WILLIAMSBRIDGE GARDENS
718 EAST 212TH STREET
BRONX, NEW YORK
NYSDEC BCP ID: C203113

REMEDIAL ACTION WORK PLAN

SUBMITTED TO:

New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, New York 11101

PREPARED FOR:

B&B Urban LLC
211 Residential Associates LLC
419 Park Avenue South, 7th Floor
New York, New York 10019

PREPARED BY:

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PWGC Project Number: BBU1801

SEPTEMBER 2019

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CERTIFICATIONS

I, Paul K. Boyce, PE, PG, 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.

074604	09.12.19	Paul Boyce
NYS Professional Engineer #	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.

FINAL REMEDIAL ACTION WORK PLAN

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EXECUTIVE SUMMARY

P.W. Grosser Consulting, Inc. (PWGC) was contracted by B&B Urban LLC and 211 Residential Associates LLC to prepare a Remedial Action Work Plan (RAWP) for the Williamsbridge Gardens Site located at 722 East 212th Street and 713 East 211th Street, Bronx, New York (the "Site"). The Applicants, B&B Urban LLC and 211 Residential Associates LLC are currently Volunteers in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program, and the Site is designated as Site No. C203113. The objective of the RAWP is to detail the planned remedial action at the Site.

Site Description

The Site is located at 722 East 212th Street and 713 East 211th Street in the Williamsbridge section of the Bronx, New York and is identified as Block 4657 and Lots 0042, and 0071 (formerly known as 0042, 0067, 0069, 0071, and 0072; tax lots were merged on June 24, 2019) on the New York City Tax Map. The Site is approximately 35,000-square feet and is bounded by East 212th Street to the north, East 211th Street to the south, residential and commercial properties and Holland Avenue to the east, and commercial properties and White Plains Road to the west. Currently, the Site is vacant; the Site is unoccupied but was most recently used for storage of carnival equipment and rides.

Physical Setting

The geologic setting of New York City is well documented. Manhattan Island and the Bronx are underlain by tightly folded, metamorphic rocks. Erosion of these formations has resulted in the formation of northeast trending hills which are prominent in the northern sections of Manhattan. The bedrock beneath most of Manhattan and the Bronx is the Manhattan schist. The Inwood limestone does underlie two small areas in the northern half of the Manhattan island and a narrow belt of limestone is also present on the southeastern portion of the island near the East River. The Fordham gneiss also outcrops in a few locations on the northern half of the island. In most areas of Manhattan and the Bronx, bedrock is overlain by thin deposits of Pleistocene age glacial outwash deposits (sand and gravel).

Based on a January 2018 Phase II Environmental Site Assessment (ESA) performed by PWGC at the Site, soils at the Site consist primarily of silty and clayey sand with some gravel that extended from grade to the bedrock surface which was encountered at depths ranging from approximately 5 to 12 feet below grade.

Based on the results of the April 2019 Remedial Investigation (RI), groundwater is present at approximately 10 feet below grade at the Site, within shallow weathered bedrock. Based on groundwater elevation measurements, the Site-specific groundwater flow direction is toward the south-southeast.

Site History

Lot 0042 (East 211th Street) has been vacant since at least 1897. Lots 0067, 0069, and 0071 were first developed in approximately 1918 as residential apartment buildings. The buildings on Lots 0067 and 0069 remained in place until approximately 1978, when they were demolished. The building on Lot 0071 was demolished at some point between 1950 and 1976. Lot 0072 was first developed in approximately 1918 with an auto repair shop. Between 1918 and 1935 it was redeveloped as a contractor storage garage/warehouse and residential dwelling. These buildings were demolished in approximately 2004. Lots 0042, 0067, 0069, and 0071 have been used for carnival ride/equipment storage and maintenance from approximately 1981 to the present. Lot 0072 has been vacant from approximately 2004 to the present.

Past Site uses include residential (approx. 1918 to 1978), auto repair (approx. 1918) and contractor storage building (approx. 1935 to 2004).

Based on review of historical Sanborn Fire Insurance Maps, aerial photos, topographic maps, and city directories performed as part of PWGC's August 2017 Phase I ESA for the Site, it appears the subject property was first developed in approximately 1908 with several residential apartment buildings. The Site appears to have been used primarily for residential purposes from that time through approximately 1978, at which point the existing structures were demolished; the Site has been vacant since then and used for storage of carnival rides and equipment. No USTs were identified on Sanborn maps of the Site.

Summary of the Remedial Investigation

PWGC performed an RI at the Site in April 2019. The purpose of the RI was to delineate soil, groundwater, and soil vapor impact within the Site boundary and to determine what, if any, impact may have migrated off-Site. To perform this work, the following tasks were completed:

- A total of 12 soil borings were installed at the Site. Borings were installed to the bedrock surface (ranging from seven to 13 feet below grade, based on field observations). A minimum of three soil samples were collected from each boring location, including a shallow (0 to 2 foot) sample and deep (0 to 2 feet above bedrock) sample and one or more intermediate sample(s) from two-foot intervals between the shallow and deep samples. Analytical results identified SVOCs, metals and pesticides concentrations exceeding their respective UUSCOs and RRSCOs. In general, the highest concentrations were detected in near surface (approx. 0 to 6 feet below grade) soils, although elevated metals concentrations extend down to the bedrock surface at several locations. Such impact at the levels detected at the Site is commonly associated with the presence of historic fill material. This observation is further supported by the presence of debris (brick/wood/glass) observed in soils at the Site to depths as far as nine feet below grade. However, surficial discharges related to the historic usage of the Site may have contributed to soil impact as well. VOC impact at the Site was limited to relatively low-level detections of xylene at the northern property boundary.
- Three permanent groundwater monitoring wells were installed at the Site; one groundwater sample was collected from each monitoring well. Metals, including manganese and sodium, were detected at concentrations exceeding their respective NYSDEC AWQS in two of the three samples collected. Because elevated concentrations of these metals were not detected in soils at the Site, the presence of these metals in groundwater is likely due to the chemical composition of bedrock beneath the Site and/or soils within the aquifer.
- Eight soil vapor samples and one outdoor (ambient) air sample were collected from the Site. Although several VOCs were detected, no potential on-Site source of soil vapor impact, such as VOC impacted soil and/or groundwater, was identified at the Site. As such, it appears likely that soil vapor impact detected at the Site is related to

an off-Site source and/or is associated with regional soil vapor issues. With the exception of low-level concentrations of PCE at four locations, VOCs for which NYSDOH has established soil vapor intrusion matrices were not detected in soil vapor at the Site.

Qualitative Human Health Exposure Assessment

Soil at the Site is impacted with SVOCs, metals and pesticides. Possible exposure pathways are by ingestion, inhalation, or dermal exposure by a person on the Site. The Site is surrounded by a locked perimeter fence which limits access to the Site to authorized personnel. As such potential exposures would be limited to periods when ground intrusive work is being performed.

The Site is currently vacant and surrounded by a locked perimeter fence, which limits human receptors to occasional Site visitors and workers involved in redevelopment activities. During remediation and Site development, human receptors will be limited to construction workers and related personnel. Potential off-Site receptors include workers and residents in surrounding commercial and residential properties.

Environmental Media & Exposure Route	Human Assessment
Direct contact with surface soils	• Although the Site is currently unpaved, access to the Site is restricted by fencing.
Direct contact with subsurface soils	• Direct contact to subsurface soils may occur during ground intrusive work at the Site. Such contact will be managed during remediation by implementing a HASP and CAMP.
Direct contact with groundwater	• Direct contact to groundwater may occur during ground intrusive work at the Site. Such contact will be managed during remediation by implementing a HASP and CAMP.
Ingestion of groundwater	• Groundwater is not utilized for drinking water. Drinking water is supplied by the municipal water supply. • There are no known domestic water supply wells in the area.
Inhalation of air	• A vapor barrier will be installed as a construction measure in the proposed new buildings to prevent potential future soil vapor intrusion at the Site.

Summary of the Remedy

The proposed remedy achieves the remedial action objectives established for the redevelopment project. The remedial action is protective of the public health and environment, is compliant with remedial goals, SCGs, and RAOs, demonstrates short-term and long-term effectiveness, will result in the reduction of toxicity, mobility, and volume of contaminants through treatment, is implementable, cost effective, compatible with land use, and will generally be acceptable to the surrounding community.

The proposed remedial action will consist of the following:

1. Excavation of soil/fill exceeding Track 1 Unrestricted Use SCOs listed in **Table 10**.
2. Implementation of a Community Air Monitoring Plan during earth disturbing work.
3. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of excavated soil during any intrusive Site work.
4. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use SCOs.
5. Appropriate off-Site disposal of all material removed from the Site in accordance with Federal, State and local rules and regulations for handling, transport, and disposal.
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 10**, (2) all Federal, State and local rules and regulations for handling and transport of material.
7. Responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with applicable Federal, State, and local rules and regulations.

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

B&B Urban LLC and 211 Residential Associates LLC entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in August 2018 (amended to reflect a tax lot merging in August 2019), to investigate and remediate a 0.80-acre property located at 722 East 212th Street and 713 East 211th Street in the Bronx, New York. B&B Urban LLC and 211 Residential Associates LLC are each a Volunteer in the Brownfield Cleanup Program. Residential use is proposed for the property. When completed, the Site will contain two eight-story, multi-family residential buildings that will be used as affordable/supportive housing. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed from March to April 2019. It provides an evaluation of a Track 1 cleanup which is the volunteer's preferred remedy. 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 applicable Federal, State and local laws, regulations and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have determined that this Site does not pose a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

A formal Remedial Design document will not be prepared.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located in the County of The Bronx, New York, New York and is identified as Block 4657 and Lots 0042, and 0071 (formerly known as 0042, 0067, 0069, 0071 and 0072; tax lots were merged on June 24, 2019) on the New York City Tax Map. A Vicinity Map (**Figure 1**) shows the Site location. The Site is situated on an approximately 0.80-acre area bounded by East 212th Street to the north, East 211th Street to the south, residential properties to the east, and commercial properties to the west (see **Figure 2**). A boundary map is attached to the BCA as

required by Environmental Conservation Law (ECL) Title 14 Section 27-1419. The 0.80-acre property is fully described in **Appendix A** – Metes and Bounds. A global positioning system coordinate for the starting point is included.

1.2 CONTEMPLATED REDEVELOPMENT PLAN

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this assessment. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

Development plans for the Site consist of the construction of two new eight-story residential buildings with partial basements and a landscaped interior courtyard for residents. Combined, the buildings will be 171,000 square feet and contain 173 apartments (28 studio, 56 one-bedroom, 57 two-bedroom and 31 three-bedroom, plus one super's unit). The new buildings will be used for affordable housing, including at least 80% at rents below federal low-income housing tax credit rents, and with 30% formerly homeless families. The current zoning designation is R7A residential. The proposed use is consistent with existing zoning for the property.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

Adjacent properties to the north and east of the Site consist primarily of two to four-story multi-family residential properties. Adjacent properties to the west consist of commercial/retail and mixed-use commercial/residential properties. Adjacent properties to the south consist of multi-family residential properties and a United States Postal Service (USPS) distribution facility.

There are no schools, day care facilities, hospitals, or other sensitive receptors within approximately 500 feet of the subject Site. Sensitive receptors identified within one mile of the subject site include:

- Schools:
    - PS 041 Gun Hill Road, 3352 Olinville Avenue
    - Leaders of Tomorrow, 3710 Barnes Avenue

- North Bronx School of Empowerment, 3710 Barnes Avenue
- Bronx Academy of Health Careers, 800 East Gun Hill Road
- Bronx Aerospace HS, 800 Gun Hill Road
- Bronx HS for Writing and Communication, 800 East Gun Hill Road
- HS of Computers and Technology, 800 East Gun Hill Road
- PS 056 Norwood Heights, 341 East 207th Street
- PS 076 The Bennington School, 900 Adee Avenue
- Bedford Park Elementary, 3177 Webster Avenue
- P469X The Bronx School for Continuous Learners, 3177 Webster Avenue
- PS 021 Phillip H. Sheridan, 715 East 225th Street
- PS 078 Anne Hutchinson, 1400 Needham Avenue
- Bronx Dance Academy, 3617 Bainbridge Avenue
- JHS 080 The Mosholu Parkway, 149 East Mosholu Parkway North
- Academy for Scholarship and Entrepreneurship, 921 East 228th Street
- New World High School, 921 East 228th Street
- The Bronxwood Preparatory Academy, 921 East 228th Street
- PS 168, 3050 Webster Avenue
- PS/MS 20 P.O. George J. Werdann III, 3050 Webster Avenue
- PS 103 Hector Fontanez, 4125 Carpenter Avenue
- Bronx Community Charter School, 3170 Webster Avenue
- Bronx Charter School for Excellence 3, 3956 Carpenter Avenue
- Bronx Charter School for Excellence 4, 3956 Carpenter Avenue

- Preschools/Daycare Centers
    - Immaculate Conception School, 760 East Gun Hill Road
    - Susan Wagner Victory, 3440 White Plains Road
    - Regent School, 719 East 216th Street
    - Mind Builders Creative Arts Center, 3415 Olinville Avenue
    - The Learning Tree, 801 Barhtoldi Street
    - Rose Hill Pre-K Center, 3560 Webster Avenue
    - All Seasons A&C Day Care, 700 Rosewood Street
    - Williamsbridge NAACP Early Childhood Education Center, 670 East 219th Street
    - St. Philip & James School, 1160 East 213th Street
    - St. Brendan School, 268 East 207th Street
    - Saint Ann - Our Lady of Mount Carmel Annex, 260 East 207th Street
    - United Educare Preschool, 3950 Bronxwood Avenue
    - Our Lady of Grace Preschool, 3981 Bronxwood Avenue
    - North Bronx NCNW CDC, 4035 White Plains Road
    - Mosholu Montefiore Community Center, 3512 Dekalb Avenue
    - Bright Star Day Care at Rochambeau, 3130 Rochambeau Avenue
    - Laconia Day Care Center and Infant Care, 3950 Laconia Avenue
    - New Covenant Christian School, 1497 Needham Avenue
    - Monsignor Boyle Head Start, 3044 Hull Avenue
    - Child Development Center of Mosholu Montefiore, 3450 Dekalb Avenue
    - Susan Wagner Day School, 4102 White Plains Road
    - Little Stars Too, 1420 Burk Avenue

- Hospitals
    - Montefiore Hospital, 3400 Bainbridge Avenue
    - Children's Hospital at Montefiore, 3415 Bainbridge Avenue
    - Montefiore Medical Center Moses Division, 111 East 210th Street
    - NYC Health & Hospitals - North Central Bronx, 3424 Kossuth Avenue

There are no rivers, streams, or wetlands within approximately 500 feet of the Site. The Bronx River is the nearest surface water body to the Site located approximately ¼-mile to the west.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation (RI) Work Plan dated April 2019. The investigation was conducted between March and April 2019. The RI was submitted to NYSDEC concurrently with this RAWP. NYSDEC approval of the RI Report is pending.

2.1 SUMMARY REMEDIAL INVESTIGATIONS PERFORMED

The following table summarizes the investigation activities performed at the Site since PWGC's January 2018 Phase II ESA:

Sample Media	Number of Samples
Soil	44
Groundwater	3
Soil Vapor	8

2.1.1 Borings and Wells

PWGC performed a RI at the Site in April 2019. The RI incorporated the data generated during PWGC's January 2018 Phase II ESA (performed under the NYCOER E-designation program). To perform this work, the following tasks were completed:

- A total of 12 soil borings were installed at the Site (SB001 to SB012). Soil borings were installed utilizing a Geoprobe® direct-push drill rig outfitted with a macro-core sampler and dedicated acetate liners. Soils were collected continuously from ground surface until bedrock was encountered. The observed depth to bedrock beneath the Site noted during the RI ranged from approximately seven to 15 feet below grade. Non-dedicated sampling equipment was decontaminated in accordance with the procedures specified in Section 5.9 of the approved RI Work Plan.

- Three permanent groundwater monitoring wells (MW001 to MW003) were installed at the Site. Monitoring wells were installed using a rotary drill rig outfitted for air rotary drilling. Wells were constructed of two-inch diameter, schedule 40 PVC casing and screen with 0.010-inch slot. Monitoring wells are screened across the water table with a minimum of 10 feet of screen and solid riser to grade. A gravel pack of No. 2 Morie sand was placed in the annulus around the screen with a two-foot bentonite seal above the gravel pack. Above the bentonite layer, the annulus around the well was filled with a cement/bentonite grout. Monitoring wells were finished at grade with a flush mount curb box. Following installation, newly installed monitoring wells were over-pumped to restore the hydraulic properties of the aquifer. Well development continued until the turbidity of the groundwater was less than or equal to 50 Nephelometric Turbidity Units (NTUs) or when pH, temperature, and conductivity measurements stabilized. Monitoring well development water was containerized in 55-gallon drums for off-Site disposal.
- Eight temporary soil vapor probes (SV001 to SV008) were installed. Temporary soil vapor points were installed utilizing a Geoprobe® direct-push drill rig. At each location, a six-inch stainless-steel screen was installed at the base of the sampling point with polyethylene tubing to grade. Coarse sand was placed surrounding the screen and six inches above. The remainder of the soil vapor point annulus was sealed with bentonite grout to the surface.

2.1.2 Samples Collected

The following samples were collected during the RI. Sample methodology was in accordance with the RIWP for the Site.

- A minimum of three soil samples were collected from each boring location, including a shallow (0 to 2 foot) sample and deep (0 to 2 feet above bedrock) sample and one or more intermediate sample(s) from two-foot intervals between the shallow and deep samples. Samples were collected directly into pre-cleaned, pre-preserved, laboratory supplied glassware.
- One groundwater sample was collected from each monitoring well. Groundwater samples were collected in compliance with the USEPA Low Stress (Low Flow) Purging and Sampling Procedure for The Collection of Groundwater Samples From Monitoring Wells

(September 2017). Samples were collected directly into pre-cleaned, pre-preserved, laboratory supplied glassware.

- Eight temporary soil vapor probes were installed. One soil vapor sample was collected from each. Additionally, one outdoor (ambient) air sample was collected concurrently. Soil vapor and ambient air samples were collected approximately 24 hours after sampling points were installed. A tracer gas (helium) was utilized to test the seal around the soil vapor points. Once the integrity of the seal was confirmed at each location, three volumes of air were extracted from each point prior to sample collection with a flow rate of less than 0.2 liters/minute. Soil vapor samples were collected using batch certified 6-liter SUMMA vacuum canisters fitted with two-hour flow control regulators with a flow rate of less than 0.2 liters/minute.

2.1.3 Chemical Analytical Work Performed

Soil and groundwater samples obtained during the RI were collected in pre-cleaned, pre-preserved, laboratory-supplied glassware and stored in a cooler on ice for transport to the laboratory. Samples were submitted to Alpha Analytical of Westborough, Massachusetts, a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP ID: 11148). Each soil and groundwater sample was analyzed for the following:

- TCL VOCs by USEPA Method 8260
- TCL SVOCs by USEPA Method 8270
- TCL pesticides/PCBs by USEPA Method 8081/8082
- TAL metals by USEPA Method 6010/7471
- PFAS by USEPA Method 537 (Modified)

Soil vapor samples were collected using batch certified 6-liter SUMMA vacuum canisters fitted with two-hour flow control regulators with a flow rate of less than 0.2 liters/minute. Samples were submitted to Alpha Analytical of Mansfield, Massachusetts, a NYSDOH ELAP certified

laboratory (ELAP ID: 11627). Each soil vapor/ air sample was analyzed for VOCs by USEPA Method TO-15.

2.1.4 Documentation

Findings of the RI for the Site include the following:

- Soil sample analytical results identified SVOCs, metals and pesticides concentrations exceeding their respective UUSCOs and RRSCOs. In general, the highest concentrations were detected in near surface (approx. 0 to 6 feet below grade) soils, although elevated metals concentrations extend down to the bedrock surface at several locations. Such impact at the levels detected at the Site is commonly associated with the presence of historic fill material. This observation is further supported by the presence of debris (brick/wood/glass) observed in soils at the Site to depths as far as nine feet below grade. However, surficial discharges related to the historic usage of the Site may have contributed to soil impact as well. VOC impact at the Site was limited to relatively low-level detections of xylene at the northern property boundary.
- Metals, including manganese and sodium, were detected at concentrations exceeding their respective NYSDEC AWQS in two of the three groundwater samples collected. Because elevated concentrations of these metals were not detected in soils at the Site, the presence of these metals in groundwater is likely due to the chemical composition of bedrock beneath the Site and/or soils within the aquifer.
- Although several VOCs were detected in soil vapor samples collected from the Site, no potential on-Site source of soil vapor impact, such as VOC impacted soil and/or groundwater, was identified at the Site. As such, it appears likely that soil vapor impact detected at the Site is related to an off-Site source and/or is associated with regional soil vapor issues. With the exception of low-level concentrations of PCE at four locations, VOCs for which NYSDOH has established soil vapor intrusion matrices were not detected in soil vapor at the Site.

2.1 SIGNIFICANT THREAT

The NYSDEC and NYSDOH have determined that this Site does not pose a significant threat to human health and the environment. Notice of that determination has been provided for public review.

2.2 SITE HISTORY

2.2.1 Past Uses and Ownership

Lot 0042 (East 211th Street) has been vacant since at least 1897. Lots 0067, 0069, and 0071 were first developed in approximately 1918 as residential apartment buildings. The buildings on Lots 0067 and 0069 remained in place until approximately 1978, when they were demolished. The building on Lot 0071 was demolished at some point between 1950 and 1976. Lot 0072 was first developed in approximately 1918 with an auto repair shop. Between 1918 and 1935 it was redeveloped as a contractor storage garage/warehouse and residential dwelling. These buildings were demolished in approximately 2004. Lots 0042, 0067, 0069, and 0071 have been used for carnival ride/equipment storage and maintenance from approximately 1981 to the present. Lot 0072 has been vacant from approximately 2004 to the present.

Past Site uses include residential (approx. 1918 to 1978), auto repair (approx. 1918) and contractor storage building (approx. 1935 to 2004).

Based on review of historical Sanborn Fire Insurance Maps, aerial photos, topographic maps, and city directories performed as part of PWGC's August 2017 Phase I ESA for the Site, it appears the Site was first developed in approximately 1908 with several residential apartment buildings. The Site appears to have been used primarily for residential purposes from that time through approximately 1978, at which point the existing structures were demolished; the Site has been vacant since then and used for storage of carnival rides and equipment. No USTs were identified on Sanborn maps of the Site.

2.2.2 Phase I and Phase II Reports

Phase I ESA (August 2017)

PWGC prepared a Phase I Environmental Site Assessment (ESA) in August 2017. The Phase I ESA identified the following Recognized Environmental Conditions (RECs) associated with the Site:

- The Site has been assigned an E-Designation for Hazardous Materials by the New York City Department of Planning.
- Chemical drums and containers were stored throughout the Site. Staining and evidence of spillage was noted in the vicinity of where these containers were stored.
- Potential vapor encroachment related to off-Site sources.

Phase II ESA (January 2018)

Based on the findings of the August 2017 Phase I ESA, PWGC performed a Phase II ESA for the site in January 2018 under the oversight of the NYCOER E-Designation program. The Phase II ESA included the installation of 12 soil borings and collection and analysis of two soil samples from each, and installation of eight temporary soil vapor probes and collection of one and soil vapor samples from each. Samples were collected in accordance with NYCOER requirements, NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, and NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Groundwater was not encountered above bedrock during the Phase II ESA. Soil samples were analyzed for VOCs, SVOCs, metals, pesticides and PCBs; soil vapor samples were analyzed for VOCs. The results of the Phase II ESA were incorporated into the RI Report.

2.2.3 Sanborn Maps

Historical Sanborn maps for the Site and surrounding area were reviewed for the years available which include 1897 to 2007. Review of the maps is summarized below.

Date(s)	Description
1897 to 1908	The Site appears to be undeveloped.
1918	Lots 0067, 0069, 0071 are occupied by four-story residential buildings. Lot 0072 is occupied by an auto repair shop. Lot 0042 is vacant/undeveloped.
1935 to 1950	Lots 0067, 0069, 0071 are occupied by four-story residential buildings. Lot 0072 is occupied by a building identified as contractor storage. Lot 0042 is vacant/undeveloped.
1976 to 1978	Lots 0067 and 0069 are occupied by four-story residential buildings. Lot 0071 is vacant. Lot 0072 is occupied by a building identified as contractor storage. Lot 0042 is vacant/undeveloped.
1981 to 2004	Lots 000042, 0067, 0069, 0071 are vacant and identified as amusements storage yard. Lot 0072 is occupied by a building identified as contractor storage.
2005 to 2007	Lots 0042, 0067, 0069, 0071 and 0072 are vacant and identified as amusements storage yard.

All Sanborn Maps available for this Site were reviewed prior to preparation of the RAWP.

2.3 GEOLOGICAL CONDITIONS

Soils at the Site consist primarily of silty and clayey sand with some gravel that extends from grade to the bedrock surface. The bedrock surface was encountered at depths ranging from approximately 5 to 15 feet below grade. Evidence of the presence of historic fill material, such as debris (brick/wood/glass) was observed at depths up to nine feet below grade.

A groundwater flow map is shown in **Figure 3**.

2.4 CONTAMINATION CONDITIONS

2.4.1 Conceptual Model of Site Contamination

Soil samples collected from the Site identified impact to soils throughout the property. Analytical data identified elevated concentrations of SVOCs, pesticides and metals exceeding their

respective NYSDEC UUSCOs and RRSCOs likely related to the historic usage of the Site and/or the presence of historic urban fill material.

Groundwater samples collected from the Site identified impact to groundwater beneath the property. Analytical data identified elevated concentrations of metals exceeding their respective NYSDEC AWQSs. Identified groundwater impact appears likely to be related to the chemical composition of soils within the weathered bedrock in which the wells were installed and not an on-Site source of impact.

Analytical data identified multiple VOCs in each soil vapor sample collected from the site. . Based on the lack of a potential on-Site source of VOC impact to soil vapor (e.g., VOC impact to soil and/or groundwater), it appears likely that VOC impact to soil vapor beneath the Site is related to an off-Site source. Compounds for which NYSDOH would typically require vapor intrusion mitigation were not detected with the exception of PCE at four locations near the northern property boundary.

2.4.2 Description of Areas of Concern

Areas of Concern (AOCs) at the Site consist of surface and subsurface soils throughout the Site impacted with SVOCs, metals and pesticides at concentrations exceeding NYSDEC UUSCOs.

2.4.3 Identification of Standards, Criteria and Guidance

The applicable SCGs for soil, groundwater, and soil vapor characterization and remediation for this Site include:

- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 375 - Inactive Hazardous Waste Disposal Sites, specifically Part 375-6 Remedial Program Soil Cleanup Objectives
- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels
- 40 CFR Part 144 - Underground Injection Control Program

- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- DER-23 - Citizen Participation Handbook for Remedial Programs
- OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites
- CP-43 - Groundwater Monitoring Well Decommissioning Policy
- DER Technical Guidance for Site Investigation and Remediation (DER-10)
- CP-51 – Soil Cleanup Guidance
- DER Green Remediation (DER 31)
- DER Institutional Controls (DER 33)

2.4.4 Soil/Fill Contamination

Contaminants of concern for the Site consist of SVOCs, metals and pesticides.

2.4.4.1 Summary of Soil/Fill Data

The major compounds identified within soils at the Site include SVOCs, primarily poly-aromatic hydrocarbons (PAHs) including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, metals including chromium, lead and mercury, and pesticides including 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and dieldrin. The presence of these compounds was fairly ubiquitous in shallow soils at the Site. However, in general, concentrations decreased with depth.

2.4.4.1 Comparison of Soil/Fill with SCGs

Surface and subsurface soils throughout the Site are impacted with SVOCs (PAHs), metals, and pesticides at concentrations exceeding NYSDEC UUSCOs and/or RRSCOs.

Table 1 through **Table 4** show exceedances from Track 1 Unrestricted SCOs for all soil/fill at the Site. **Figures 4** through **Figure 6** are spider maps that show the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill.

2.4.5 On-Site and Off-Site Groundwater Contamination

2.4.5.1 Summary of Groundwater Data

Limited metals were detected in groundwater samples collected from the Site exceeding their respective AWQSs. VOCs, SVOCs, pesticides and PCBs were not detected at concentrations exceeding their respective NYSDEC AWQS in groundwater samples collected form the Site. Off-Site groundwater samples were not collected.

2.4.5.2 Comparison of Groundwater with SCGs

Groundwater impact at the Site exceeding NYSDEC AWQSs was limited to metals (manganese and sodium). Because elevated concentrations of these metals were not detected in soils at the Site, the presence of these metals in groundwater is likely due to the chemical composition of bedrock beneath the Site and/or soils within the aquifer.

Tables that indicate exceedances from GA groundwater standards in monitoring wells prior to the remedy are shown in **Tables 5** through **Table 8**. A spider map that indicates the location(s) of and summarizes exceedances from GA groundwater standards prior to the remedy is shown in **Figure 7.**

2.4.6 On-Site and Off-Site Soil Vapor Contamination

Multiple VOCs were detected in each soil vapor sample collected from the site. Petroleum related compounds, such as benzene, ethylbenzene, toluene and xylenes were detected in each soil vapor sample.

Compounds for which NYSDOH has established soil vapor/indoor air decision matrices (carbon tetrachloride, 1,1-dichloroethene, cis-1,2-dichloroethene, trichloroethene (TCE), methylene chloride, tetrachloroethene (PCE), 1,1,1-trichloroethane and vinyl chloride) were not detected above the laboratory MDL, with the exception of PCE in soil vapor samples VP001, VP002, VP006 and VP007.

2.4.6.1 Comparison of Soil Vapor with SCGs

NYSDOH has not established soil vapor standards or guidance values. With the exception of of PCE at four locations, VOCs for which NYSDOH has established soil vapor/indoor air decision matrices were not detected in soil vapor at the Site.

A table of soil vapor data collected prior to the remedy is shown in **Table 9**. A spider map that indicates the location(s) of and summarizes soil vapor data prior to the remedy is shown in **Figure 8**.

2.5 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.5.1 Qualitative Human Health Exposure Assessment

Soil at the Site is impacted with SVOCs, metals and pesticides. Possible exposure pathways are by ingestion, inhalation, or dermal exposure by a person on the Site. The Site is surrounded by a locked perimeter fence which limits access to the Site to authorized personnel. As such potential exposures would be limited to periods when ground intrusive work is being performed.

During remediation and Site development, human receptors will be limited to construction workers and related personnel. Potential off-Site receptors include workers and residents in surrounding commercial and residential properties.

Environmental Media & Exposure Route	Human Assessment
Direct contact with surface soils	• Although the Site is currently unpaved, access to the Site is restricted by fencing.
Direct contact with subsurface soils	• Direct contact to subsurface soils may occur during ground intrusive work at the Site. Such contact will be managed during remediation by implementing a HASP and CAMP.
Direct contact with groundwater	• Direct contact to groundwater may occur during ground intrusive work at the Site. Such contact will be managed during remediation by implementing a HASP and CAMP.

Ingestion of groundwater	• Groundwater is not utilized for drinking water. Drinking water is supplied by the municipal water supply. • There are no known domestic water supply wells in the area.
Inhalation of air	• A vapor barrier will be installed as a construction measure in the proposed new buildings to prevent potential future soil vapor intrusion at the Site.

2.5.2 Fish & Wildlife Remedial Impact Analysis

A Fish and Wildlife Resources Impact Analysis is not required for this Site as there are no known or potential adverse impacts to fish and wildlife resources. Due to the nature of impact at the Site, and the groundwater flow direction beneath the Site (toward the south-southeast), contamination at the Site does not appear to have the potential to migrate to, erode into or otherwise impact any on-Site or off-Site habitat of endangered, threatened or special concern species or any other fish and wildlife resource.

2.6 INTERIM REMEDIAL ACTION

No Interim Remedial Actions (IRMs) have been performed at the Site.

2.7 REMEDIAL ACTION OBJECTIVES

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

2.7.1 Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

- Prevent impacts to biota due to ingestion/direct contact with contaminated soil that would cause toxicity or bioaccumulation through the terrestrial food chain.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

Each remedial alternative is summarized below. The following alternatives were developed that are designed to satisfy the Site RAOs detailed in Section 2.7:

- Alternative 1 – excavation of all soils exceeding NYSDEC UUSCOs (Track 1).
- Alternative 2 – excavation of all soils exceeding NYSDEC RRSCOs (Track 2).

Each alternative was evaluated based upon consideration of the following criteria in accordance with Part 375-1.8(f):

- Protection of human health and the environment;
- Compliance with standards, criteria, and guidelines (SCGs);
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance; and
- Land use.

The following Remedial Action standards, criteria, and guidance were also considered in evaluating the two alternatives.

- 6 NYCRR Part 375-6 Soil Cleanup Objectives
- New York State Groundwater Quality Standards – 6 NYCRR Part 703;
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1;
- NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation - December 2002 (or later version if available);

- NYSDEC Draft Brownfield Cleanup Program Guide – May 2004;
- New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan
- NYS Waste Transporter Permits – 6 NYCRR Part 364;
- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364;

3.1.1 Alternative 1 – Soil Excavation in Excess of UUSCOs (Track 1 Cleanup)

Alternative 1 is the most comprehensive and would include excavation of all soils from the Site in excess of their respective Unrestricted Use SCOs. The approximate excavation areas for Alternative 1 are illustrated in **Figure 9**.

3.1.1.1 Overall Protectiveness of Public Health and the Environment

Alternative 1 would achieve the RAOs for surface soil and subsurface soil.

3.1.1.2 Compliance with Remedial Goals, SCGs, and RAOs

Alternative 1 could meet compliance with remedial goals, SCGs and RAOs for the Site by meeting Unrestricted Use SCOs.

3.1.1.3 Short-Term Impacts and Effectiveness

The short-term adverse impacts and exposure to the public and the environment during the implementation of Alternative 1 are minimal. Short-term exposure to on-Site workers during excavation and loading activities will be addressed with a HASP and mitigated through the use of personal protective equipment, monitoring and engineering controls employed during remedial and construction activities. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during excavation and soil disturbance activities.

3.3.1.4 Long-Term Effectiveness and Permanence

Alternative 1 achieves long term effectiveness and permanence by removing soils affected by Site contaminants above Unrestricted Use SCOs. Under this Alternative, risk from soil impact is eliminated for future on-Site residents and off-Site residents. This alternative will continue to meet RAOs for soil in the future, providing a permanent long-term solution for the Site.

3.1.1.5 Reduction of Toxicity, Mobility or Volume through Treatment

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site surface soil, and subsurface soil by meeting unrestricted use objectives.

3.1.1.6 Implementability

Alternative 1 can be implemented using readily available and proven technologies. Both the technical and non-technical aspects of implementing this alternative are feasible.

3.1.1.7 Cost-Effectiveness,

The estimated costs associated with the implementation of Alternative 1 range from approximately $1.1MM to $1.5MM in capital costs (rage is dependent on the actual total volume of impacted soil to be removed and disposed). The capital costs for this estimate include the construction, equipment, materials, waste disposal, and indirect capital costs such as engineering and design expenses, and legal and administrative costs. There should be no post-remedial Site control (PRSC) costs as this alternative will result in no further waste generation or monitoring.

3.1.1.8 Compatibility with Land Use,

The proposed future land use is multi-family residential. Alternative 1 is compatible with respect to the proposed land use and to land uses in the vicinity of the Site. The alternative is consistent with NYSDEC BCP goals for cleanup of contaminated land and brings the property into productive use. The alternative is protective of natural and cultural resources.

3.1.2 Alternative 2 – Soil Excavation in Excess of RRSCOs (Track 2 Cleanup)

In the event that a Track 1 Cleanup cannot be achieved, a Track 2 Cleanup may be implemented. Alternative 2 would include excavation of all soils from the Site in excess of their respective Restricted Residential Use SCOs. The approximate excavation areas for Alternative 2 are illustrated in **Figure 10**.

3.1.2.1 Overall Protectiveness of Public Health and the Environment

Alternative 2 would achieve the RAOs for surface soil and subsurface soil.

3.1.2.2 Compliance with Remedial Goals, SCGs, and RAOs

Alternative 2 could meet compliance with remedial goals, SCGs and RAOs for the Site by meeting Restricted Residential Use SCOs.

3.1.2.3 Short-Term Impacts and Effectiveness

The short-term adverse impacts and exposure to the public and the environment during the implementation of Alternative 2 are minimal. Short-term exposure to on-Site workers during excavation and loading activities will be addressed with a HASP and mitigated through the use of personal protective equipment, monitoring and engineering controls. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during excavation and soil disturbance activities.

3.1.2.4 Long-Term Effectiveness and Permanence

Alternative 2 achieves long term effectiveness and permanence by removing soils affected by Site contaminants above Restricted Residential Use SCOs. Under this Alternative, risk from soil impact is eliminated for future on-Site residents and off-Site residents. This alternative will continue to meet RAOs for soil in the future, providing a permanent long-term solution for the Site.

3.1.2.5 Reduction of Toxicity, Mobility or Volume through Treatment

Alternative 2 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site surface soil, and subsurface soil by meeting restricted use objectives.

3.1.2.6 Implementability

Alternative 2 can be implemented using readily available and proven technologies. Both the technical and non-technical aspects of implementing this alternative are feasible.

3.1.2.7 Cost-Effectiveness

The estimated costs associated with the implementation of Alternative 2 range from approximately $800,000 to $1.2MM in capital costs (rage is dependent on the actual total volume of impacted soil to be removed and disposed). The capital costs for this estimate include the construction, equipment, materials, waste disposal, and indirect capital costs such as engineering and design expenses, and legal and administrative costs. PRSC costs for Alternative 2 are estimated at approximately $100,000, and include implementation of a SMP, and annual certification for a minimum of 20 years.

3.1.2.8 Compatibility with Land Use

The proposed future land use is multi-family residential. Alternative 2 is compatible with respect to the proposed land use and to land uses in the vicinity of the Site. The alternative is consistent with NYSDEC BCP goals for cleanup of contaminated land and brings the property into productive use. The alternative is protective of natural and cultural resources.

3.2 SELECTION OF THE PREFERRED REMEDY

Based upon the findings of the RI, the location and depth of soil impact, the lithology and hydrogeologic conditions at the Site, green remediation guidelines, and the proposed schedule for the future redevelopment of the Site, the applicant prefers to implement Alternative 1 as the remedial action.

3.2.1 Zoning;

The Site is located within a R7A residential district. Nearby properties are zoned as R7A or have a commercial overlay zoning of C1-4 or C2-4. The Site's proposed use conforms with the current zoning.

3.2.2 Applicable Comprehensive Community Master Plans or Land Use Plans;

There are no current comprehensive community master plans or land use plans pertaining to or in the vicinity of the Site.

3.2.3 Surrounding Property Uses;

Surrounding properties are used for residential, mixed residential and commercial uses.

3.2.4 Citizen Participation;

In accordance with DER-23, a 45-day comment period will be open to the community following submission of this RAWP to the NYSDEC.

3.2.5 Environmental Justice Concerns;

There are no environmental justice concerns related to the proposed redevelopment of this Site as the redevelopment will not reasonably be expected to cause or increase a disproportionate burden on the community in which the Site is located, including low-income minority communities, or to result in a disproportionate concentration of commercial or industrial uses in what has historically been a mixed use or residential community.

3.2.6 Land Use Designations;

There are no federal or state land use designations for the subject Site.

3.2.7 Population Growth Patterns;

The proposed use of the Site conforms to recent development patterns in the area.

3.2.8 Accessibility to Existing Infrastructure;

The Site is accessible to existing infrastructure, such as the Metropolitan Transit Authority MTA subway lines and bus routes.

3.2.9 Proximity to Cultural Resources;

There are no important cultural resources, including federal or state historic heritage sites or Native American sites located within ½ mile of the Site.

3.2.10 Proximity to Natural Resources;

The Site lies approximately ¼-mile from the Bronx River. No habitats of endangered, threatened or special concern species or other fish and wildlife resource were identified on the NYS Environmental Resource Mapper in the vicinity of the Site.

3.2.11 Off-Site Groundwater Impacts;

No off -Site groundwater samples were collected. Based on the nature of groundwater impact identified on-Site (i.e., metals that appear to be related to the chemical composition of the weathered bedrock/soils that monitoring wells were installed in), off-Site groundwater impact does not appear to be a concern.

3.2.12 Proximity to Floodplains;

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) show that the Site is not located within the 100 or 500-year flood zone (FEMA Map Panel ID: 36119C0338F).

3.2.13 Geography and Geology of the Site; and

The geologic setting of New York City is well documented. Manhattan Island and the Bronx are underlain by tightly folded, metamorphic rocks. Erosion of these formations has resulted in the formation of northeast trending hills which are prominent in the northern sections of Manhattan. The bedrock beneath most of Manhattan and the Bronx is the Manhattan schist. The Inwood limestone does underlie two small areas in the northern half of the Manhattan island and

a narrow belt of limestone is also present on the southeastern portion of the island near the East River. The Fordham gneiss also outcrops in a few locations on the northern half of the island. In most areas of Manhattan and the Bronx, bedrock is overlain by thin deposits of Pleistocene age glacial outwash deposits (sand and gravel).

3.2.14 Current Institutional Controls

There are no institutional controls currently implemented at the Site.

3.3 SUMMARY OF SELECTED REMEDIAL ACTIONS

The proposed remedy achieves the remedial action objectives established for the redevelopment project. The remedial action is protective of the public health and environment, is compliant with remedial goals, SCGs, and RAOs, demonstrates short-term and long-term effectiveness, will result in the reduction of toxicity, mobility, and volume of contaminants through treatment, is implementable, cost effective, compatible with land use, and will generally be acceptable to the surrounding community.

The proposed remedial action will consist of the following:

1. Excavation of soil/fill exceeding Track 1 Unrestricted Use SCOs listed in **Table 10**.
2. Implementation of a Community Air Monitoring Plan during earth disturbing work.
3. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of excavated soil during any intrusive Site work.
4. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use SCOs.
5. Appropriate off-Site disposal of all material removed from the Site in accordance with Federal, State and local rules and regulations for handling, transport, and disposal.
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 10**, (2) all Federal, State and local rules and regulations for handling and transport of material.

7. Responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with applicable Federal, State, and local rules and regulations.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP. Deviations from the RAWP will be promptly reported to NYSDEC for approval and fully explained in the FER.

4.0 REMEDIAL ACTION PROGRAM

4.1 GOVERNING DOCUMENTS

4.1.1 Standards, Criteria and Guidance

The standards, criteria, and guidance (SQG) for the Site are specified in Section 2.4.2.

4.1.2 Site Specific Health & Safety Plan (HASP)

The HASP has been included as **Appendix B**. The HASP outlines the requirements for training, medical surveillance, daily tailgate meetings, emergency response, and accident and injury reporting.

The PWGC Field Team Leader will be responsible for implementing the HASP, completing the daily tailgate safety meetings and performing necessary Industrial Hygiene monitoring as specified in the HASP.

PWGC and/or the Volunteer's sub-contractors will have the option of adopting this HASP or developing their own Site-specific document. If a subcontractor chooses to prepare their own HASP, it must meet the minimum requirements as detailed in the Site HASP prepared by PWGC and must be made available to PWGC and NYSDEC.

Remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA and the PWGC Corporate Environmental Health and Safety policy. Modifications to the HASP may be made with the approval of the PWGC Health and Safety Manager and/or Project Manager.

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 Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The Health and Safety Plan (HASP) and requirements defined in this Remedial Action Work Plan 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 identified prior to the start of remedial construction, and a resume will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 Quality Assurance Project Plan (QAPP)

The quality assurance project plan (QAPP), included as **Appendix C**, presents the objectives, functional activities, methods, and quality assurance / quality control (QA/QC) requirements associated with sample collection and laboratory analysis for remedial activities. The QAPP follows requirements detailed in DER-10, Section 2.

The components of the QAPP include:

- Project Organization,
- Sampling requirements, including methodology, identification, quantity, volumes, locations, frequency, chain of custody procedures, and sample packaging,
- Field/Laboratory data control requirements,
- Equipment decontamination, and
- Field documentation.

4.1.4 Soil/Materials Management Plan (SoMP)

A Soil/Materials Management Plan (SoMP), further detailed in Section 5.4 of this RAWP, includes detailed plans for managing all soils/materials that are disturbed as the Site, including excavation, handling, storage, transport, and disposal. The SoMP will also include the controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable federal, state, and local laws and regulations.

4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during remedial activities. Erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

4.1.6 Community Air Monitoring Plan (CAMP)

A Site-specific Community Air Monitoring Plan has been prepared and included as **Appendix D** to provide measures for protection for the downwind community (i.e., off-Site receptors including residences, businesses, and on-Site workers not directly involved in the remedial work) from potential airborne contaminants as a direct result of the remedial activities. The primary concerns for this Site are SVOCs, metals, pesticides and dust particulates.

The CAMP will be implemented and executed in accordance with the NYSDOH Generic CAMP.

4.1.7 Contractors Site Operations Plan (SOP);

The Remedial Engineer has reviewed all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirms that they are in compliance with this RAWP. The Remedial Engineer is responsible to ensure 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

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

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

Document repositories have been established at the following locations and contain all applicable project documents:

Wakefield Library

4100 Lowerre Place

Bronx, New York 10466

718-652-4663

https://www.nypl.org/about/locations/wakefield

Hours: Monday – Thursday: 10AM to 7PM

Friday – Saturday: 10AM to 5PM

Sunday: Closed

Bronx Community Board 12

4101 White Plains Road

Bronx, New York 10466

718-944-3300

https://www1.nyc.gov/site/bronxcb12/about/contact.page

4.2 PROJECT ORGANIZATION

The Remedial Engineer (RE) and Qualified Environmental Professional (QEP) for this project are Paul K. Boyce, PE, PG and Thomas Melia, PG, respectively. Principal personnel who will participate in the remedial action include an on-Site environmental scientist or engineer (name TBD). The on-Site environmental scientist/engineer will document that the remedial actions are implemented in accordance with this RAWP, HASP, SoMP, and supporting documents, and promptly report any deviations from these documents to the appropriate team members, the RE, and the QEP so that the issue can be rectified in a timely manner. The environmental scientist/engineer will report directly to the QEP and RE and will provide daily summary reports of the Site remedial activities.

An organization chart is included in **Figure 11**.

Resumes of key personnel involved in the Remedial Action are included in **Appendix F**.

4.2.1 Remedial Engineer

The Remedial Engineer for this project will be Paul K. Boyce, PE, PG. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the Williamsbridge Gardens Site (NYSDEC BCA Index No. C203113-07-18, Site No. C203113). The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and will certify compliance in the Final Engineering Report.

The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

4.2.2 Remedial Action Construction Schedule

The estimated duration to complete soil excavation and backfill is approximately six months. A generalized timeline has been prepared to illustrate the proposed schedule starting with the approval of this RAWP and is included as **Table 11**. Following approval of this RAWP by the NYSDEC, a revised timeline with actual dates will be submitted.

4.2.3 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. DEC 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.

4.2.4 Site Security

Site security will be maintained by utilizing and maintaining the existing six-foot high chain link fence surrounding the property. The fence will be maintained throughout the project and access gates will be kept closed during daily operations and closed and locked at all other times.

4.2.5 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts.

4.2.6 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to the NYSDEC Project Manager. Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and TAL/TCLP metals, as appropriate.

4.2.7 Worker Training and Monitoring

Remedial Site workers will be required, at a minimum, to have completed 29 CFR 1910.120 HAZWOPER, Site safety training, and medical monitoring for Site workers. HAZWOPER training completion certificates will be submitted to the Remediation Engineer before

commencement of Site work. Once soils in excess of Unrestricted Use SCOs have been removed, HAZWOPER training will not be required of Site construction workers.

4.2.8 Agency Approvals

The Volunteer has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the property as determined by New York City Department of Planning. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

A complete list of all local, regional and national governmental permits, certificates or other approvals or authorizations required to perform the remedial and development work is attached in **Table 12**. This list includes a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency. This list will be updated in the Final Engineering Report.

All planned remedial or construction work in regulated wetlands and adjacent areas will be specifically approved by the NYSDEC Division of Natural Resources to ensure that it meets the requirements for substantive compliance with those regulations prior to the start of construction. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

4.2.9 Pre-Construction Meeting with NYSDEC

A pre-construction meeting will take place with the NYSDEC, the Volunteer, PWGC, and the contractor prior to the start of Site mobilization.

4.2.10 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in **Table 13**. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.11 Remedial Action Costs

The total estimated cost of the Remedial Action is $1.5MM. An itemized and detailed summary of estimated costs for all remedial activity is attached as Appendix G. This will be revised based on actual costs and submitted as an Appendix to the Final Engineering Report.

4.3 SITE PREPARATION

4.3.1 Mobilization

Mobilization will include the delivery of construction equipment and materials to the Site. Site workers will receive Site orientation and training in accordance with the Site-specific HASP, CAMP, and established policies and procedures to be followed during the implementation of remedial activities. The remediation contractor and all associated subcontractors will each receive a copy of the RAWP, HASP, and CAMP and will be briefed on their contents.

4.3.2 Monitoring Well / Vapor Probe Decommissioning

Existing groundwater monitoring wells will either be protected during remediation and development for use in post-remedial monitoring or will be properly decommissioned in accordance with NYSDEC policy CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development.

Similarly, existing soil vapor probes will be properly decommissioned unless they are to be fully removed during remediation/development or used for post-remedial monitoring.

4.3.3 Erosion and Sedimentation Controls

Erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff will be placed to protect the excavation work and adjacent areas during excavation activities. Storm water control measures, such as straw hay bales or silt fence, may be utilized during excavation activities to prevent storm water runoff from impacting excavation areas and neighboring sites.

4.3.4 Stabilized Construction Entrance(s)

During Site remediation, continuity will be achieved between the truck wash and the stone-based egress path by placing the truck wash system right before the egress path of the Site. Egress points for truck and equipment transport will be kept clean of dirt and other materials during Site remediation and development, so that trucks will be decontaminated prior to departure from the Site.

4.3.5 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.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

4.3.6 Sheeting and Shoring

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities include 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.

4.3.7 Equipment and Material Staging

Equipment and materials staging areas will be designated during the remediation activities, in coordination with the Construction Manager to facilitate remediation work and prevent cross-contamination.

4.3.8 Decontamination Area

A temporary decontamination area lined with polyethylene sheeting will be constructed for steam-cleaning or washing excavation and drilling equipment, when appropriate. The location of the decontamination area will be coordinated with the Construction Manager. At a minimum, the decontamination pad will have a 30-mil low-permeability liner, be bermed and sloped to a collection sump to contain and collect fluids, and have side walls to mitigate, to the extent practicable, errant overspray, especially when decontaminating large equipment.

4.3.9 Site Fencing

Site security will be maintained by utilizing and maintaining the existing six-foot high chain link fence surrounding the property. The fence will be maintained throughout the project and access gates will be kept closed during daily operations and closed and locked at all other times.

4.3.10 Demobilization

Following the completion of remedial activities at the Site, equipment and remedial structures will be decontaminated and dismantled and removed from the Site. Sediment and erosion control measures and solid wastes generated during remedial activities (i.e., polyethylene sheeting) will be properly disposed of.

4.4 REPORTING

All daily and monthly Reports will be included in the Final Engineering Report.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period 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 finding, 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 for the Site 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.

A Site map that shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC is attached in **Figure 12**.

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 within one week following the end of the month of the reporting period and will include:

- 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 all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all 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, source area and Site structures before, during and after remediation. Photos will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the Final Engineering Report.

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

Complaints from the public regarding nuisance or other Site conditions will be reported directly to the NYSDEC project manager and included in the daily reports.

4.4.5 Deviations from the Remedial Action Work Plan

In the event that remedial activities require deviation from the RAWP due to unforeseen Site conditions, a detailed description of the conditions and required deviations from the RAWP will be submitted to the NYSDEC project manager. The description will include the reasons that dictate deviation from the RAWP, any changes/editions to the RAWP, and how the proposed remedy is affected.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

Based on The RI for the Site, SVOC, metals and pesticide impact is present within soils at the Site. Soils impacted with SVOCs, metals and pesticides above the NYSDEC UUSCOs will be excavated and removed from the Site. The volume to be excavated for off-Site disposal is estimated at approximately 5,000 to 7,500 cubic yards. The final limit of the excavation will be determined in the field based upon confirmatory endpoint soil sample analytical results. The proposed excavation area and depths are illustrated in **Figure 9**.

5.1 SOIL CLEANUP OBJECTIVES

The Soil Cleanup Objectives for this Site are listed in **Table 10** and consist of Unrestricted Use SCOs.

Soil and materials management on-Site and off-Site will be conducted in accordance with the Soil Management Plan as described below.

Tables 1 through **Table 4** summarize all soil samples that exceed the SCOs proposed for this Remedial Action. A spider map that shows all soil samples that exceed the SCOs proposed for this Remedial Action is shown in **Figure 4** through **Figure 6**.

UST closures will, at a minimum, conform to criteria defined in DER-10.

5.2 REMEDIAL PERFORMANCE EVALUATION (POST EXCAVATION END-POINT SAMPLING)

Following removal of impacted soils from the Site, confirmatory endpoint soil samples will be collected from the excavation area to confirm the effectiveness of remedial activities. Endpoint soil samples will be collected in accordance with NYSDEC DER-10. Results will be compared to NYSDEC UUSCOs.

5.2.1 End-Point Sampling Frequency

As specified in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, verification sampling will consist of collecting endpoint soil samples from within each excavation area. DER-10 specifies a sampling frequency of one bottom sample from the

excavation for every 900 square feet of bottom, and one sidewall sample for every 30 linear feet of sidewall. Based on the anticipated excavation area (see **Figure 9**), a minimum of 39 bottom samples and 27 sidewall samples would be required based on DER-10. However, at several locations, the excavation area may extend to the bedrock surface. In areas where bedrock is encountered, no bottom endpoint samples will be collected. Additionally, in areas where the excavation extends to the property line, sidewall endpoint samples will not be collected.

Endpoint soil samples will be submitted to a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory and analyzed for:

- TCL SVOCs by USEPA Method 8270
- TAL Metals by USPEA Method 6010/7471
- TCL Pesticides by USEPA Method 8081

5.2.2 Methodology

Excavation soil endpoint samples will be collected when the limits of the remediation excavation have been reached. Endpoint samples will be collected utilizing a properly decontaminated stainless-steel hand auger.

5.2.3 Reporting of Results

Data collected during the remediation will be tabulated and reviewed. 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. Data will also be submitted to NYSDEC's Environmental Information Management System in the standardized electronic data deliverable format.

5.2.4 QA/QC

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). MS/MSD samples, as applicable, will be designated by the field personnel. QA/QC protocols are further detailed in the QAPP included as **Appendix C**.

5.2.5 DUSR

Data usability and validation are performed on analytical data sets, primarily to confirm that sampling and chain-of- custody documentation are complete, sample IDs can be tied to specific sampling locations, samples were analyzed within the required holding times, and analyses are reported in conformance to NYSDEC ASP, Category 2 data deliverable requirements as applicable to the method utilized.

Independent third-party data validation will be performed on 5% of the sample data, or on one sample from each sample delivery group, whichever is greater. Data validation will be performed by a qualified subcontractor independent of the project and a Data Usability Summary Report will be included in the FER.

5.2.6 Reporting of End-Point Data in FER

Chemical labs used for all end-point sample results and contingency sampling will be NYSDOH ELAP certified.

End point sampling, including bottom and side-wall sampling, will be performed in accordance with DER-10 sample frequency requirements. Side-wall samples will be collected a minimum of every 30 linear feet. Bottom samples will be collected at a rate of one for every 900 square feet. The FER will provide a tabular and map summary of all end-point sample results and exceedances of SCOs.

5.3 ESTIMATED MATERIAL REMOVAL QUANTITIES

The estimated quantity of soil/fill to be removed from the Site is 5,000 to 7,500 cubic yards. The estimated quantity of soil to be imported into the Site for backfill and cover soil will be determined by the actual total volume of material removed as part of remediation.

5.4 Soil/Materials Management Plan

This section presents the approach to managing, disposing, and reusing soil, fill, and debris excavated from the Site. This plan is based on the current knowledge of Site conditions and will

be augmented with additional data collected during remediation, as needed. The Remediation Engineer will monitor and document the handling and transporting of material removed from the Site to a proper disposal facility as a regulated waste or as an unregulated waste, as applicable. The Remediation Engineer 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.

Stockpiling of impacted soil is not anticipated; however, if stockpiles become necessary, 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 co-mingling impacted materials with non-impacted soil.

5.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the direction of the Remedial Engineer during all remedial and development excavations into known or potentially contaminated material. 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 COC.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (i.e. those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

Stockpiling of impacted soils is not anticipated during the Remedial Action. If the necessity for stockpiling impacted soils arises, the following procedures will be followed.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

Stockpiles will be kept covered at all times when not actively in use with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will be continuously encircled with silt fences. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Water will be available on-Site at suitable supply and pressure for use in dust control.

5.4.3 Materials Excavation and Load Out

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The 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 Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Vehicles leaving the Site will not be overloaded. The Remedial Engineer's representative will make reasonable efforts to ensure that vehicles are not loaded beyond their NYSDOT weight rating and that all material is secured beneath the truck bed cover.

A truck wash will be operated on-Site. The Remedial Engineer will be responsible for ensuring that all outbound trucks will be washed 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 Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site

during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site -derived materials.

The 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 Remedial Engineer will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each hotspot and structure to be remediated (USTs, vaults and associated piping, transformers, etc.) will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

Development-related grading cuts and fills will not be performed without NYSDEC approval and 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.

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.

Truck transport routes are as follows:

- Exit the Site and head west toward White Plains Road for 400 feet.
- Turn right onto East Gun Hill Road for 0.9 Miles.
- Turn right onto Jerome Avenue for 0.9 miles to the Major Deegan Expressway (I-87).

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes, unless traffic, road work, or other conditions necessitate alternate routing. Truck operators are responsible for traffic signs and detours.

Proposed in-bound and out-bound truck routes to the Site are described above. 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.

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

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

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

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

All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

5.4.5 Materials Disposal Off-Site

The disposal locations are to be determined. Disposal location established at a later date will be reported to the NYSDEC Project Manager.

The total quantity of material expected to be disposed off-Site is estimated at 5,000 to 7,500 cubic yards of non-hazardous soils. The total disposal volume will be dependent on the final excavation depths necessary to achieve satisfactory endpoint sample results.

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

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

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Volunteer, or designee 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 Remedial Engineer. 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 all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

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

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

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of 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 Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The Final Engineering Report 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 non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

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

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

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the 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

Materials reuse on-Site is not anticipated. In the event that materials will be reused, NYSDEC will be notified in advance and provided with details regarding the material's origin, volumes and sampling data. Such material will not be reused on-Site without approval from the NYSDEC project manager.

Concrete crushing or processing on-Site is prohibited.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

5.4.7 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit.

5.4.8 Demarcation

In the event that a Track 1 Cleanup cannot be achieved, a demarcation layer will be established; if Track 1 is achieved, demarcation will not be necessary. Should demarcation be necessary, 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 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. 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, 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 Site Management Plan. A map showing the survey results will be included in the Final Engineering Report and the Site Management Plan.

5.4.9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the Remedial Engineer 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.

If sampling of material imported to the Site is required, sampling will be conducted in accordance with DER-10 Section 5.4. The NYSDEC will be consulted prior to importation of any fill material.

The Final Engineering Report will include the following certification by the Remedial Engineer: "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 Remedial Action Work Plan".

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the Unrestricted Use Soil Cleanup Objectives as set forth in Table 375-6.8(b) of 6 NYCRR Part 375 and listed in **Table 10**. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this Remedial Action Work Plan should be construed as an approval for this purpose.

Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

5.4.10 Stormwater Pollution Prevention

Based on the size of the Site (less than one acre), a formal Storm Water Pollution Prevention Plan (SWPPP) is not necessary. Storm water pollution prevention measures detailed below will be implemented during remedial activities.

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

Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

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 (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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

5.4.12 Community Air Monitoring Plan

A Site-specific Community Air Monitoring Plan (CAMP) has been prepared to provide measures for protection for the downwind community from potential airborne contaminants as a direct result of remedial activities. The CAMP is included as **Appendix D**.

The CAMP will be implemented and executed in accordance with the New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan.

A map showing the location of fixed and mobile sampling stations is shown in **Figure 13**.

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

The Final Engineering Report will include the following certification by the Remedial Engineer: "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 Remedial Action Work Plan."

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 wetting soils to prevent off-Site migration, application of a foam suppressant on the source area, and/or covering the source area with a tarp. 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 Remedial Engineer, who is responsible for certifying the Final Engineering Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d)

direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

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

5.4.13.2 Dust Control Plan

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

- Water will be available on-site at suitable supply and pressure for use in dust control.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

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 ENGINEERING CONTROLS

Although it will not be considered an engineering control for the purposes of remediation, as part of development, a vapor barrier/water proofing membrane will be installed beneath the foundations of the proposed buildings.

The vapor barriers will be installed in accordance with the New York Building Code. The vapor barriers will be installed beneath the entire footprint of the foundation slab and outside the foundation walls. The vapor barrier/waterproofing membrane will be installed over a sub grade (compacted sand) free of sharp rocks, roots or other protrusions. The specific vapor barrier products that will be used at the site are:

- Grace Pre-Prufe 300R for horizontal applications below the foundation slabs.
- Grace Pre-Prufe 160R for vertical blindside, zero property line applications.
- Grace Bituthene 4000 for non-blindside vertical applications.

As the vapor barrier/waterproofing membrane will not be considered an engineering control, a PE certification of its installation will not be required.

Vapor barrier product specifications are included in **Appendix H**.

7.0 FINAL ENGINEERING REPORT

A Final Engineering Report (FER) 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. The Final Engineering Report will include as-built drawings for all constructed elements, calculation and manufacturer documentation for treatment systems, certifications, manifests, bills of lading as well as the complete Site Management Plan (formerly the Operation and Maintenance Plan), as needed. 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.

Where determined to be necessary by NYSDEC, a Financial Assurance Plan will be required to ensure the sufficiency of revenue to perform long-term operations, maintenance and monitoring tasks defined in the Site Management Plan and Environmental Easement. This determination will be made by NYSDEC in the context of the Final Engineering Report review.

The Final Engineering Report 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 thorough summary of all residual contamination that exceeds the SCOs defined for the Site in the RAWP and must provide 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 Final Engineering Report 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.

Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

7.1 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer [name] 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, _____, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Williamsbridge Gardens Site (NYSDEC BCA Index No. C203113-07-18, Site No. C203113).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for [Site name] and related amendments.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the [Applicant / Volunteer / Participant] for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

I certify that the export of all contaminated soil, fill, water or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that all import of soils from off-Site, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

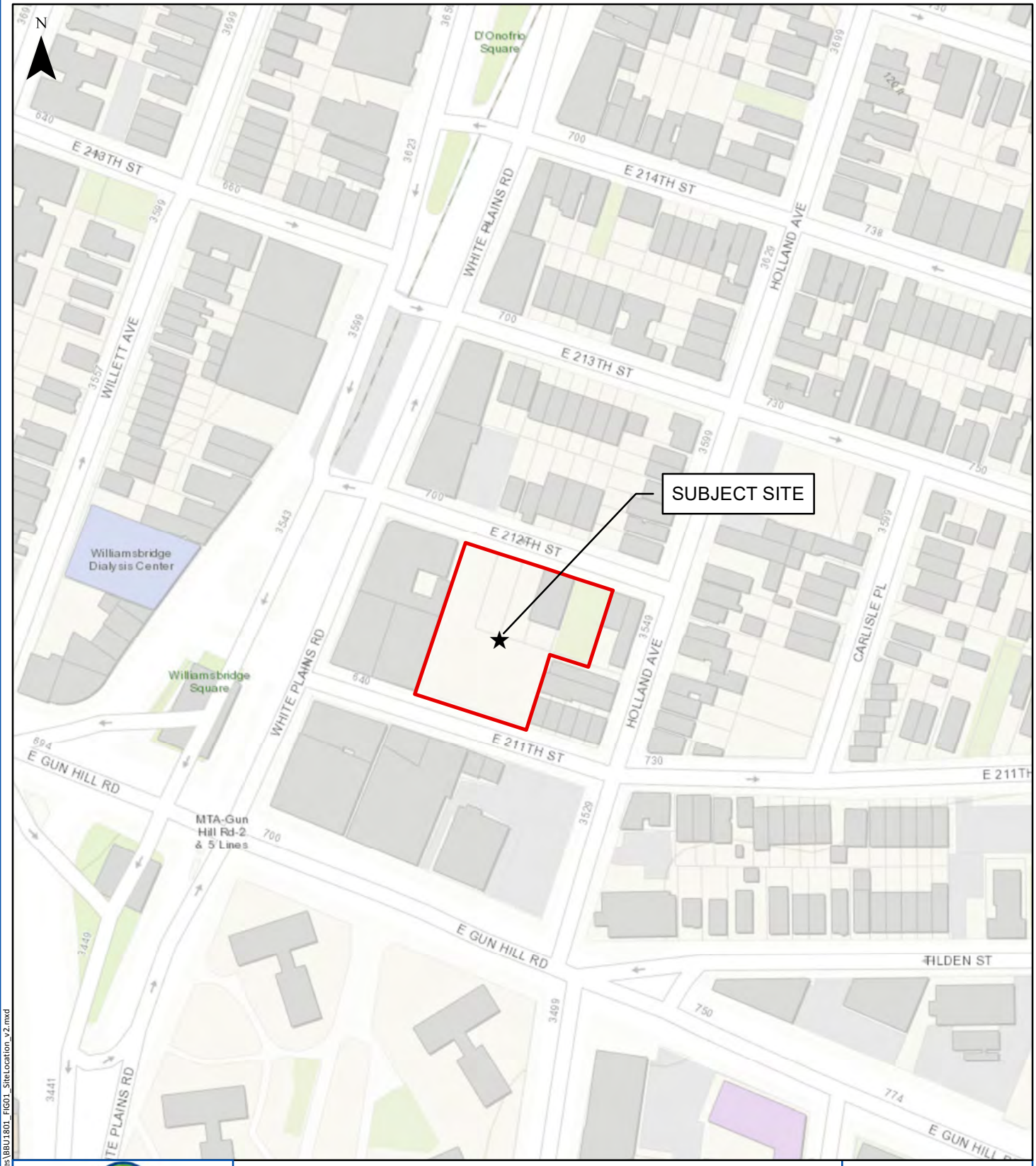
I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

It is a violation of Article 130 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 130, New York State Education Law.

8.0 SCHEDULE

A schedule of remedial actions, including estimated dates for performance of work and deliverables, has been included as **Table 11**.

FIGURES



SITE LOCATION

East 211th Street
Bronx, NY

0 75 150 300 450 Feet

Project:	BBU1801
Date:	1/17/2019
Designed by:	TM
Drawn by:	PH
Approved by:	TM
Figure No:	1

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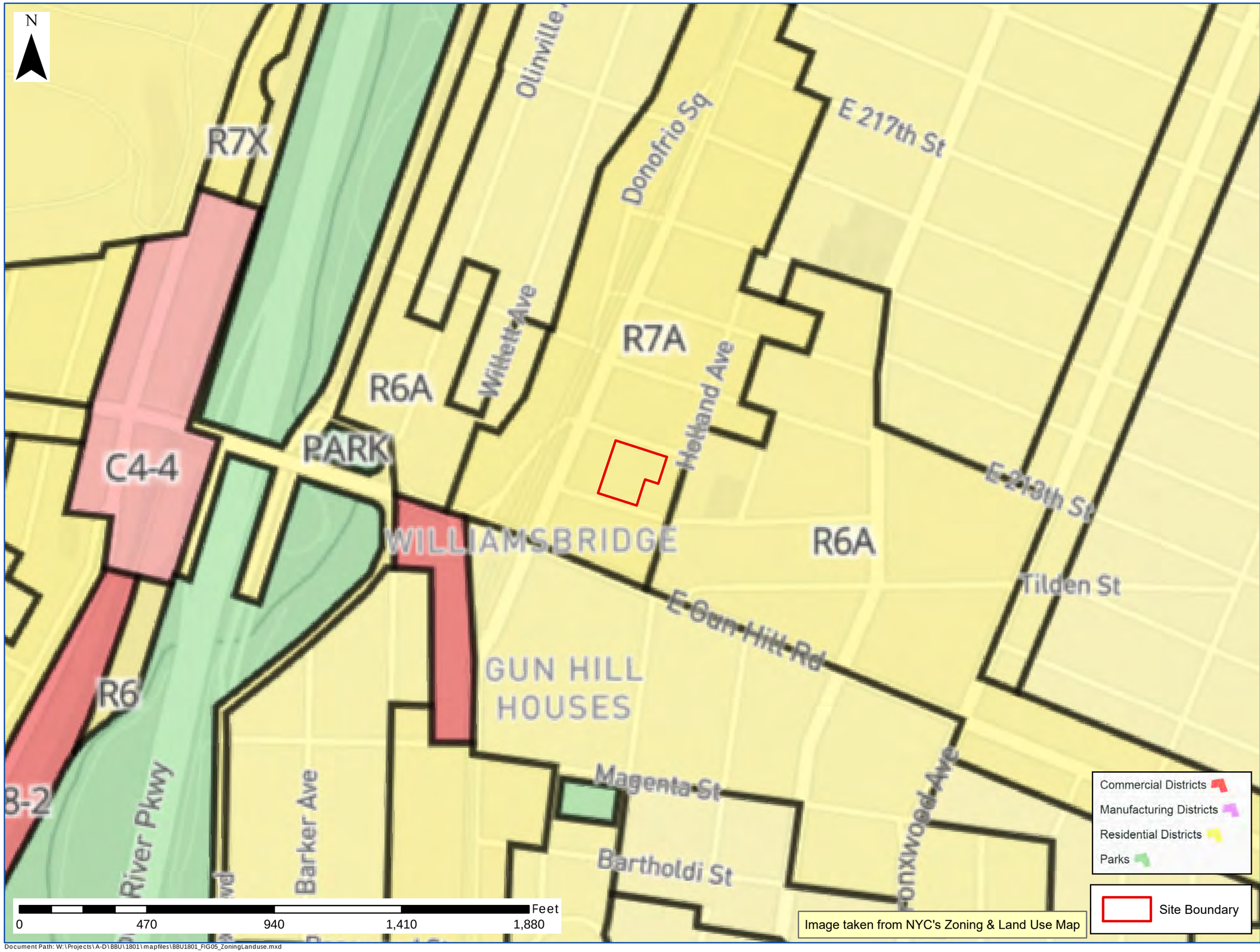
Document Path: W:\Projects\A-D\CGCL1702\mapfiles\BBU1801_FIG01_SiteLocation_v2.mxd



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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	BBU1702	Designed by:	TM
Date:	2/20/2018	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	TM

ZONING AND LAND USE

EAST 211th Street
Bronx, NY

FIGURE NO:

2

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\BBU1801_FIG05_ZoningLanduse.mxd

N

EAST 212TH STREET

WHITE PLAINS ROAD

Site Specific Groundwater Flow Direction

MW002
92.30

MW001
91.83

MW003
90.85

92.00'

91.50'

91.00'

HOLLAND AVENUE

EAST 211TH STREET

Feet
0 40 80 120 160

Proposed Monitoring Well
GW Contour
GW Contour Inferred
90.85 GW Elevation (Relative to Airbitrary Datum)
Adjacent Lots
Proposed Cellar Footprint
Proposed Building Footprint
Site Boundary

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RI Report\FIG03_SiteSpecific_GWContour.mxd

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Project:	BBU1801	Designed by:	TM
Date:	9/5/2019	Drawn by:	PH
Scale:	AS SHOWN	Approved by:	TM

SITE SPECIFIC GROUNDWATER CONTOUR MAP

EAST 211th Street
Bronx, NY

FIGURE NO:

3

N

WHITE PLAINS RD

EAST 212TH ST

EAST 211TH ST

LOCATION	SB011 (0-2)
SAMPLING DATE	12/14/2017
Metals	
Barium, Total	418
Cadmium, Total	4.79
Chromium, Total	341
Copper, Total	721
Lead, Total	986
Nickel, Total	341
Zinc, Total	2110
Pesticides	
4,4'-DDD	0.0035
4,4'-DDE	0.0040
4,4'-DDT	0.0253
Dieldrin	0.0073

LOCATION	SB001 (0-2)
SAMPLING DATE	12/11/2017
no exceedances	

LOCATION	SB002 (0-2)
SAMPLING DATE	12/11/2017
no exceedances	

LOCATION	SB004 (0-2)
SAMPLING DATE	12/11/2017
VOCs	
Acetone	0.058
Metals	
Lead, Total	85.8
Pesticides	
4,4'-DDT	0.0056

LOCATION	SB012 (0-2)
SAMPLING DATE	12/14/2017
Metals	
Lead, Total	82.6
Mercury, Total	0.24
Zinc, Total	114

LOCATION	SB008 (0-2)
SAMPLING DATE	12/14/2017
Metals	
Lead, Total	186
Zinc, Total	273
Pesticides	
4,4'-DDD	0.0088
4,4'-DDE	0.0619
4,4'-DDT	0.0603
PCBs	
PCBs, Total	0.185 J

LOCATION	SB003 (0-2)
SAMPLING DATE	12/11/2017
Semi-VOCs	
Benzo(a)anthracene	1.4
Benzo(a)pyrene	1.2
Benzo(b)fluoranthene	1.6
Chrysene	1.3
Indeno(1,2,3-cd)pyrene	0.82
Metals	
Lead, Total	76.3

LOCATION	SB010 (0-2)
SAMPLING DATE	12/14/2017
Semi-VOCs	
Benzo(a)anthracene	1.4
Benzo(a)pyrene	1.4
Benzo(b)fluoranthene	1.8
Chrysene	1.5
Indeno(1,2,3-cd)pyrene	1
Metals	
Barium, Total	650
Beryllium, Total	15.8
Cadmium, Total	6.53
Chromium, Total	668
Copper, Total	2160
Lead, Total	1770
Nickel, Total	1020
Selenium, Total	9.68
Pesticides	
4,4'-DDE	0.0132
4,4'-DDT	0.062
Dieldrin	0.0543

LOCATION	SB009 (0-2)
SAMPLING DATE	12/14/2017
Metals	
Copper, Total	120
Lead, Total	624
Mercury, Total	1.1
Silver, Total	2.11
Zinc, Total	714
Pesticides	
4,4'-DDD	0.0035
4,4'-DDT	0.0124

LOCATION	SB005 (0-2)
SAMPLING DATE	12/14/2017
VOCs	
Acetone	0.057
Semi-VOCs	
Benzo(a)anthracene	1.5
Benzo(a)pyrene	1.4
Benzo(b)fluoranthene	1.8
Chrysene	1.7
Indeno(1,2,3-cd)pyrene	0.88
Metals	
Zinc, Total	126
Pesticides	
4,4'-DDD	0.0246
4,4'-DDE	0.0098
4,4'-DDT	0.0127 P

LOCATION	SB006 (0-2)
SAMPLING DATE	12/14/2017
Semi-VOCs	
Benzo(b)fluoranthene	1
Indeno(1,2,3-cd)pyrene	0.54
Metals	
Copper, Total	84.5
Lead, Total	420
Mercury, Total	0.45
Zinc, Total	378
Pesticides	
4,4'-DDD	0.0088
4,4'-DDE	0.0056 P

LOCATION	SB007 (0-2)
SAMPLING DATE	12/14/2017
Semi-VOCs	
Benzo(a)anthracene	1.4
Benzo(a)pyrene	1.4
Benzo(b)fluoranthene	1.7
Chrysene	1.5
Indeno(1,2,3-cd)pyrene	0.9
Metals	
Arsenic, Total	19.6
Cadmium, Total	10.7
Chromium, Total	79.1
Copper, Total	263
Lead, Total	385
Nickel, Total	109
Zinc, Total	809
Pesticides	
4,4'-DDD	0.0107
4,4'-DDE	0.0092
4,4'-DDT	0.0109
PCBs	
PCBs, Total	0.12 J

SB001 SB002 SB003 SB004 SB005 SB006 SB007 SB008 SB009 SB010 SB011 SB012

0 50 100 150 200 Feet

Concentrations are mg/kg (ppm)

Yellow highlighted values exceed Unrestricted Use SCO

Orange highlighted values exceed Restricted Residential SCO

Soil Boring

Site Boundary

Proposed Cellar Footprint

Proposed Building Footprint

Taxlot Boundary

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RI Report\FIG04_SoilResults_Shallow.mxd

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	BBU1801	Designed by:	KC
Date:	9/5/2019	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	TM

SOIL BORING RESULTS

Shallow Interval

EAST 211th Street
Bronx, NY

FIGURE NO:

4

N

WHITE PLAINS RD

EAST 212TH ST

EAST 211TH ST

HOLLAND AVE

LOCATION	SB011 (3-5)
SAMPLING DATE	2/25/2019
VOCs	
Xylenes, Total	1.2
Semi-VOCs	
Benzo(a)anthracene	1.3
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	1.5
Chrysene	1.3
Indeno(1,2,3-cd)pyrene	0.78
Pesticides	
4,4'-DDD	0.0205
4,4'-DDE	0.0498
4,4'-DDT	0.188
Aldrin	0.0322
Dieldrin	0.251

LOCATION	SB001 (3-5)	SB001 (8-10)
SAMPLING DATE	2/26/2019	12/11/2017
Metals		
Chromium, Total	27	34.6

LOCATION	SB002 (2-4)
SAMPLING DATE	2/25/2019
no exceedances	

LOCATION	SB012 (2-4)
SAMPLING DATE	2/25/2019
no exceedances	

LOCATION	SB004 (3-5)		SB004 (7-9)	
SAMPLING DATE	2/25/2019		12/11/2017	
VOCs				
Xylenes, Total	0.5	J	0.0007	J
Semi-VOCs				
Benzo(a)anthracene	2.2		1.2	
Benzo(a)pyrene	1.6		0.93	
Benzo(b)fluoranthene	2.5		1.3	
Chrysene	1.8		1.1	
Indeno(1,2,3-cd)pyrene	1.1		0.6	
Metals				
Lead, Total	161		94.2	
Mercury, Total	0.016	U	7.6	
Zinc, Total	93.6		132	
Pesticides				
4,4'-DDT	0.00412		0.0041	

LOCATION	SB008 (4-6)		SB008 (8-10)		SB008 (10-12)	
SAMPLING DATE	2/26/2019		2/25/2019		12/14/2017	
Metals						
Chromium, Total	26.1		24.7		42.8	
Lead, Total	167		4.16	J	4.28	J
Zinc, Total	212		66.7		68.2	

LOCATION	SB003 (2-4)
SAMPLING DATE	2/26/2019
Semi-VOCs	
Benzo(a)anthracene	3.4
Benzo(a)pyrene	3.1
Benzo(b)fluoranthene	4.2
Benzo(k)fluoranthene	1.5
Chrysene	3
Dibenzo(a,h)anthracene	0.53
Indeno(1,2,3-cd)pyrene	2.1
Metals	
Lead, Total	103

LOCATION	SB010 (5-7)
SAMPLING DATE	2/25/2019
Metals	
Chromium, Total	36.4
Manganese, Total	3070
Nickel, Total	39.8
Pesticides	
4,4'-DDE	0.00504
4,4'-DDT	0.0159
Dieldrin	0.0104

LOCATION	SB009 (4-6)	SB009 (7-9)
SAMPLING DATE	2/26/2019	12/14/2017
Metals		
Barium, Total	388	67
Chromium, Total	30.9	16.2
Copper, Total	61.7	133
Lead, Total	647	6.85
Mercury, Total	0.41	0.12
Nickel, Total	17.7	85.6
Zinc, Total	622	51

LOCATION	SB007 (4-6)	SB007 (7-9)	
SAMPLING DATE	2/26/2019	12/14/2017	
Metals			
Chromium, Total	37.4	23.9	
Lead, Total	78.9	3.9	J

LOCATION	SB005 (2-4)	SB005 (3-5)	
SAMPLING DATE	2/26/2019	12/14/2017	
Metals			
Copper, Total	158	13.6	
Lead, Total	1590	11.6	
Mercury, Total	1.54	0.08	U
Nickel, Total	39	11.2	
Zinc, Total	924	34.9	
Pesticides			
4,4'-DDD	0.0342	0.0018	U
4,4'-DDE	0.00798	0.0018	U
4,4'-DDT	0.00465	0.0034	U
PCBs			
Aroclor 1242	0.127	0.0381	U
PCBs, Total	0.228 J	0.0381	U

LOCATION	SB006 (5-7)	SB006 (7.5-9.5)
SAMPLING DATE	2/26/2019	12/14/2017
Metals		
Chromium, Total	37.3	25.8

SB001 SB002 SB003 SB004 SB005 SB006 SB007 SB008 SB009 SB010 SB011 SB012

Soil Boring
Site Boundary
Proposed Cellar Footprint
Proposed Building Footprint
Taxlot Boundary

Concentrations are mg/kg (ppm)
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

0 50 100 150 200 Feet

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RI Report\FIG05_SoilResults_Intermediate.mxd

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DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	BBU1702	Designed by:	KC
Date:	9/5/2019	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	TM

SOIL BORING RESULTS

Intermediate Intervals

EAST 211th Street
Bronx, NY

FIGURE NO:

5

N

WHITE PLAINS RD

EAST 212TH ST

EAST 211TH ST

HOLLAND AVE

LOCATION	SB001 (11-13)
SAMPLING DATE	2/25/2019
Metals	
Nickel, Total	41.1

LOCATION	SB011 (5-7)
SAMPLING DATE	12/14/2017
no exceedances	

LOCATION	SB002 (7-9)
SAMPLING DATE	12/11/2017
no exceedances	

LOCATION	SB012 (6-8)
SAMPLING DATE	12/14/2017
Metals	
Chromium, Total	36.7
Copper, Total	57.1
Nickel, Total	50.2
Zinc, Total	117

LOCATION	SB004 (10-12)
SAMPLING DATE	2/25/2019
no exceedances	

LOCATION	SB010 (7-9)
SAMPLING DATE	12/14/2017
no exceedances	

LOCATION	SB008 (13-15)
SAMPLING DATE	2/25/2019
Metals	
Chromium, Total	37.5
Nickel, Total	43

LOCATION	SB003 (7-9)
SAMPLING DATE	12/11/2017
Metals	
Lead, Total	80.4
Pesticides	
4,4'-DDT	0.00606 P

LOCATION	SB009 (10-12)
SAMPLING DATE	2/26/2019
Metals	
Chromium, Total	41.2

LOCATION	SB005 (7-9)
SAMPLING DATE	2/26/2019
Metals	
Nickel, Total	39.2

LOCATION	SB007 (9-11)
SAMPLING DATE	2/26/2019
no exceedances	

LOCATION	SB006 (9-11)
SAMPLING DATE	2/26/2019
no exceedances	

SB001 SB002 SB003 SB004 SB005 SB006 SB007 SB008 SB009 SB010 SB011 SB012

Soil Boring
Site Boundary
Proposed Cellar Footprint
Proposed Building Footprint
Adjacent Lots

Concentrations are mg/kg (ppm)
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

0 50 100 150 200 Feet

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	BBU1702	Designed by:	KC
Date:	9/5/2019	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	TM

SOIL BORING RESULTS
Bedrock Interval

EAST 211th Street
Bronx, NY

FIGURE NO:
6

N

EAST 212TH STREET

EAST 211TH STREET

WHITE PLAINS ROAD

HOLLAND AVENUE

VP001	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	4.59
1,3,5-Trimethylbenzene	1.66
1,3-Butadiene	11
2-Butanone	32.4
2-Hexanone	6.56
4-Ethyltoluene	1.17
Acetone	55.3
Benzene	7.76
Carbon disulfide	4.39
Chloroform	2.24
Cyclohexane	1.08
Dichlorodifluoromethane	1.6
Ethanol	10.6
Ethylbenzene	3.43
Heptane	3.94
n-Hexane	7.72
o-Xylene	3.79
p/m-Xylene	10.3
Styrene	1.63
Tertiary butyl Alcohol	3.36
Tetrachloroethene	39.3
Toluene	11.7
trans-1,2-Dichloroethene	1.34
Trichlorofluoromethane	1.62

AA001	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	1.85
Acetone	4.85
Benzene	1.74
Chloromethane	1.08
Dichlorodifluoromethane	1.4
Ethylbenzene	2.5
Isopropanol	1.42
Toluene	0.81

VP007	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	2.27
2-Butanone	11.6
2-Hexanone	1.38
Acetone	47.7
Benzene	1.26
Carbon disulfide	2.1
Chloroform	2.38
Dichlorodifluoromethane	1.79
Ethylbenzene	1.32
o-Xylene	2.01
p/m-Xylene	5.91
Styrene	1.22
Tertiary butyl Alcohol	4.06
Tetrachloroethene	18.9
Toluene	2.76
Trichlorofluoromethane	1.28

VP002	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	2.28
1,3-Butadiene	9.98
2-Butanone	35.4
2-Hexanone	7.05
Acetone	79.8
Benzene	8.56
Carbon disulfide	7.85
Chloroform	4.34
Cyclohexane	1.24
Dichlorodifluoromethane	2.16
Ethylbenzene	4.07
Heptane	4.07
n-Hexane	9.87
o-Xylene	4.33
p/m-Xylene	12.2
Styrene	2.02
Tertiary butyl Alcohol	6.15
Tetrachloroethene	8.54
Toluene	17.5
trans-1,2-Dichloroethene	1.8
Trichlorofluoromethane	1.28

VP008	
SAMPLING DATE	12/12/2017
VOCs	
2-Butanone	15.7
2-Hexanone	1.29
Acetone	63.7
Benzene	0.687
Chloromethane	0.748
Dichlorodifluoromethane	1.74
o-Xylene	0.869
p/m-Xylene	2.26
Toluene	1.66
Trichlorofluoromethane	1.22

VP003	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	1.76
1,3-Butadiene	9.36
2-Butanone	42.8
2-Hexanone	7.05
Acetone	142
Benzene	5.85
Carbon disulfide	6.1
Chloroform	2.25
Chloromethane	0.45
Cyclohexane	10.3
Dichlorodifluoromethane	1.07
Ethanol	13
Ethylbenzene	1.99
Heptane	2.36
n-Hexane	7.58
o-Xylene	2.49
p/m-Xylene	6.69
Styrene	1.63
Tertiary butyl Alcohol	3.02
Toluene	7.08
trans-1,2-Dichloroethene	1.04

VP006	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	2.22
1,3-Butadiene	50.4
2-Butanone	56
2-Hexanone	8.2
Acetone	155
Benzene	8.63
Carbon disulfide	102
Chloroform	3.59
Chloromethane	0.487
Cyclohexane	6.85
Ethylbenzene	3.85
Heptane	13.6
n-Hexane	40.9
o-Xylene	4
p/m-Xylene	11
Styrene	2.17
Tertiary butyl Alcohol	3.03
Tetrachloroethene	3.52
Toluene	17.5
trans-1,2-Dichloroethene	2.98
Trichlorofluoromethane	1.6

VP004	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	1.72
2-Butanone	62.5
2-Hexanone	8.85
Acetone	287
Benzene	0.831
Chloromethane	1.2
Dichlorodifluoromethane	1.69
Ethanol	51.4
Ethyl Acetate	3.24
Ethylbenzene	3.69
o-Xylene	1.57
p/m-Xylene	4.31
Styrene	4.3
Tertiary butyl Alcohol	1.99
Toluene	2.6
Trichlorofluoromethane	1.25

VP005	
SAMPLING DATE	12/12/2017
VOCs	
1,2,4-Trimethylbenzene	2.19
1,3-Butadiene	4.07
2-Butanone	11.2
2-Hexanone	1.19
Benzene	5.21
Carbon disulfide	8.03
Chloroform	2.3
Chloromethane	0.593
Cyclohexane	3.2
Dichlorodifluoromethane	1.13
Ethylbenzene	1.62
Heptane	5
n-Hexane	10
o-Xylene	2.76
p/m-Xylene	6.65
Styrene	1.66
Toluene	4.71

AA001 VP001 VP002 VP003 VP004 VP005 VP006 VP007 VP008

0 40 80 120 160 Feet

Notes:
- All concentrations are shown in ug/m^3
- Only detected compounds are shown

Ambient Air Sample
Vapor Sample
Site Boundary
Taxlot Boundary
Proposed Cellar Footprint
ProposedBuilding Footprint

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RI Report\FIG08_SoilVaporResults.mxd

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Date:	9/5/2019	Drawn by:	TS
Scale:	AS SHOWN	Approved by:	TM

SITE PLAN WITH SOIL VAPOR RESULTS

EAST 211th Street
Bronx, NY

FIGURE NO:
8

N

EAST 212TH ST

SB001

SB011

Est. Depth
5' BGS

Est. Depth
9' BGS

SB004

SB002

SB010

SB012

SB003

SB008

SB009

SB005

SB006

SB007

HOLLAND AVENUE

EAST 211TH ST

Est. Depth
7' BGS

0 30 60 90 120 Feet

Note: Excavation areas are approximate. Excavation areas will be expanded horizontally & vertically as needed to achieve satisfactory endpoint sample results.

- Soil Boring
- No Excavation Necessary
- Hotspot Excavation (Minimum Depth as Noted)
- Excavation to Bedrock
- Minimum Excavation Depth of 2 feet BGS
- Site Boundary
- Taxlot Boundary

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RAWP\FIG09_Proposed_Excavation_Area_Alt1.mxd

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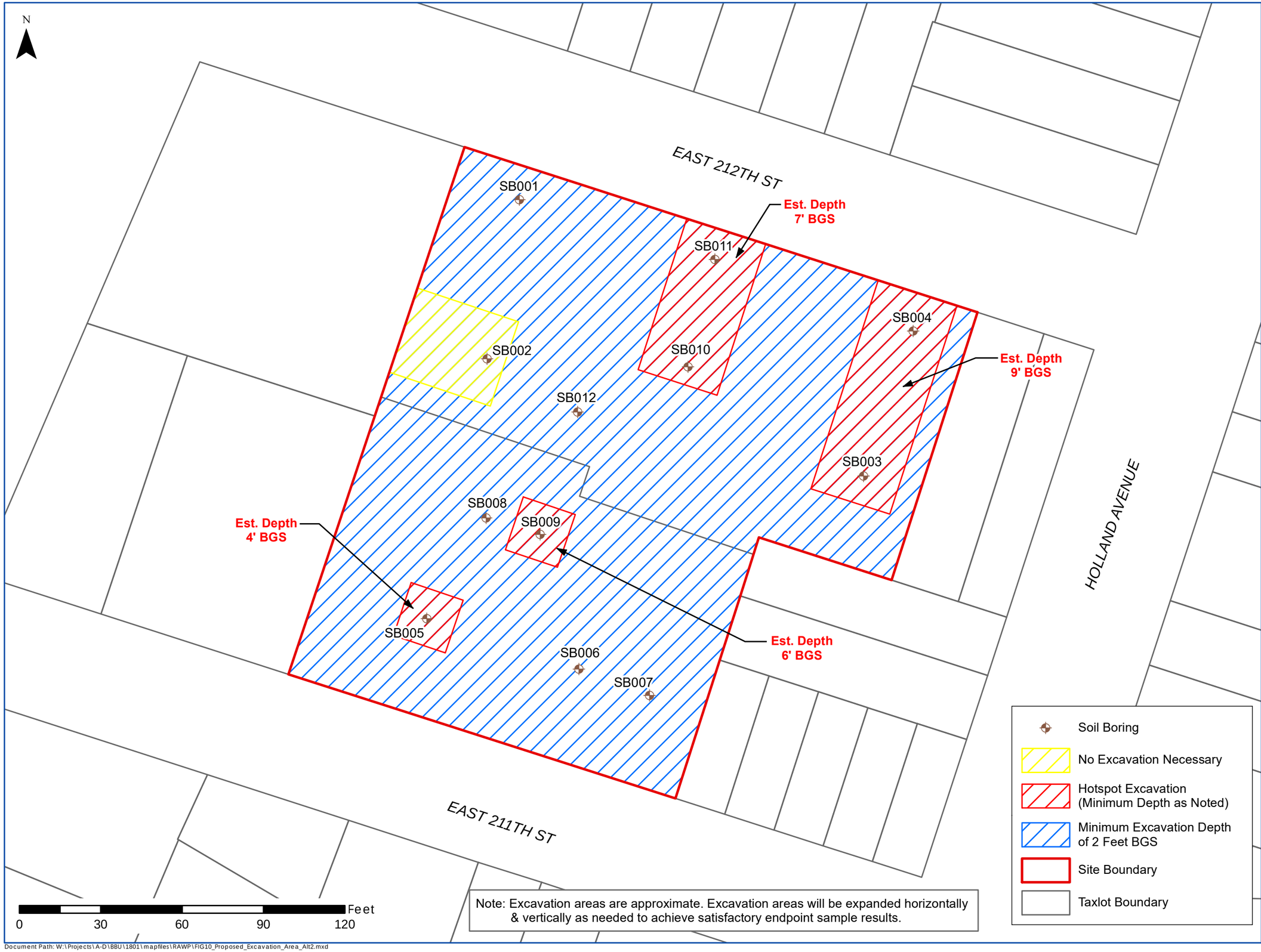
PROPOSED EXCAVATION AREA - ALTERNATIVE 1

EAST 211th Street
Bronx, NY

FIGURE NO:

9



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Date:	9/5/2019	Drawn by:	PH
Scale:	AS SHOWN	Approved by:	TM

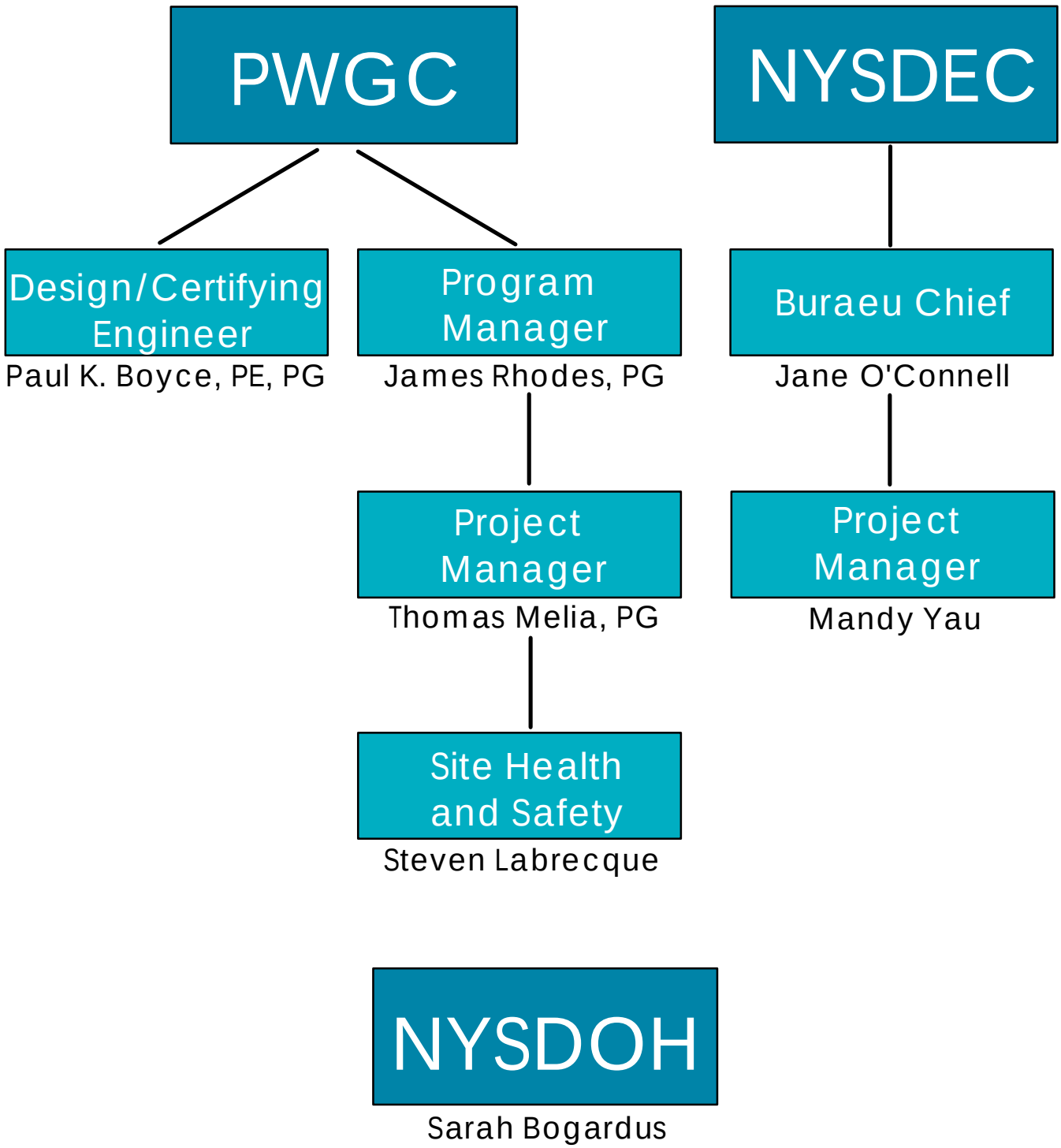
PROPOSED EXCAVATION AREA - ALTERNATIVE 2

EAST 211th Street
Bronx, NY

FIGURE NO:

10

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RAWP\FIG10_Proposed_Excavation_Area_Alt2.mxd



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PROJECT ORGANIZATION CHART

EAST 211TH STREET
BRONX, NEW YORK

Project:	BBU1801
Date:	4/30/2019
Designed by:	TM
Drawn by:	PH
Approved by:	TM
Figure No:	11

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

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Date:	4/30/2019	Drawn by:	PH
Scale:	AS SHOWN	Approved by:	TM

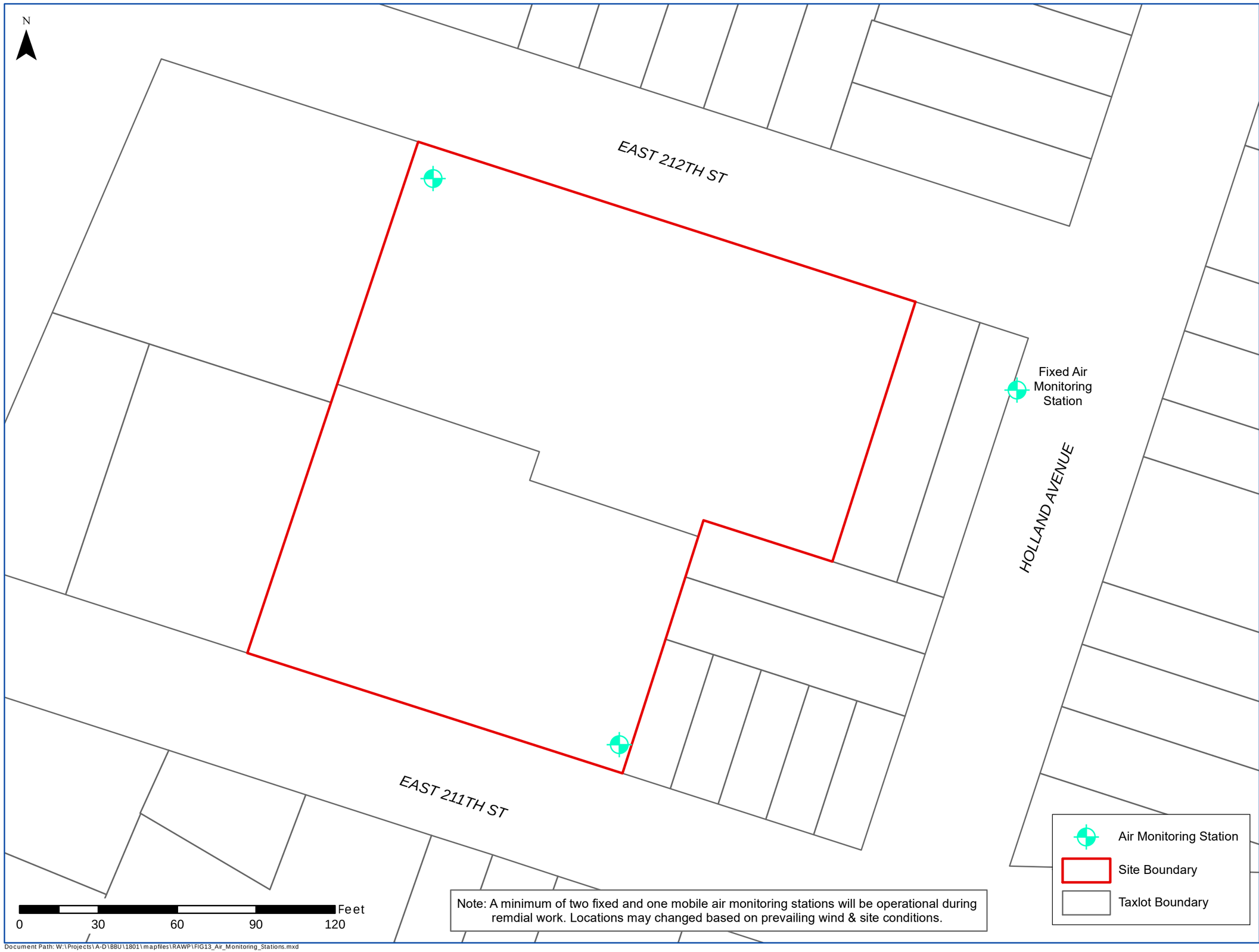
ALPHA-NUMERIC GRID

EAST 211th Street
Bronx, NY

FIGURE NO:

12

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RAWP\FIG012_AlphaNumeric_Grid.mxd



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Date:	9/5/2019	Drawn by:	PH
Scale:	AS SHOWN	Approved by:	TM

AIR MONITORING STATIONS

EAST 211th Street
Bronx, NY

FIGURE NO:

13

Document Path: W:\Projects\A-D\BBU\1801\mapfiles\RAWP\FIG13_Air_Monitoring_Stations.mxd

TABLES

Table 1

Soil Sample Analaytical Data - Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB001 (0-2)		SB001 (3-5)		SB001 (8-10)		SB001 (11-13)		SB002 (0-2)		SB002 (2-4)		SB002 (7-9)		SB003 (0-2)		SB003 (2-4)		SB003 (7-9)		SB004 (0-2)		SB004 (3-5)		SB004 (7-9)		SB004 (10-12)		SB005 (0-2)		SB005 (2-4)	
SAMPLING DATE	Number	Use SCO[1]	Residential	12/11/2017		2/26/2019		12/11/2017		2/25/2019		12/11/2017		2/25/2019		12/11/2017		12/11/2017		2/26/2019		12/11/2017		12/11/2017		2/25/2019		12/11/2017		2/25/2019		12/14/2017		2/26/2019	
LAB SAMPLE ID			SCO[2]	L1745804-01		L1907512-01		L1745804-02		L1907308-05		L1745804-03		L1907308-06		L1745804-04		L1745804-05		L1907512-02		L1745804-06		L1745804-07		L1907308-02		L1745804-08		L1907308-03		L1746315-01		L1907512-03	
Volatile Organic Compounds																																	
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	0.0011	U	0.00012	U	0.001	U	0.00012	U	0.0011	U	0.00016	U	0.0011	U	0.0017	U	0.00017	U	0.0014	U	0.0012	U	0.017	U	0.0015	U	0.0079	U	0.001	U	0.00014	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.0011	U	0.00016	U	0.001	U	0.00016	U	0.0011	U	0.0002	U	0.0011	U	0.0017	U	0.00022	U	0.0014	U	0.0012	U	0.022	U	0.0015	U	0.01	U	0.001	U	0.00017	U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	0.0011	U	0.00016	U	0.001	U	0.00016	U	0.0011	U	0.0002	U	0.0011	U	0.0017	U	0.00022	U	0.0014	U	0.0012	U	0.022	U	0.0015	U	0.0099	U	0.001	U	0.00017	U
1,1,2-Trichloroethane	79-00-5	NS	NS	0.0017	U	0.00025	U	0.0016	U	0.00025	U	0.0017	U	0.00032	U	0.0017	U	0.0026	U	0.00035	U	0.002	U	0.0018	U	0.035	U	0.0022	U	0.016	U	0.0015	U	0.00027	U
1,1-Dichloroethane	75-34-3	0.27	26	0.0017	U	0.00014	U	0.0016	U	0.00014	U	0.0017	U	0.00018	U	0.0017	U	0.0026	U	0.00019	U	0.002	U	0.0018	U	0.019	U	0.0022	U	0.0087	U	0.0015	U	0.00015	U
1,1-Dichloroethene	75-35-4	0.33	100	0.0011	U	0.00022	U	0.001	U	0.00022	U	0.0011	U	0.00029	U	0.0011	U	0.0017	U	0.00031	U	0.0014	U	0.0012	U	0.031	U	0.0015	U	0.014	U	0.001	U	0.00024	U
1,1-Dichloropropene	563-58-6	NS	NS	0.0057	U	0.00015	U	0.0052	U	0.00015	U	0.0056	U	0.00019	U	0.0056	U	0.0086	U	0.00021	U	0.0068	U	0.006	U	0.021	U	0.0074	U	0.0095	U	0.0051	U	0.00016	U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	0.0057	U	0.0003	U	0.0052	U	0.0003	U	0.0056	U	0.00039	U	0.0056	U	0.0086	U	0.00042	U	0.0068	U	0.006	U	0.042	U	0.0074	U	0.019	U	0.0051	U	0.00033	U
1,2,3-Trichloropropane	96-18-4	NS	NS	0.011	U	0.00012	U	0.01	U	0.00012	U	0.011	U	0.00015	U	0.011	U	0.017	U	0.00016	U	0.014	U	0.012	U	0.016	U	0.015	U	0.0076	U	0.01	U	0.00013	U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	0.0046	U	0.00018	U	0.0042	U	0.00018	U	0.0045	U	0.00023	U	0.0045	U	0.0069	U	0.00025	U	0.0055	U	0.0048	U	0.091	J	0.00044	J	0.29		0.004	U	0.0002	U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.0057	U	0.00026	U	0.0052	U	0.00026	U	0.0056	U	0.00033	U	0.0056	U	0.0086	U	0.00035	U	0.0068	U	0.006	U	0.035	U	0.0074	U	0.016	U	0.0051	U	0.00028	U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	0.00027	J	0.00032	U	0.0052	U	0.00032	U	0.0056	U	0.0004	U	0.0056	U	0.0086	U	0.00044	U	0.00032	J	0.006	U	0.25	J	0.00039	J	1		0.00024	J	0.00034	U
1,2-Dibromo-3-chloropropane	96-12-8	NS	NS	0.0057	U	0.00094	U	0.0052	U	0.00095	U	0.0056	U	0.0012	U	0.0056	U	0.0086	U	0.0013	U	0.0068	U	0.006	U	0.13	U	0.0074	U	0.06	U	0.0051	U	0.001	U
1,2-Dibromoethane	106-93-4	NS	NS	0.0046	U	0.00026	U	0.0042	U	0.00026	U	0.0045	U	0.00034	U	0.0045	U	0.0069	U	0.00036	U	0.0055	U	0.0048	U	0.036	U	0.0059	U	0.017	U	0.004	U	0.00029	U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.0057	U	0.00014	U	0.0052	U	0.00014	U	0.0056	U	0.00017	U	0.0056	U	0.0086	U	0.00019	U	0.0068	U	0.006	U	0.63		0.0074	U	0.0086	U	0.0051	U	0.00015	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.0011	U	0.00024	U	0.001	U	0.00024	U	0.0011	U	0.00031	U	0.0011	U	0.0017	U	0.00033	U	0.0014	U	0.0012	U	0.034	U	0.0015	U	0.015	U	0.001	U	0.00026	U
1,2-Dichloroethene, Total	540-59-0	NS	NS	0.0011	U	0.00013	U	0.001	U	0.00013	U	0.0011	U	0.00016	U	0.0011	U	0.0017	U	0.00018	U	0.0014	U	0.0012	U	0.018	U	0.0015	U	0.0082	U	0.001	U	0.00014	U
1,2-Dichloropropane	78-87-5	NS	NS	0.004	U	0.00012	U	0.0037	U	0.00012	U	0.0039	U	0.00015	U	0.0039	U	0.006	U	0.00016	U	0.0048	U	0.0042	U	0.016	U	0.0052	U	0.0075	U	0.0036	U	0.00013	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	0.0057	U	0.00018	U	0.0052	U	0.00018	U	0.0056	U	0.00023	U	0.0056	U	0.0086	U	0.00025	U	0.0068	U	0.006	U	0.041	J	0.0074	U	0.26		0.0051	U	0.0002	U
1,3-Dichlorobenzene	541-73-1	2.4	49	0.0057	U	0.00014	U	0.0052	U	0.00014	U	0.0056	U	0.00018	U	0.0056	U	0.0086	U	0.00019	U	0.0068	U	0.006	U	0.1	J	0.0074	U	0.0088	U	0.0051	U	0.00015	U
1,3-Dichloropropane	142-28-9	NS	NS	0.0057	U	0.00016	U	0.0052	U	0.00016	U	0.0056	U	0.0002	U	0.0056	U	0.0086	U	0.00022	U	0.0068	U	0.006	U	0.022	U	0.0074	U	0.01	U	0.0051	U	0.00017	U
1,3-Dichloropropene, Total	542-75-6	NS	NS	0.0011	U	0.00015	U	0.001	U	0.00015	U	0.0011	U	0.00019	U	0.0011	U	0.0017	U	0.0002	U	0.0014	U	0.0012	U	0.021	U	0.0015	U	0.0094	U	0.001	U	0.00016	U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.0057	U	0.00016	U	0.0052	U	0.00016	U	0.0056	U	0.00021	U	0.0056	U	0.0086	U	0.00022	U	0.0068	U	0.006	U	0.065	J	0.0074	U	0.01	U	0.0051	U	0.00018	U
1,4-Dioxane	123-91-1	0.1	13	0.046	U	0.033	U	0.042	U	0.033	U	0.045	U	0.042	U	0.045	U	0.069	U	0.046	U	0.055	U	0.048	U	4.6	U	0.059	U	2.1	U	0.04	U	0.036	U
2,2-Dichloropropane	594-20-7	NS	NS	0.0057	U	0.00019	U	0.0052	U	0.00019	U	0.0056	U	0.00024	U	0.0056	U	0.0086	U	0.00026	U	0.0068	U	0.006	U	0.026	U	0.0074	U	0.012	U	0.0051	U	0.00021	U
2-Butanone	78-93-3	0.12	100	0.011	U	0.0021	U	0.01	U	0.0021	U	0.011	U	0.0027	U	0.011	U	0.017	U	0.0029	U	0.014	U	0.012	U	0.29	U	0.015	U	0.13	U	0.0065	J	0.0023	U
2-Hexanone	591-78-6	NS	NS	0.011	U	0.0011	U	0.01	U	0.0011	U	0.011	U	0.0014	U	0.011	U	0.017	U	0.0015	U	0.014	U	0.012	U	0.15	U	0.015	U	0.07	U	0.01	U	0.0012	U
4-Methyl-2-pentanone	108-10-1	NS	NS	0.011	U	0.0012	U	0.01	U	0.0012	U	0.011	U	0.0015	U	0.011	U	0.017	U	0.0017	U	0.014	U	0.012	U	0.17	U	0.015	U	0.076	U	0.01	U	0.0013	U
Acetone	67-64-1	0.05	100	0.011	U	0.0046	U	0.01	U	0.015		0.011	U	0.0058	U	0.011	U	0.017	U	0.02		0.0075	J	0.058		0.63	U	0.0067	J	0.29	U	0.057		0.01	
Acrylonitrile	107-13-1	NS	NS	0.011	U	0.0011	U	0.01	U	0.0011	U	0.011	U	0.0014	U	0.011	U	0.017	U	0.0015	U	0.014	U	0.012	U	0.15	U	0.015	U	0.069	U	0.01	U	0.0012	U
Benzene	71-43-2	0.06	4.8	0.0011	U	0.00016	U	0.001	U	0.00029	J	0.0011	U	0.0002	U	0.0011	U	0.0017	U	0.00022	U	0.0014	U	0.0012	U	0.022	U	0.0015	U	0.0099	U	0.00029	J	0.00017	U
Bromobenzene	108-86-1	NS	NS	0.0057	U	0.00014	U	0.0052	U	0.00014	U	0.0056	U	0.00018	U	0.0056	U	0.0086	U	0.00019	U	0.0068	U	0.006	U	0.019	U	0.0074	U	0.0087	U	0.0051	U	0.00015	U
Bromochloromethane	74-97-5	NS	NS	0.0057	U	0.00019	U	0.0052	U	0.00019	U	0.0056	U	0.00025	U	0.0056	U	0.0086	U	0.00027	U	0.0068	U	0.006	U	0.027	U	0.0074	U	0.012	U	0.0051	U	0.00021	U
Bromodichloromethane	75-27-4	NS	NS	0.0011	U	0.0001	U	0.001	U	0.0001	U	0.0011	U	0.00013	U	0.0011	U	0.0017	U	0.00014	U	0.0014	U	0.0012	U	0.014	U	0.0015	U	0.0065	U	0.001	U	0.00011	U
Bromoform	75-25-2	NS	NS	0.0046	U	0.00023	U	0.0042	U	0.00023	U	0.0045	U	0.0003	U	0.0045	U	0.0069	U	0.00032	U	0.0055	U	0.0048	U	0.032	U	0.0059	U	0.015	U	0.004	U	0.00025	U
Bromomethane	74-83-9	NS	NS	0.0023	U	0.00055	U	0.0021	U	0.00055	U	0.0022	U	0.0007	U	0.0022	U	0.0034	U	0.00076	U	0.0027	U	0.0024	U	0.076	U	0.003	U	0.035	U	0.002	U	0.0006	U
Carbon disulfide	75-15-0	NS	NS	0.011	U	0.0043	U	0.01	U	0.0043	U	0.011	U	0.0055	U	0.011	U	0.017	U	0.0059	U	0.014	U	0.012	U	0.59	U	0.015	U	0.27	U	0.01	U	0.0047	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.0011	U	0.00022	U	0.001	U	0.00022	U	0.0011	U	0.00028	U	0.0011	U	0.0017	U	0.0003	U	0.0014	U	0.0012	U	0.03	U	0.0015	U	0.014	U	0.001	U	0.00024	U
Chlorobenzene	108-90-7	1.1	100	0.0011	U	0.00012	U	0.001	U	0.00012	U	0.0011	U	0.00015	U	0.0011	U	0.0017	U	0.00016	U	0.0014	U	0.0012	U	0.016	U	0.0015	U	0.0076	U	0.001	U	0.00013	U
Chloroethane	75-00-3	NS	NS	0.0023	U	0.00043	U	0.0021	U	0.00043	U	0.0022	U	0.00055	U	0.0022	U	0.0034	U	0.00059	U	0.0027	U	0.0024	U	0.059	U	0.003	U	0.027	U	0.002	U	0.00046	U
Chloroform	67-66-3	0.37	49	0.0017	U	0.00013	U	0.0016	U	0.00013	U	0.0017	U	0.00017	U	0.0017	U	0.0026	U	0.00018	U	0.002	U	0.0018	U	0.018	U	0.0022	U	0.0084	U	0.0015	U	0.00014	U
Chloromethane	74-87-3	NS	NS	0.0057	U	0.00088	U	0.0052	U	0.00088	U	0.0056	U	0.0011	U	0.0056	U	0.0086	U	0.0012	U	0.0068	U	0.006	U	0.12	U	0.0074	U	0.056	U	0.0051	U	0.00096	U
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.0011	U	0.00016	U	0.001	U	0.00017	U	0.0011	U	0.00021	U	0.0011	U	0.0017	U	0.00023	U	0.0014	U	0.0012	U	0.023	U	0.0015	U	0.01	U	0.001	U	0.00018	U
cis-1,3-Dichloropropene	10061-01-5	NS	NS	0.0011	U	0.00015	U	0.001	U	0.00015	U	0.0011	U	0.00019	U	0.0011	U	0.0017	U	0.0002	U	0.0014	U	0.0012	U	0.021	U	0.0015	U	0.0094	U	0.001	U	0.00016	U
Dibromochloromethane	124-48-1	NS	NS	0.0011	U	0.00013	U	0.001	U	0.00013	U	0.0011	U	0.00017	U	0.0011	U	0.0017	U	0.00018	U	0.0014	U	0.0012	U	0.018	U	0.0015	U	0.0084	U	0.001	U	0.00014	U
Dibromomethane	74-95-3	NS	NS	0.011	U	0.00022	U	0.01	U	0.00022	U	0.011	U	0.00029	U	0.011	U	0.017	U	0.00031	U	0.014	U	0.012	U	0.031	U	0.015	U	0.014	U	0.01	U	0.00024	U
Dichlorodifluoromethane	75-71-8	NS	NS	0.011	U	0.00086	U	0.01	U	0.00087	U	0.011	U	0.0011	U	0.011	U	0.017	U	0.0012	U	0.014	U	0.012	U	0.12	U	0.015	U	0.055	U	0.01	U	0.00094	U
Ethyl ether	60-29-7	NS	NS	0.0057	U	0.00032	U	0.0052	U	0.00032	U	0.0056	U	0.00041	U	0.0056	U	0.0086	U	0.00044	U	0.0068	U	0.006	U	0.044	U	0.0074	U	0.02	U	0.0051	U	0.00035	U
Ethylbenzene	100-41-4	1	41	0.0011	U	0.00013	U	0.001	U	0.00013	U	0.0011	U	0.00036	J	0.0011	U	0.0017	U	0.00018	U	0.0014	U	0.0012	U	0.076	J	0.00027	J	0.05	J	0.001	U	0.00014	U
Hexachlorobutadiene	87-68-3	NS	NS	0.0057	U	0.00016	U	0.0052	U	0.00016	U	0.0056	U	0.0002	U	0.0056	U	0.0086	U	0.00022	U	0.0068	U	0.006	U	0.022	U	0.0074	U	0.01	U	0.0051	U	0.00017	U
Isopropylbenzene	98-82-8	NS	NS	0.0011	U	0.0001	U	0.001	U	0.0001	U	0.0011	U	0.00013	U	0.0011	U	0.0017	U	0.00014	U	0.0014	U	0.0012	U	0.014	U	0.0015	U	0.16		0.001	U	0.00011	U
Methyl tert butyl ether	1634-04-4	0.93	100	0.0023	U	0.00019	U	0.0021	U	0.00019	U	0.0022	U	0.00024	U	0.0022	U	0.0034	U	0.00026	U	0.0027	U	0.0024	U	0.026	U	0.003	U	0.012	U	0.002	U	0.00021	U
Methylene chloride	75-09-2	0.05	100	0.011	U	0.0022	U	0.01	U	0.0022	U	0.011	U	0.0028	U	0.011	U	0.017	U	0.003	U	0.014	U	0.012	U	0.3	U	0.015	U	0.14	U	0.01	U	0.0023	U
n-Butylbenzene	104-51-8	12	100	0.0011	U	0.00016	U	0.001	U	0.00016	U	0.0011	U	0.0002	U	0.0011	U	0.0017	U	0.00022	U	0.0014	U	0.0012	U	0.06	J	0.0015	U	0.26		0.001	U	0.00017	U
n-Propylbenzene	103-65-1	3.9	100	0.0011	U	0.00016	U	0.001	U	0.00016	U	0.0011	U	0.00021	U	0.0011	U	0.0017	U	0.00022	U	0.0014	U	0.0012	U	0.076	J	0.0015	U	0.3		0.001	U	0.00018	U
Naphthalene	91-20-3	12	100	0.0057	U	0.00061	U	0.0052	U	0.00062	U	0.0056	U	0.00078	U	0.0056	U	0.00035	J	0.00085	U	0.00037	J	0.00018	J	0.29	J	0.00055	J	0.08	J	0.0051	U	0.00067	U
o-Chlorotoluene	95-49-8	NS	NS	0.0057	U	0.00018	U	0.0052	U	0.00018	U	0.0056	U	0.00023	U	0.0056	U	0.0086	U	0.00025	U	0.0068	U	0.006	U	0.029	J	0.0074	U	0.011	U	0.0051	U	0.0002	U
o-Xylene	95-47-6	NS	NS	0.0023	U	0.00028	U	0.0021	U	0.00028	U	0.0022	U	0.00073	J	0.0022	U	0.0034	U	0.00038	U	0.0027	U	0.0024	U	0.079	J	0.003	U	0.057	J	0.002	U	0.0003	U
p-Chlorotoluene	106-43-4	NS	NS	0.0057	U	0.0001	U	0.0052	U	0.0001	U	0.0056	U	0.00013	U	0.0056	U	0.0086	U	0.00014	U	0.0068	U	0.006	U	0.014	U	0.0074	U	0.0064	U	0.0051	U	0.00011	U
p-Diethylbenzene	105-05-5	NS	NS	0.0046	U	0.00017	U	0.0042	U	0.00017	U	0.0045	U	0.00021	U	0.0045	U	0.0069	U	0.00023	U	0.0055	U	0.0048	U	0.052	J	0.0059	U	0.82		0.004	U	0.00018	U
p-Ethyltoluene	622-96-8	NS	NS	0.00027	J	0.00036	U	0.0042	U	0.00036	U	0.0045	U	0.00046	U	0.0045	U	0.0069	U	0.0005	U	0.0055	U	0.0048	U	0.19	J	0.0059	U	0.84		0.004	U	0.00039	U
p-Isopropyltoluene	99-87-6	NS	NS	0.0011	U	0.0001	U	0.001	U	0.0001	U	0.0011	U	0.00013	U	0.0011	U	0.0017	U	0.00014	U	0.0014	U	0.0012	U	0.014	U	0.0015	U	0.32		0.001	U	0.00011	U
p/m-Xylene	179601-23-1	NS	NS	0.0023	U	0.00053	U	0.0021	U	0.00053	U	0.0022	U	0.0022	J	0.0022	U	0.0034	U	0.00073	U	0.0027	U	0.0024	U	0.42		0.00072	J	0.12		0.002	U	0.00057	U
sec-Butylbenzene	135-98-8	11	100	0.0011	U	0.00014	U	0.001	U	0.00014	U	0.0011	U	0.00018	U	0.0011	U	0.0017	U	0.00019	U	0.0014	U	0.0012	U	0.019	U	0.0015	U	0.24		0.001	U	0.00015	U
Styrene	100-42-5	NS	NS	0.0023	U	0.00018	U	0.0021	U	0.00018	U	0.0022	U	0.00024	U	0.0022	U	0.0034	U	0.00026	U	0.0027	U	0.0024	U	0.026	U	0.003	U	0.012	U	0.002	U	0.0002	U
tert-Butylbenzene	98-06-6	5.9	100	0.0057	U	0.00011	U	0.0052	U	0.00011	U	0.0056	U	0.00014	U	0.0056	U	0.0086	U	0.00015	U	0.0068	U	0.006	U	0.015	U	0.0074	U	0.032	J	0.0051	U	0.00012	U
Tetrachloroethene	127-18-4	1.3	19	0.0011	U	0.00018	U	0.001	U	0.00018	U	0.0011	U	0.00024	U	0.0011	U	0.0017	U	0.00026	U	0.0014	U	0.0012	U	0.026	U	0.0015	U	0.012	U	0.001	U	0.0002	U
Toluene	108-88-3	0.7	100	0.0017	U	0.00051	U	0.0016	U	0.00052	U	0.0017	U	0.00066	U	0.0017	U	0.00046	J	0.00071	U	0.00028	J	0.0018	U	0.2		0.00093	J	0.032	U	0.0015	U	0.00056	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.0017	U	0.00013	U	0.0016	U	0.00013	U	0.0017	U	0.00016	U	0.0017	U	0.0026	U	0.00018	U	0.002	U	0.0018	U	0.018	U	0.0022	U	0.0082	U	0.0015	U	0.00014	U
trans-1,3-Dichloropropene	10061-02-6	NS	NS	0.0011	U	0.00026	U	0.001	U	0.00026	U	0.0011	U	0.00033	U	0.0011	U	0.0017	U	0.00036	U	0.0014	U	0.0012	U	0.036	U	0.0015	U	0.016	U	0.001	U	0.00028	U
trans-1,4-Dichloro-2-butene	110-57-6	NS	NS	0.0057	U	0.0013	U	0.0052	U	0.0013	U	0.0056	U	0.0017	U	0.0056	U	0.0086	U	0.0018	U	0.0068	U	0.006	U	0.18	U	0.0074	U	0.085	U	0.0051	U	0.0014	U
Trichloroethene	79-01-6	0.47	21	0.0011	U	0.00013	U	0.001	U	0.00013	U	0.0011	U	0.00016	U	0.0011	U	0.0017	U	0.00018	U	0.0014	U	0.0012	U	0.018	U	0.0015	U	0.0082	U	0.001	U	0.00014	U
Trichlorofluoromethane	75-69-4	NS	NS	0.0057	U	0.00066	U	0.0052	U	0.00066	U	0.0056	U	0.00084	U	0.0056	U	0.0086	U	0.0009	U	0.0068	U	0.006	U	0.091	U	0.0074	U	0.042	U	0.0051	U	0.00071	U
Vinyl acetate	108-05-4	NS	NS	0.011	U	0.002	U	0.01	U	0.002	U	0.011	U	0.0026	U	0.011	U	0.017	U	0.0028	U	0.014	U	0.012	U	0.28	U	0.015	U	0.13	U	0.01	U	0.0022	U
Vinyl chloride	75-01-4	0.02	0.9	0.0023	U	0.00032	U	0.0021	U	0.00032	U	0.0022	U	0.0004	U	0.0022	U	0.0034	U	0.00044	U	0.0027	U	0.0024	U	0.044	U	0.003	U	0.02	U	0.002	U	0.00034	U
Xylenes, Total	1330-20-7	0.26	100	0.0023	U	0.00028	U	0.0021	U	0.00028	U	0.0022	U	0.0029	J	0.0022	U	0.0034	U	0.00038	U	0.0027	U	0.0024	U	0.5	J	0.00072	J	0.18	J	0.002	U	0.0003	U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 1

Soil Sample Analaytical Data - Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB005 (3-5)	SB005 (7-9)	SB006 (0-2)	SB006 (5-7)	SB006 (7.5-9.5)	SB006 (9-11)	SB007 (0-2)	SB007 (4-6)	SB007 (7-9)	SB007 (9-11)	SB008 (0-2)	SB008 (4-6)	SB008 (8-10)	SB008 (10-12)	SB008 (13-15)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	2/25/2019	12/14/2017	2/25/2019
LAB SAMPLE ID			SCO[2]	L1746315-02	L1907512-04	L1746315-03	L1907512-05	L1746315-04	L1907512-06	L1746315-05	L1907512-07	L1746315-06	L1907512-08	L1746315-07	L1907512-09	L1907308-11	L1746315-08	L1907308-12
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	0.00096 U	0.00015 U	0.0014 U	0.00013 U	0.0011 U	0.00012 U	0.0013 U	0.00014 U	0.00092 U	0.00012 U	0.0013 U	0.00013 U	0.00013 U	0.0012 U	0.00014 U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.00096 U	0.00019 U	0.0014 U	0.00017 U	0.0011 U	0.00016 U	0.0013 U	0.00018 U	0.00092 U	0.00016 U	0.0013 U	0.00016 U	0.00017 U	0.0012 U	0.00018 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	0.00096 U	0.00019 U	0.0014 U	0.00017 U	0.0011 U	0.00015 U	0.0013 U	0.00018 U	0.00092 U	0.00016 U	0.0013 U	0.00016 U	0.00017 U	0.0012 U	0.00018 U
1,1,2-Trichloroethane	79-00-5	NS	NS	0.0014 U	0.0003 U	0.0021 U	0.00027 U	0.0016 U	0.00025 U	0.002 U	0.00029 U	0.0014 U	0.00025 U	0.002 U	0.00026 U	0.00027 U	0.0018 U	0.00028 U
1,1-Dichloroethane	75-34-3	0.27	26	0.0014 U	0.00016 U	0.0021 U	0.00015 U	0.0016 U	0.00013 U	0.002 U	0.00016 U	0.0014 U	0.00014 U	0.002 U	0.00014 U	0.00015 U	0.0018 U	0.00015 U
1,1-Dichloroethene	75-35-4	0.33	100	0.00096 U	0.00027 U	0.0014 U	0.00024 U	0.0011 U	0.00022 U	0.0013 U	0.00026 U	0.00092 U	0.00022 U	0.0013 U	0.00023 U	0.00024 U	0.0012 U	0.00025 U
1,1-Dichloropropene	563-58-6	NS	NS	0.0048 U	0.00018 U	0.0069 U	0.00016 U	0.0053 U	0.00015 U	0.0066 U	0.00017 U	0.0046 U	0.00015 U	0.0066 U	0.00015 U	0.00016 U	0.0059 U	0.00017 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	0.0048 U	0.00037 U	0.0069 U	0.00033 U	0.0053 U	0.0003 U	0.0066 U	0.00035 U	0.0046 U	0.0003 U	0.0066 U	0.00031 U	0.00033 U	0.0059 U	0.00034 U
1,2,3-Trichloropropane	96-18-4	NS	NS	0.0096 U	0.00014 U	0.014 U	0.00013 U	0.011 U	0.00012 U	0.013 U	0.00014 U	0.0092 U	0.00012 U	0.013 U	0.00012 U	0.00013 U	0.012 U	0.00013 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	0.0038 U	0.00022 U	0.0055 U	0.00019 U	0.0043 U	0.00018 U	0.0053 U	0.00021 U	0.0037 U	0.00018 U	0.0052 U	0.00018 U	0.00019 U	0.0047 U	0.0002 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.0048 U	0.00031 U	0.0069 U	0.00028 U	0.0053 U	0.00025 U	0.0066 U	0.0003 U	0.0046 U	0.00026 U	0.0066 U	0.00026 U	0.00028 U	0.0059 U	0.00029 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	0.0048 U	0.00038 U	0.00061 J	0.00034 U	0.0053 U	0.00031 U	0.0066 U	0.00036 U	0.0046 U	0.00031 U	0.0066 U	0.00032 U	0.00034 U	0.0059 U	0.00035 U
1,2-Dibromo-3-chloropropane	96-12-8	NS	NS	0.0048 U	0.0011 U	0.0069 U	0.001 U	0.0053 U	0.00093 U	0.0066 U	0.0011 U	0.0046 U	0.00094 U	0.0066 U	0.00096 U	0.001 U	0.0059 U	0.0011 U
1,2-Dibromoethane	106-93-4	NS	NS	0.0038 U	0.00032 U	0.0055 U	0.00028 U	0.0043 U	0.00026 U	0.0053 U	0.0003 U	0.0037 U	0.00026 U	0.0052 U	0.00027 U	0.00028 U	0.0047 U	0.0003 U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.0048 U	0.00016 U	0.0069 U	0.00015 U	0.0053 U	0.00013 U	0.0066 U	0.00016 U	0.0046 U	0.00014 U	0.0066 U	0.00014 U	0.00015 U	0.0059 U	0.00015 U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.00096 U	0.00029 U	0.0014 U	0.00026 U	0.0011 U	0.00024 U	0.0013 U	0.00028 U	0.00092 U	0.00024 U	0.0013 U	0.00025 U	0.00026 U	0.0012 U	0.00027 U
1,2-Dichloroethene, Total	540-59-0	NS	NS	0.00096 U	0.00016 U	0.0014 U	0.00014 U	0.0011 U	0.00013 U	0.0013 U	0.00015 U	0.00092 U	0.00013 U	0.0013 U	0.00013 U	0.00014 U	0.0012 U	0.00014 U
1,2-Dichloropropane	78-87-5	NS	NS	0.0034 U	0.00014 U	0.0048 U	0.00013 U	0.0037 U	0.00012 U	0.0046 U	0.00014 U	0.0032 U	0.00012 U	0.0046 U	0.00012 U	0.00013 U	0.0041 U	0.00013 U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	0.0048 U	0.00022 U	0.00026 J	0.0002 U	0.0053 U	0.00018 U	0.0066 U	0.00021 U	0.0046 U	0.00018 U	0.0066 U	0.00019 U	0.0002 U	0.0059 U	0.0002 U
1,3-Dichlorobenzene	541-73-1	2.4	49	0.0048 U	0.00017 U	0.0069 U	0.00015 U	0.0053 U	0.00014 U	0.0066 U	0.00016 U	0.0046 U	0.00014 U	0.0066 U	0.00014 U	0.00015 U	0.0059 U	0.00016 U
1,3-Dichloropropane	142-28-9	NS	NS	0.0048 U	0.00019 U	0.0069 U	0.00017 U	0.0053 U	0.00016 U	0.0066 U	0.00018 U	0.0046 U	0.00016 U	0.0066 U	0.00016 U	0.00017 U	0.0059 U	0.00018 U
1,3-Dichloropropene, Total	542-75-6	NS	NS	0.00096 U	0.00018 U	0.0014 U	0.00016 U	0.0011 U	0.00015 U	0.0013 U	0.00017 U	0.00092 U	0.00015 U	0.0013 U	0.00015 U	0.00016 U	0.0012 U	0.00017 U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.0048 U	0.0002 U	0.0069 U	0.00017 U	0.0053 U	0.00016 U	0.0066 U	0.00019 U	0.0046 U	0.00016 U	0.0066 U	0.00016 U	0.00017 U	0.0059 U	0.00018 U
1,4-Dioxane	123-91-1	0.1	13	0.038 U	0.04 U	0.055 U	0.036 U	0.043 U	0.033 U	0.053 U	0.038 U	0.037 U	0.033 U	0.052 U	0.034 U	0.036 U	0.047 U	0.037 U
2,2-Dichloropropane	594-20-7	NS	NS	0.0048 U	0.00023 U	0.0069 U	0.0002 U	0.0053 U	0.00019 U	0.0066 U	0.00022 U	0.0046 U	0.00019 U	0.0066 U	0.00019 U	0.0002 U	0.0059 U	0.00021 U
2-Butanone	78-93-3	0.12	100	0.0096 U	0.0025 U	0.014 U	0.0022 U	0.011 U	0.0021 U	0.013 U	0.0051 J	0.0092 U	0.0021 U	0.013 U	0.0021 U	0.0023 U	0.012 U	0.0024 U
2-Hexanone	591-78-6	NS	NS	0.0096 U	0.0013 U	0.014 U	0.0012 U	0.011 U	0.0011 U	0.013 U	0.0013 U	0.0092 U	0.0011 U	0.013 U	0.0011 U	0.0012 U	0.012 U	0.0012 U
4-Methyl-2-pentanone	108-10-1	NS	NS	0.0096 U	0.0015 U	0.014 U	0.0013 U	0.011 U	0.0012 U	0.013 U	0.0014 U	0.0092 U	0.0012 U	0.013 U	0.0012 U	0.0013 U	0.012 U	0.0014 U
Acetone	67-64-1	0.05	100	0.0027 J	0.0064 J	0.044	0.01	0.0045 J	0.005 J	0.013 U	0.03	0.0092 U	0.0045 U	0.01 J	0.0046 U	0.0079 J	0.012 U	0.0051 U
Acrylonitrile	107-13-1	NS	NS	0.0096 U	0.0013 U	0.014 U	0.0012 U	0.011 U	0.0011 U	0.013 U	0.0013 U	0.0092 U	0.0011 U	0.013 U	0.0011 U	0.0012 U	0.012 U	0.0012 U
Benzene	71-43-2	0.06	4.8	0.00096 U	0.00019 U	0.0014 U	0.00017 U	0.0011 U	0.00015 U	0.0013 U	0.00018 U	0.00092 U	0.00016 U	0.0013 U	0.00016 U	0.00017 U	0.0012 U	0.00018 U
Bromobenzene	108-86-1	NS	NS	0.0048 U	0.00016 U	0.0069 U	0.00015 U	0.0053 U	0.00013 U	0.0066 U	0.00016 U	0.0046 U	0.00014 U	0.0066 U	0.00014 U	0.00015 U	0.0059 U	0.00015 U
Bromochloromethane	74-97-5	NS	NS	0.0048 U	0.00023 U	0.0069 U	0.00021 U	0.0053 U	0.00019 U	0.0066 U	0.00022 U	0.0046 U	0.00019 U	0.0066 U	0.0002 U	0.00021 U	0.0059 U	0.00022 U
Bromodichloromethane	75-27-4	NS	NS	0.00096 U	0.00012 U	0.0014 U	0.00011 U	0.0011 U	0.0001 U	0.0013 U	0.00012 U	0.00092 U	0.0001 U	0.0013 U	0.0001 U	0.00011 U	0.0012 U	0.00012 U
Bromoform	75-25-2	NS	NS	0.0038 U	0.00028 U	0.0055 U	0.00025 U	0.0043 U	0.00023 U	0.0053 U	0.00027 U	0.0037 U	0.00023 U	0.0052 U	0.00024 U	0.00025 U	0.0047 U	0.00026 U
Bromomethane	74-83-9	NS	NS	0.0019 U	0.00066 U	0.0028 U	0.00059 U	0.0021 U	0.00054 U	0.0026 U	0.00064 U	0.0018 U	0.00054 U	0.0026 U	0.00056 U	0.00059 U	0.0023 U	0.00062 U
Carbon disulfide	75-15-0	NS	NS	0.0096 U	0.0052 U	0.002 J	0.0046 U	0.011 U	0.0042 U	0.013 U	0.005 U	0.0092 U	0.0043 U	0.013 U	0.0044 U	0.0046 U	0.012 U	0.0048 U
Carbon tetrachloride	56-23-5	0.76	2.4	0.00096 U	0.00026 U	0.0014 U	0.00023 U	0.0011 U	0.00021 U	0.0013 U	0.00025 U	0.00092 U	0.00022 U	0.0013 U	0.00022 U	0.00023 U	0.0012 U	0.00024 U
Chlorobenzene	108-90-7	1.1	100	0.00096 U	0.00014 U	0.0014 U	0.00013 U	0.0011 U	0.00012 U	0.0013 U	0.00014 U	0.00092 U	0.00012 U	0.0013 U	0.00012 U	0.00013 U	0.0012 U	0.00013 U
Chloroethane	75-00-3	NS	NS	0.0019 U	0.00052 U	0.0028 U	0.00046 U	0.0021 U	0.00042 U	0.0026 U	0.0005 U	0.0018 U	0.00042 U	0.0026 U	0.00044 U	0.00046 U	0.0023 U	0.00048 U
Chloroform	67-66-3	0.37	49	0.0014 U	0.00016 U	0.0021 U	0.00014 U	0.0016 U	0.00013 U	0.002 U	0.00029 J	0.0014 U	0.00013 U	0.002 U	0.00013 U	0.00014 U	0.0018 U	0.00015 U
Chloromethane	74-87-3	NS	NS	0.0048 U	0.0011 U	0.0069 U	0.00095 U	0.0053 U	0.00087 U	0.0066 U	0.001 U	0.0046 U	0.00088 U	0.0066 U	0.0009 U	0.00095 U	0.0059 U	0.00099 U
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.00096 U	0.0002 U	0.0014 U	0.00018 U	0.0011 U	0.00016 U	0.0013 U	0.00019 U	0.00092 U	0.00016 U	0.0013 U	0.00017 U	0.00018 U	0.0012 U	0.00018 U
cis-1,3-Dichloropropene	10061-01-5	NS	NS	0.00096 U	0.00018 U	0.0014 U	0.00016 U	0.0011 U	0.00015 U	0.0013 U	0.00017 U	0.00092 U	0.00015 U	0.0013 U	0.00015 U	0.00016 U	0.0012 U	0.00017 U
Dibromochloromethane	124-48-1	NS	NS	0.00096 U	0.00016 U	0.0014 U	0.00014 U	0.0011 U	0.00013 U	0.0013 U	0.00015 U	0.00092 U	0.00013 U	0.0013 U	0.00013 U	0.00014 U	0.0012 U	0.00015 U
Dibromomethane	74-95-3	NS	NS	0.0096 U	0.00027 U	0.014 U	0.00024 U	0.011 U	0.00022 U	0.013 U	0.00026 U	0.0092 U	0.00022 U	0.013 U	0.00023 U	0.00024 U	0.012 U	0.00025 U
Dichlorodifluoromethane	75-71-8	NS	NS	0.0096 U	0.001 U	0.014 U	0.00093 U	0.011 U	0.00085 U	0.013 U	0.001 U	0.0092 U	0.00086 U	0.013 U	0.00088 U	0.00093 U	0.012 U	0.00097 U
Ethyl ether	60-29-7	NS	NS	0.0048 U	0.00039 U	0.0069 U	0.00035 U	0.0053 U	0.00032 U	0.0066 U	0.0046 U	0.0046 U	0.00032 U	0.0066 U	0.00033 U	0.00035 U	0.0059 U	0.00036 U
Ethylbenzene	100-41-4	1	41	0.00096 U	0.00016 U	0.0014 U	0.00014 U	0.0011 U	0.00013 U	0.0013 U	0.00015 U	0.00092 U	0.00013 U	0.0013 U	0.00014 U	0.00014 U	0.0012 U	0.00015 U
Hexachlorobutadiene	87-68-3	NS	NS	0.0048 U	0.00019 U	0.0069 U	0.00017 U	0.0053 U	0.00016 U	0.0066 U	0.00018 U	0.0046 U	0.00016 U	0.0066 U	0.00016 U	0.00017 U	0.0059 U	0.00018 U
Isopropylbenzene	98-82-8	NS	NS	0.00096 U	0.00012 U	0.0014 U	0.00011 U	0.0011 U	0.0001 U	0.0013 U	0.00012 U	0.00092 U	0.0001 U	0.0013 U	0.0001 U	0.00011 U	0.0012 U	0.00012 U
Methyl tert butyl ether	1634-04-4	0.93	100	0.0019 U	0.00023 U	0.0028 U	0.0002 U	0.0021 U	0.00019 U	0.0026 U	0.00022 U	0.0018 U	0.00019 U	0.0026 U	0.00019 U	0.0002 U	0.0023 U	0.00021 U
Methylene chloride	75-09-2	0.05	100	0.0096 U	0.0026 U	0.014 U	0.0023 U	0.011 U	0.0021 U	0.013 U	0.0025 U	0.0092 U	0.0022 U	0.013 U	0.0022 U	0.0023 U	0.012 U	0.0024 U
n-Butylbenzene	104-51-8	12	100	0.00096 U	0.00019 U	0.0014 U	0.00017 U	0.0011 U	0.00016 U	0.0013 U	0.00018 U	0.00092 U	0.00016 U	0.0013 U	0.00016 U	0.00017 U	0.0012 U	0.00018 U
n-Propylbenzene	103-65-1	3.9	100	0.00096 U	0.0002 U	0.0014 U	0.00017 U	0.0011 U	0.00016 U	0.0013 U	0.00019 U	0.00092 U	0.00016 U	0.0013 U	0.00016 U	0.00017 U	0.0012 U	0.00018 U
Naphthalene	91-20-3	12	100	0.0048 U	0.00074 U	0.0069 U	0.00066 U	0.0053 U	0.0006 U	0.0066 U	0.00071 U	0.0046 U	0.00061 U	0.0066 U	0.00063 U	0.00066 U	0.0059 U	0.00069 U
o-Chlorotoluene	95-49-8	NS	NS	0.0048 U	0.00022 U	0.0069 U	0.00019 U	0.0053 U	0.00018 U	0.0066 U	0.00021 U	0.0046 U	0.00018 U	0.0066 U	0.00018 U	0.00019 U	0.0059 U	0.0002 U
o-Xylene	95-47-6	NS	NS	0.0019 U	0.00033 U	0.0028 U	0.0003 U	0.0021 U	0.00027 U	0.0026 U	0.00032 U	0.0018 U	0.00027 U	0.0026 U	0.00028 U	0.0003 U	0.0023 U	0.00031 U
p-Chlorotoluene	106-43-4	NS	NS	0.0048 U	0.00012 U	0.0069 U	0.00011 U	0.0053 U	0.0001 U	0.0066 U	0.00012 U	0.0046 U	0.0001 U	0.0066 U	0.0001 U	0.00011 U	0.0059 U	0.00011 U
p-Diethylbenzene	105-05-5	NS	NS	0.0038 U	0.0002 U	0.0055 U	0.00018 U	0.0043 U	0.00016 U	0.0053 U	0.00019 U	0.0037 U	0.00017 U	0.0052 U	0.00017 U	0.00018 U	0.0047 U	0.00019 U
p-Ethyltoluene	622-96-8	NS	NS	0.0038 U	0.00044 U	0.00063 J	0.00039 U	0.0043 U	0.00036 U	0.0053 U	0.00042 U	0.0037 U	0.00036 U	0.0052 U	0.00037 U	0.00039 U	0.0047 U	0.00041 U
p-Isopropyltoluene	99-87-6	NS	NS	0.00096 U	0.00012 U	0.0014 U	0.00011 U	0.0011 U	0.0001 U	0.0013 U	0.00012 U	0.00092 U	0.0001 U	0.0013 U	0.0001 U	0.00011 U	0.0012 U	0.00012 U
p/m-Xylene	179601-23-1	NS	NS	0.0019 U	0.00064 U	0.0028 U	0.00057 U	0.0021 U	0.00052 U	0.0026 U	0.00061 U	0.0018 U	0.00053 U	0.0026 U	0.00054 U	0.00057 U	0.0023 U	0.00059 U
sec-Butylbenzene	135-98-8	11	100	0.00096 U	0.00017 U	0.0014 U	0.00015 U	0.0011 U	0.00014 U	0.0013 U	0.00016 U	0.00092 U	0.00014 U	0.0013 U	0.00014 U	0.00015 U	0.0012 U	0.00016 U
Styrene	100-42-5	NS	NS	0.0019 U	0.00022 U	0.0028 U	0.0002 U	0.0021 U	0.00018 U	0.0026 U	0.00021 U	0.0018 U	0.00018 U	0.0026 U	0.00019 U	0.0002 U	0.0023 U	0.00021 U
tert-Butylbenzene	98-06-6	5.9	100	0.0048 U	0.00013 U	0.0069 U	0.00012 U	0.0053 U	0.00011 U	0.0066 U	0.00013 U	0.0046 U	0.00011 U	0.0066 U	0.00011 U	0.00012 U	0.0059 U	0.00012 U
Tetrachloroethene	127-18-4	1.3	19	0.00096 U	0.00022 U	0.0014 U	0.0002 U	0.0011 U	0.00018 U	0.0013 U	0.00021 U	0.00092 U	0.00018 U	0.0013 U	0.00019 U	0.0002 U	0.0012 U	0.00021 U
Toluene	108-88-3	0.7	100	0.0014 U	0.00062 U	0.0021 U	0.00055 U	0.0016 U	0.0005 U	0.002 U	0.00059 U	0.0014 U	0.00051 U	0.002 U	0.00052 U	0.00055 U	0.0018 U	0.00058 U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.0014 U	0.00016 U	0.0021 U	0.00014 U	0.0016 U	0.00013 U	0.002 U	0.00015 U	0.0014 U	0.00013 U	0.002 U	0.00013 U	0.00014 U	0.0018 U	0.00014 U
trans-1,3-Dichloropropene	10061-02-6	NS	NS	0.00096 U	0.00031 U	0.0014 U	0.00028 U	0.0011 U	0.00025 U	0.0013 U	0.0003 U	0.00092 U	0.00026 U	0.0013 U	0.00026 U	0.00028 U	0.0012 U	0.00029 U
trans-1,4-Dichloro-2-butene	110-57-6	NS	NS	0.0048 U	0.0016 U	0.0069 U	0.0014 U	0.0053 U	0.0013 U	0.0066 U	0.0016 U	0.0046 U	0.0013 U	0.0066 U	0.0014 U	0.0014 U	0.0059 U	0.0015 U
Trichloroethene	79-01-6	0.47	21	0.00096 U	0.00016 U	0.0014 U	0.00014 U	0.0011 U	0.00013 U	0.0013 U	0.00015 U	0.00092 U	0.00013 U	0.0013 U	0.00013 U	0.00014 U	0.0012 U	0.00014 U
Trichlorofluoromethane	75-69-4	NS	NS	0.0048 U	0.00079 U	0.0069 U	0.00071 U	0.0053 U	0.00065 U	0.0066 U	0.00076 U	0.0046 U	0.00065 U	0.0066 U	0.00067 U	0.00071 U	0.0059 U	0.00074 U
Vinyl acetate	108-05-4	NS	NS	0.0096 U	0.0024 U	0.014 U	0.0022 U	0.011 U	0.002 U	0.013 U	0.0024 U	0.0092 U	0.002 U	0.013 U	0.0021 U	0.0022 U	0.012 U	0.0023 U
Vinyl chloride	75-01-4	0.02	0.9	0.0019 U	0.00038 U	0.0028 U	0.00034 U	0.0021 U	0.00031 U	0.0026 U	0.00037 U	0.0018 U	0.00031 U	0.0026 U	0.00032 U	0.00034 U	0.0023 U	0.00036 U
Xylenes, Total	1330-20-7	0.26	100	0.0019 U	0.00033 U	0.0028 U	0.0003 U	0.0021 U	0.00027 U	0.0026 U	0.00032 U	0.0018 U	0.00027 U	0.0026 U	0.00028 U	0.0003 U	0.0023 U	0.00031 U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Object
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Ol
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL)
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 1

Soil Sample Analaytical Data - Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB009 (0-2)	SB009 (4-6)	SB009 (7-9)	SB009 (10-12)	SB010 (0-2)	SB010 (5-7)	SB010 (7-9)	SB011 (0-2)	SB011 (3-5)	SB011 (5-7)	SB012 (0-2)	SB012 (2-4)	SB012 (6-8)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017
LAB SAMPLE ID			SCO[2]	L1746315-09	L1907512-10	L1746315-10	L1907512-11	L1746315-11	L1907308-09	L1746315-12	L1746315-13	L1907308-08	L1746315-14	L1746315-15	L1907308-07	L1746315-16
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	0.0011 U	0.00017 U	0.0011 U	0.00013 U	0.0013 U	0.00013 U	0.00091 U	0.0014 U	0.013 U	0.0011 U	0.00093 U	0.00014 U	0.00094 U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.0011 U	0.00021 U	0.0011 U	0.00017 U	0.0013 U	0.00017 U	0.00091 U	0.0014 U	0.016 U	0.0011 U	0.00093 U	0.00018 U	0.00094 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	0.0011 U	0.00021 U	0.0011 U	0.00017 U	0.0013 U	0.00017 U	0.00091 U	0.0014 U	0.016 U	0.0011 U	0.00093 U	0.00018 U	0.00094 U
1,1,2-Trichloroethane	79-00-5	NS	NS	0.0016 U	0.00034 U	0.0016 U	0.00027 U	0.002 U	0.00027 U	0.0014 U	0.0021 U	0.026 U	0.0016 U	0.0014 U	0.00029 U	0.0014 U
1,1-Dichloroethane	75-34-3	0.27	26	0.0016 U	0.00018 U	0.0016 U	0.00014 U	0.002 U	0.00014 U	0.0014 U	0.0021 U	0.014 U	0.0016 U	0.0014 U	0.00016 U	0.0014 U
1,1-Dichloroethene	75-35-4	0.33	100	0.0011 U	0.0003 U	0.0011 U	0.00024 U	0.0013 U	0.00024 U	0.00091 U	0.0014 U	0.023 U	0.0011 U	0.00093 U	0.00026 U	0.00094 U
1,1-Dichloropropene	563-58-6	NS	NS	0.0055 U	0.0002 U	0.0054 U	0.00016 U	0.0067 U	0.00016 U	0.0045 U	0.007 U	0.015 U	0.0053 U	0.0046 U	0.00017 U	0.0047 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	0.0055 U	0.00041 U	0.0054 U	0.00032 U	0.0067 U	0.00032 U	0.0045 U	0.007 U	0.031 U	0.0053 U	0.0046 U	0.00035 U	0.0047 U
1,2,3-Trichloropropane	96-18-4	NS	NS	0.011 U	0.00016 U	0.011 U	0.00013 U	0.013 U	0.00013 U	0.0091 U	0.014 U	0.012 U	0.011 U	0.0093 U	0.00014 U	0.0094 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	0.0044 U	0.00024 U	0.0044 U	0.00019 U	0.0053 U	0.00019 U	0.0036 U	0.0056 U	0.022 J	0.0043 U	0.0037 U	0.00021 U	0.0037 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.0055 U	0.00035 U	0.0054 U	0.00027 U	0.0067 U	0.00027 U	0.0045 U	0.007 U	0.026 U	0.0053 U	0.0046 U	0.0003 U	0.0047 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	0.0011 J	0.00042 U	0.00082 J	0.00034 U	0.0013 J	0.00034 U	0.0007 J	0.0011 J	0.032 U	0.00074 J	0.00059 J	0.00036 U	0.00057 J
1,2-Dibromo-3-chloropropane	96-12-8	NS	NS	0.0055 U	0.0013 U	0.0054 U	0.001 U	0.0067 U	0.001 U	0.0045 U	0.007 U	0.097 U	0.0053 U	0.0046 U	0.0011 U	0.0047 U
1,2-Dibromoethane	106-93-4	NS	NS	0.0044 U	0.00036 U	0.0044 U	0.00028 U	0.0053 U	0.00028 U	0.0036 U	0.0056 U	0.027 U	0.0043 U	0.0037 U	0.0003 U	0.0037 U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.0055 U	0.00018 U	0.0054 U	0.00014 U	0.0067 U	0.00014 U	0.0045 U	0.007 U	0.014 U	0.0053 U	0.0046 U	0.00016 U	0.0047 U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.0011 U	0.00033 U	0.0011 U	0.00026 U	0.0013 U	0.00026 U	0.00091 U	0.0014 U	0.025 U	0.0011 U	0.00093 U	0.00028 U	0.00094 U
1,2-Dichloroethene, Total	540-59-0	NS	NS	0.0011 U	0.00017 U	0.0011 U	0.00014 U	0.0013 U	0.00014 U	0.00091 U	0.0014 U	0.013 U	0.0011 U	0.00093 U	0.00015 U	0.00094 U
1,2-Dichloropropane	78-87-5	NS	NS	0.0038 U	0.00016 U	0.0038 U	0.00012 U	0.0047 U	0.00012 U	0.0032 U	0.0049 U	0.012 U	0.0037 U	0.0033 U	0.00014 U	0.0033 U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	0.00046 J	0.00024 U	0.00035 J	0.00019 U	0.00052 J	0.00019 U	0.00028 J	0.00044 J	0.019 U	0.00026 J	0.00023 J	0.00021 U	0.00023 J
1,3-Dichlorobenzene	541-73-1	2.4	49	0.0055 U	0.00019 U	0.0054 U	0.00015 U	0.0067 U	0.00015 U	0.0045 U	0.007 U	0.014 U	0.0053 U	0.0046 U	0.00016 U	0.0047 U
1,3-Dichloropropane	142-28-9	NS	NS	0.0055 U	0.00021 U	0.0054 U	0.00017 U	0.0067 U	0.00017 U	0.0045 U	0.007 U	0.016 U	0.0053 U	0.0046 U	0.00018 U	0.0047 U
1,3-Dichloropropene, Total	542-75-6	NS	NS	0.0011 U	0.0002 U	0.0011 U	0.00016 U	0.0013 U	0.00016 U	0.00091 U	0.0014 U	0.015 U	0.0011 U	0.00093 U	0.00017 U	0.00094 U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.0055 U	0.00022 U	0.0054 U	0.00017 U	0.0067 U	0.00017 U	0.0045 U	0.007 U	0.016 U	0.0053 U	0.0046 U	0.00019 U	0.0047 U
1,4-Dioxane	123-91-1	0.1	13	0.044 U	0.045 U	0.044 U	0.035 U	0.053 U	0.035 U	0.036 U	0.056 U	3.4 U	0.043 U	0.037 U	0.038 U	0.037 U
2,2-Dichloropropane	594-20-7	NS	NS	0.0055 U	0.00026 U	0.0054 U	0.0002 U	0.0067 U	0.0002 U	0.0045 U	0.007 U	0.02 U	0.0053 U	0.0046 U	0.00022 U	0.0047 U
2-Butanone	78-93-3	0.12	100	0.011 U	0.0028 U	0.011 U	0.0022 U	0.013 U	0.0022 U	0.0091 U	0.014 U	0.22 U	0.011 U	0.0093 U	0.0024 U	0.0094 U
2-Hexanone	591-78-6	NS	NS	0.011 U	0.0015 U	0.011 U	0.0012 U	0.013 U	0.0012 U	0.0091 U	0.014 U	0.11 U	0.011 U	0.0093 U	0.0013 U	0.0094 U
4-Methyl-2-pentanone	108-10-1	NS	NS	0.011 U	0.0016 U	0.011 U	0.0013 U	0.013 U	0.0013 U	0.0091 U	0.014 U	0.12 U	0.011 U	0.0093 U	0.0014 U	0.0094 U
Acetone	67-64-1	0.05	100	0.0072 J	0.0061 U	0.011 U	0.015	0.013	0.0048 U	0.0091 U	0.0069 J	0.47 U	0.0042 J	0.0093 U	0.012	0.0094 U
Acrylonitrile	107-13-1	NS	NS	0.011 U	0.0015 U	0.011 U	0.0012 U	0.013 U	0.0012 U	0.0091 U	0.014 U	0.11 U	0.011 U	0.0093 U	0.0012 U	0.0094 U
Benzene	71-43-2	0.06	4.8	0.0011 U	0.00021 U	0.0011 U	0.00017 U	0.00033 J	0.00017 U	0.00091 U	0.0014 U	0.016 U	0.0011 U	0.00093 U	0.00018 U	0.00094 U
Bromobenzene	108-86-1	NS	NS	0.0055 U	0.00018 U	0.0054 U	0.00014 U	0.0067 U	0.00014 U	0.0045 U	0.007 U	0.014 U	0.0053 U	0.0046 U	0.00016 U	0.0047 U
Bromochloromethane	74-97-5	NS	NS	0.0055 U	0.00026 U	0.0054 U	0.00021 U	0.0067 U	0.00021 U	0.0045 U	0.007 U	0.02 U	0.0053 U	0.0046 U	0.00022 U	0.0047 U
Bromodichloromethane	75-27-4	NS	NS	0.0011 U	0.00014 U	0.0011 U	0.00011 U	0.0013 U	0.00011 U	0.00091 U	0.0014 U	0.01 U	0.0011 U	0.00093 U	0.00012 U	0.00094 U
Bromoform	75-25-2	NS	NS	0.0044 U	0.00031 U	0.0044 U	0.00025 U	0.0053 U	0.00025 U	0.0036 U	0.0056 U	0.024 U	0.0043 U	0.0037 U	0.00027 U	0.0037 U
Bromomethane	74-83-9	NS	NS	0.0022 U	0.00074 U	0.0022 U	0.00058 U	0.0027 U	0.00058 U	0.0018 U	0.0028 U	0.056 U	0.0021 U	0.0019 U	0.00063 U	0.0019 U
Carbon disulfide	75-15-0	NS	NS	0.011 U	0.0058 U	0.011 U	0.0046 U	0.013 U	0.0046 U	0.0091 U	0.014 U	0.44 U	0.011 U	0.0093 U	0.005 U	0.0094 U
Carbon tetrachloride	56-23-5	0.76	2.4	0.0011 U	0.00029 U	0.0011 U	0.00023 U	0.0013 U	0.00023 U	0.00091 U	0.0014 U	0.022 U	0.0011 U	0.00093 U	0.00025 U	0.00094 U
Chlorobenzene	108-90-7	1.1	100	0.0011 U	0.00016 U	0.0011 U	0.00013 U	0.0013 U	0.00013 U	0.00091 U	0.0014 U	0.012 U	0.0011 U	0.00093 U	0.00014 U	0.00094 U
Chloroethane	75-00-3	NS	NS	0.0022 U	0.00058 U	0.0022 U	0.00045 U	0.0027 U	0.00045 U	0.0018 U	0.0028 U	0.044 U	0.0021 U	0.0019 U	0.00049 U	0.0019 U
Chloroform	67-66-3	0.37	49	0.0016 U	0.00018 U	0.0016 U	0.00026 J	0.002 U	0.00014 U	0.0014 U	0.0021 U	0.014 U	0.0016 U	0.0014 U	0.00015 U	0.0014 U
Chloromethane	74-87-3	NS	NS	0.0055 U	0.0012 U	0.0054 U	0.00094 U	0.0067 U	0.00094 U	0.0045 U	0.007 U	0.09 U	0.0053 U	0.0046 U	0.001 U	0.0047 U
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.0011 U	0.00022 U	0.0011 U	0.00018 U	0.0013 U	0.00018 U	0.00091 U	0.0014 U	0.017 U	0.0011 U	0.00093 U	0.00019 U	0.00094 U
cis-1,3-Dichloropropene	10061-01-5	NS	NS	0.0011 U	0.0002 U	0.0011 U	0.00016 U	0.0013 U	0.00016 U	0.00091 U	0.0014 U	0.015 U	0.0011 U	0.00093 U	0.00017 U	0.00094 U
Dibromochloromethane	124-48-1	NS	NS	0.0011 U	0.00018 U	0.0011 U	0.00014 U	0.0013 U	0.00014 U	0.00091 U	0.0014 U	0.014 U	0.0011 U	0.00093 U	0.00015 U	0.00094 U
Dibromomethane	74-95-3	NS	NS	0.011 U	0.0003 U	0.011 U	0.00024 U	0.013 U	0.00024 U	0.0091 U	0.014 U	0.023 U	0.011 U	0.0093 U	0.00026 U	0.0094 U
Dichlorodifluoromethane	75-71-8	NS	NS	0.011 U	0.0012 U	0.011 U	0.00092 U	0.013 U	0.00092 U	0.0091 U	0.014 U	0.089 U	0.011 U	0.0093 U	0.001 U	0.0094 U
Ethyl ether	60-29-7	NS	NS	0.0055 U	0.00043 U	0.0054 U	0.00034 U	0.0067 U	0.00034 U	0.0045 U	0.007 U	0.033 U	0.0053 U	0.0046 U	0.00037 U	0.0047 U
Ethylbenzene	100-41-4	1	41	0.00027 J	0.00018 U	0.0011 U	0.00014 U	0.00031 J	0.00014 U	0.00091 U	0.0014 U	0.12	0.0011 U	0.00093 U	0.00066 J	0.00094 U
Hexachlorobutadiene	87-68-3	NS	NS	0.0055 U	0.00022 U	0.0054 U	0.00017 U	0.0067 U	0.00017 U	0.0045 U	0.007 U	0.016 U	0.0053 U	0.0046 U	0.00018 U	0.0047 U
Isopropylbenzene	98-82-8	NS	NS	0.0011 U	0.00014 U	0.0011 U	0.00011 U	0.0013 U	0.00011 U	0.00091 U	0.0014 U	0.012 J	0.0011 U	0.00093 U	0.00012 U	0.00094 U
Methyl tert butyl ether	1634-04-4	0.93	100	0.0022 U	0.00026 U	0.0022 U	0.0002 U	0.0027 U	0.0002 U	0.0018 U	0.0028 U	0.02 U	0.0021 U	0.0019 U	0.00022 U	0.0019 U
Methylene chloride	75-09-2	0.05	100	0.011 U	0.0029 U	0.011 U	0.0023 U	0.013 U	0.0023 U	0.0091 U	0.014 U	0.22 U	0.011 U	0.0093 U	0.0025 U	0.0094 U
n-Butylbenzene	104-51-8	12	100	0.0011 U	0.00021 U	0.0011 U	0.00017 U	0.0013 U	0.00017 U	0.00091 U	0.0014 U	0.016 U	0.0011 U	0.00093 U	0.00018 U	0.00094 U
n-Propylbenzene	103-65-1	3.9	100	0.00037 J	0.00022 U	0.00027 J	0.00017 U	0.00042 J	0.00017 U	0.00021 J	0.0014 U	0.029 J	0.0011 U	0.00093 U	0.00019 U	0.00094 U
Naphthalene	91-20-3	12	100	0.0055 U	0.00083 U	0.0054 U	0.00065 U	0.0067 U	0.00065 U	0.00014 J	0.00028 J	0.063 U	0.0053 U	0.0046 U	0.00071 U	0.0047 U
o-Chlorotoluene	95-49-8	NS	NS	0.0055 U	0.00024 U	0.0054 U	0.00019 U	0.0067 U	0.00019 U	0.0045 U	0.007 U	0.018 U	0.0053 U	0.0046 U	0.00021 U	0.0047 U
o-Xylene	95-47-6	NS	NS	0.0022 U	0.00037 U	0.0022 U	0.00029 U	0.0027 U	0.00029 U	0.0018 U	0.0028 U	0.33	0.0021 U	0.0019 U	0.0013	0.0019 U
p-Chlorotoluene	106-43-4	NS	NS	0.0055 U	0.00014 U	0.0054 U	0.00011 U	0.0067 U	0.00011 U	0.0045 U	0.007 U	0.01 U	0.0053 U	0.0046 U	0.00012 U	0.0047 U
p-Diethylbenzene	105-05-5	NS	NS	0.0044 U	0.00022 U	0.0044 U	0.00018 U	0.0053 U	0.00018 U	0.0036 U	0.0056 U	0.023 J	0.0043 U	0.0037 U	0.00019 U	0.0037 U
p-Ethyltoluene	622-96-8	NS	NS	0.0012 J	0.00049 U	0.00088 J	0.00039 U	0.0014 J	0.00039 U	0.00072 J	0.0011 J	0.037 U	0.00078 J	0.00062 J	0.00042 U	0.00059 J
p-Isopropyltoluene	99-87-6	NS	NS	0.0011 U	0.00014 U	0.0011 U	0.00011 U	0.0013 U	0.00011 U	0.00091 U	0.0014 U	0.01 U	0.0011 U	0.00093 U	0.00012 U	0.00094 U
p/m-Xylene	179601-23-1	NS	NS	0.00056 J	0.00071 U	0.00042 J	0.00056 U	0.00075 J	0.00084 J	0.0018 U	0.0028 U	0.82	0.0021 U	0.0019 U	0.0043	0.0019 U
sec-Butylbenzene	135-98-8	11	100	0.0011 U	0.00018 U	0.0011 U	0.00015 U	0.0013 U	0.00015 U	0.00091 U	0.0014 U	0.014 U	0.0011 U	0.00093 U	0.00016 U	0.00094 U
Styrene	100-42-5	NS	NS	0.0022 U	0.00025 U	0.0022 U	0.0002 U	0.0027 U	0.0002 U	0.0018 U	0.0028 U	0.019 U	0.0021 U	0.0019 U	0.00021 U	0.0019 U
tert-Butylbenzene	98-06-6	5.9	100	0.0055 U	0.00015 U	0.0054 U	0.00012 U	0.0067 U	0.00012 U	0.0045 U	0.007 U	0.011 U	0.0053 U	0.0046 U	0.00013 U	0.0047 U
Tetrachloroethene	127-18-4	1.3	19	0.0011 U	0.00025 U	0.0011 U	0.0002 U	0.0013 U	0.0002 U	0.00091 U	0.0014 U	0.019 U	0.0011 U	0.00093 U	0.00021 U	0.00094 U
Toluene	108-88-3	0.7	100	0.0016 U	0.00069 U	0.0016 U	0.00054 U	0.00034 J	0.00055 U	0.0014 U	0.0021 U	0.053 U	0.0016 U	0.0014 U	0.00059 U	0.0014 U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.0016 U	0.00017 U	0.0016 U	0.00014 U	0.002 U	0.00014 U	0.0014 U	0.0021 U	0.013 U	0.0016 U	0.0014 U	0.00015 U	0.0014 U
trans-1,3-Dichloropropene	10061-02-6	NS	NS	0.0011 U	0.00035 U	0.0011 U	0.00027 U	0.0013 U	0.00027 U	0.00091 U	0.0014 U	0.026 U	0.0011 U	0.00093 U	0.0003 U	0.00094 U
trans-1,4-Dichloro-2-butene	110-57-6	NS	NS	0.0055 U	0.0018 U	0.0054 U	0.0014 U	0.0067 U	0.0014 U	0.0045 U	0.007 U	0.14 U	0.0053 U	0.0046 U	0.0015 U	0.0047 U
Trichloroethene	79-01-6	0.47	21	0.0011 U	0.00017 U	0.0011 U	0.00014 U	0.0013 U	0.00014 U	0.00091 U	0.0014 U	0.013 U	0.0011 U	0.00093 U	0.00015 U	0.00094 U
Trichlorofluoromethane	75-69-4	NS	NS	0.0055 U	0.00088 U	0.0054 U	0.0007 U	0.0067 U	0.0007 U	0.0045 U	0.007 U	0.067 U	0.0053 U	0.0046 U	0.00076 U	0.0047 U
Vinyl acetate	108-05-4	NS	NS	0.011 U	0.0027 U	0.011 U	0.0022 U	0.013 U	0.0022 U	0.0091 U	0.014 U	0.21 U	0.011 U	0.0093 U	0.0023 U	0.0094 U
Vinyl chloride	75-01-4	0.02	0.9	0.0022 U	0.00043 U	0.0022 U	0.00034 U	0.0027 U	0.00034 U	0.0018 U	0.0028 U	0.032 U	0.0021 U	0.0019 U	0.00036 U	0.0019 U
Xylenes, Total	1330-20-7	0.26	100	0.00056 J	0.00037 U	0.00042 J	0.00029 U	0.00075 J	0.00084 J	0.0018 U	0.0028 U	1.2	0.0021 U	0.0019 U	0.0056	0.0019 U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Object
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Ol
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL)
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 2

Soil Sample Analaytical Data - Semi-Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB001 (0-2)	SB001 (3-5)	SB001 (8-10)	SB001 (11-13)	SB002 (0-2)	SB002 (2-4)	SB002 (7-9)	SB003 (0-2)	SB003 (2-4)	SB003 (7-9)	SB004 (0-2)	SB004 (3-5)	SB004 (7-9)	SB004 (10-12)	SB005 (0-2)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/11/2017	2/26/2019	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/11/2017	12/11/2017	2/26/2019	12/11/2017	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/14/2017
LAB SAMPLE ID			SCO[2]	L1745804-01	L1907512-01	L1745804-02	L1907308-05	L1745804-03	L1907308-06	L1745804-04	L1745804-05	L1907512-02	L1745804-06	L1745804-07	L1907308-02	L1745804-08	L1907308-03	L1746315-01
Semi-Volatile Organic Compounds																		
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	0.18 U	0.018 U	0.19 U	0.018 U	0.2 U	0.02 U	0.19 U	0.19 U	0.08 U	0.19 U	0.19 U	0.02 U	0.19 U	0.021 U	0.18 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.18 U	0.02 U	0.19 U	0.02 U	0.2 U	0.022 U	0.19 U	0.19 U	0.088 U	0.19 U	0.19 U	0.022 U	0.19 U	0.023 U	0.18 U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.18 U	0.032 U	0.19 U	0.031 U	0.2 U	0.034 U	0.19 U	0.19 U	0.14 U	0.19 U	0.19 U	0.035 U	0.19 U	0.036 U	0.18 U
1,3-Dichlorobenzene	541-73-1	2.4	49	0.18 U	0.03 U	0.19 U	0.03 U	0.2 U	0.033 U	0.19 U	0.19 U	0.13 U	0.19 U	0.19 U	0.034 U	0.19 U	0.035 U	0.18 U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.18 U	0.031 U	0.19 U	0.03 U	0.2 U	0.033 U	0.19 U	0.19 U	0.13 U	0.19 U	0.19 U	0.034 U	0.19 U	0.035 U	0.18 U
2,4,5-Trichlorophenol	95-95-4	NS	NS	0.18 U	0.034 U	0.19 U	0.033 U	0.2 U	0.037 U	0.19 U	0.19 U	0.15 U	0.19 U	0.19 U	0.038 U	0.19 U	0.039 U	0.18 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	0.11 U	0.034 U	0.11 U	0.033 U	0.12 U	0.036 U	0.11 U	0.12 U	0.14 U	0.11 U	0.11 U	0.037 U	0.11 U	0.038 U	0.11 U
2,4-Dichlorophenol	120-83-2	NS	NS	0.16 U	0.028 U	0.17 U	0.028 U	0.18 U	0.031 U	0.17 U	0.18 U	0.12 U	0.17 U	0.17 U	0.032 U	0.17 U	0.032 U	0.17 U
2,4-Dimethylphenol	105-67-9	NS	NS	0.18 U	0.059 U	0.19 U	0.057 U	0.2 U	0.063 U	0.19 U	0.19 U	0.25 U	0.19 U	0.19 U	0.065 U	0.19 U	0.067 U	0.18 U
2,4-Dinitrophenol	51-28-5	NS	NS	0.85 U	0.083 U	0.91 U	0.08 U	0.94 U	0.089 U	0.89 U	0.93 U	0.36 U	0.91 U	0.9 U	0.092 U	0.9 U	0.094 U	0.89 U
2,4-Dinitrotoluene	121-14-2	NS	NS	0.18 U	0.036 U	0.19 U	0.034 U	0.2 U	0.038 U	0.19 U	0.19 U	0.15 U	0.19 U	0.19 U	0.039 U	0.19 U	0.04 U	0.18 U
2,6-Dinitrotoluene	606-20-2	NS	NS	0.18 U	0.03 U	0.19 U	0.03 U	0.2 U	0.033 U	0.19 U	0.19 U	0.13 U	0.19 U	0.19 U	0.034 U	0.19 U	0.035 U	0.18 U
2-Chloronaphthalene	91-58-7	NS	NS	0.18 U	0.018 U	0.19 U	0.017 U	0.2 U	0.019 U	0.19 U	0.19 U	0.076 U	0.19 U	0.19 U	0.019 U	0.19 U	0.02 U	0.18 U
2-Chlorophenol	95-57-8	NS	NS	0.18 U	0.021 U	0.19 U	0.02 U	0.2 U	0.023 U	0.19 U	0.19 U	0.09 U	0.19 U	0.19 U	0.023 U	0.19 U	0.024 U	0.18 U
2-Methylnaphthalene	91-57-6	NS	NS	0.21 U	0.021 U	0.23 U	0.021 U	0.24 U	0.023 U	0.22 U	0.098 J	0.19 J	0.23 U	0.22 U	0.12 J	0.065 J	0.28	0.089 J
2-Methylphenol	95-48-7	0.33	100	0.18 U	0.028 U	0.19 U	0.027 U	0.2 U	0.03 U	0.19 U	0.19 U	0.12 U	0.19 U	0.19 U	0.03 U	0.19 U	0.031 U	0.18 U
2-Nitroaniline	88-74-4	NS	NS	0.18 U	0.034 U	0.19 U	0.033 U	0.2 U	0.037 U	0.19 U	0.19 U	0.15 U	0.19 U	0.19 U	0.038 U	0.19 U	0.039 U	0.18 U
2-Nitrophenol	88-75-5	NS	NS	0.38 U	0.067 U	0.41 U	0.065 U	0.42 U	0.072 U	0.4 U	0.42 U	0.29 U	0.41 U	0.4 U	0.074 U	0.41 U	0.076 U	0.4 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	0.18 U	0.047 U	0.19 U	0.046 U	0.2 U	0.051 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.052 U	0.19 U	0.054 U	0.18 U
3-Methylphenol/4-Methylphenol	108-39-4	0.33	100	0.26 U	0.028 U	0.27 U	0.027 U	0.28 U	0.03 U	0.27 U	0.28 U	0.12 U	0.27 U	0.27 U	0.031 U	0.27 U	0.032 U	0.27 U
3-Nitroaniline	99-09-2	NS	NS	0.18 U	0.034 U	0.19 U	0.033 U	0.2 U	0.036 U	0.19 U	0.19 U	0.14 U	0.19 U	0.19 U	0.037 U	0.19 U	0.038 U	0.18 U
4,6-Dinitro-o-cresol	534-52-1	NS	NS	0.46 U	0.085 U	0.49 U	0.083 U	0.51 U	0.092 U	0.48 U	0.5 U	0.37 U	0.49 U	0.49 U	0.094 U	0.49 U	0.097 U	0.48 U
4-Bromophenyl phenyl ether	101-55-3	NS	NS	0.18 U	0.027 U	0.19 U	0.026 U	0.2 U	0.029 U	0.19 U	0.19 U	0.12 U	0.19 U	0.19 U	0.03 U	0.19 U	0.031 U	0.18 U
4-Chloroaniline	106-47-8	NS	NS	0.18 U	0.032 U	0.19 U	0.031 U	0.2 U	0.035 U	0.19 U	0.19 U	0.14 U	0.19 U	0.19 U	0.036 U	0.19 U	0.037 U	0.18 U
4-Chlorophenyl phenyl ether	7005-72-3	NS	NS	0.18 U	0.019 U	0.19 U	0.018 U	0.2 U	0.02 U	0.19 U	0.19 U	0.082 U	0.19 U	0.19 U	0.021 U	0.19 U	0.022 U	0.18 U
4-Nitroaniline	100-01-6	NS	NS	0.18 U	0.074 U	0.19 U	0.072 U	0.2 U	0.079 U	0.19 U	0.19 U	0.32 U	0.19 U	0.19 U	0.081 U	0.19 U	0.084 U	0.18 U
4-Nitrophenol	100-02-7	NS	NS	0.25 U	0.072 U	0.26 U	0.07 U	0.27 U	0.078 U	0.26 U	0.27 U	0.31 U	0.26 U	0.26 U	0.08 U	0.26 U	0.082 U	0.26 U
Acenaphthene	83-32-9	20	100	0.14 U	0.018 U	0.15 U	0.018 U	0.16 U	0.02 U	0.15 U	0.04 J	0.094 J	0.15 U	0.15 U	0.06 J	0.043 J	0.021 U	0.16
Acenaphthylene	208-96-8	100	100	0.14 U	0.027 U	0.15 U	0.027 U	0.19	0.03 U	0.15 U	0.88	1.3	0.077 J	0.056 J	0.72	0.68	0.031 U	0.077 J
Acetophenone	98-86-2	NS	NS	0.18 U	0.022 U	0.19 U	0.021 U	0.2 U	0.024 U	0.19 U	0.19 U	0.095 U	0.19 U	0.19 U	0.024 U	0.063 J	0.025 U	0.18 U
Anthracene	120-12-7	100	100	0.11 U	0.035 U	0.11 U	0.034 U	0.11 J	0.037 U	0.11 U	0.54	1	0.062 J	0.11 U	0.6	0.51	0.039 U	0.42
Benzo(a)anthracene	56-55-3	1	1	0.11 U	0.02 U	0.11 U	0.019 U	0.34	0.031 J	0.11 U	1.4	3.4	0.12	0.1 J	2.2	1.2	0.081 J	1.5
Benzo(a)pyrene	50-32-8	1	1	0.14 U	0.043 U	0.15 U	0.042 U	0.31	0.047 U	0.15 U	1.2	3.1	0.16	0.1 J	1.6	0.93	0.049 J	1.4
Benzo(b)fluoranthene	205-99-2	1	1	0.11 U	0.032 J	0.11 U	0.029 U	0.4	0.032 U	0.11 U	1.6	4.2	0.24	0.14	2.5	1.3	0.075 J	1.8
Benzo(ghi)perylene	191-24-2	100	100	0.14 U	0.021 U	0.15 U	0.02 U	0.21	0.022 U	0.15 U	0.73	1.6	0.12 J	0.069 J	0.88	0.51	0.024 U	0.83
Benzo(k)fluoranthene	207-08-9	0.8	3.9	0.11 U	0.028 J	0.11 U	0.028 U	0.16	0.031 U	0.11 U	0.67	1.5	0.079 J	0.047 J	0.66	0.43	0.032 U	0.6
Benzoic Acid	65-85-0	NS	NS	0.58 U	0.18 U	0.61 U	0.17 U	0.64 U	0.19 U	0.6 U	0.63 U	0.78 U	0.61 U	0.61 U	0.2 U	0.61 U	0.2 U	0.6 U
Benzyl Alcohol	100-51-6	NS	NS	0.18 U	0.054 U	0.19 U	0.053 U	0.2 U	0.059 U	0.19 U	0.19 U	0.23 U	0.19 U	0.19 U	0.06 U	0.19 U	0.062 U	0.18 U
Biphenyl	92-52-4	NS	NS	0.4 U	0.041 U	0.43 U	0.04 U	0.45 U	0.044 U	0.42 U	0.44 U	0.18 U	0.43 U	0.43 U	0.046 U	0.43 U	0.047 U	0.42 U
Bis(2-chloroethoxy)methane	111-91-1	NS	NS	0.19 U	0.018 U	0.2 U	0.017 U	0.21 U	0.019 U	0.2 U	0.21 U	0.077 U	0.2 U	0.2 U	0.02 U	0.2 U	0.02 U	0.2 U
Bis(2-chloroethyl)ether	111-44-4	NS	NS	0.16 U	0.024 U	0.17 U	0.023 U	0.18 U	0.026 U	0.17 U	0.18 U	0.1 U	0.17 U	0.17 U	0.027 U	0.17 U	0.027 U	0.17 U
Bis(2-chloroisopropyl)ether	108-60-1	NS	NS	0.21 U	0.03 U	0.23 U	0.03 U	0.24 U	0.033 U	0.22 U	0.23 U	0.13 U	0.23 U	0.22 U	0.034 U	0.23 U	0.034 U	0.22 U
Bis(2-ethylhexyl)phthalate	117-81-7	NS	NS	0.18 U	0.061 U	0.19 U	0.06 U	0.2 U	0.066 U	0.19 U	0.19 U	0.26 U	0.083 J	0.19 U	0.099 J	0.19 U	0.07 U	0.18 U
Butyl benzyl phthalate	85-68-7	NS	NS	0.18 U	0.045 U	0.19 U	0.044 U	0.2 U	0.048 U	0.19 U	0.056 J	0.47 J	0.19 U	0.19 U	0.13 J	0.07 J	0.051 U	0.18 U
Carbazole	86-74-8	NS	NS	0.18 U	0.017 U	0.19 U	0.017 U	0.019 J	0.019 U	0.19 U	0.21	0.53 J	0.048 J	0.021 J	0.3	0.14 J	0.02 U	0.16 J
Chrysene	218-01-9	1	3.9	0.11 U	0.018 U	0.11 U	0.018 U	0.32	0.021 J	0.11 U	1.3	3	0.15	0.11	1.8	1.1	0.067 J	1.7
Di-n-butylphthalate	84-74-2	NS	NS	0.18 U	0.034 U	0.19 U	0.033 U	0.2 U	0.036 U	0.19 U	0.19 U	0.14 U	0.19 U	0.19 U	0.037 U	0.19 U	0.038 U	0.075 J
Di-n-octylphthalate	117-84-0	NS	NS	0.18 U	0.06 U	0.19 U	0.059 U	0.2 U	0.065 U	0.19 U	0.19 U	0.26 U	0.19 U	0.19 U	0.067 U	0.19 U	0.069 U	0.18 U
Dibenzo(a,h)anthracene	53-70-3	0.33	0.33	0.11 U	0.02 U	0.11 U	0.02 U	0.053 J	0.022 U	0.11 U	0.22	0.53	0.035 J	0.11 U	0.27	0.17	0.023 U	0.23
Dibenzofuran	132-64-9	7	59	0.18 U	0.017 U	0.19 U	0.016 U	0.2 U	0.018 U	0.19 U	0.12 J	0.44 J	0.19 U	0.19 U	0.19 J	0.11 J	0.019 U	0.069 J
Diethyl phthalate	84-66-2	NS	NS	0.18 U	0.016 U	0.19 U	0.016 U	0.2 U	0.018 U	0.19 U	0.19 U	0.071 U	0.19 U	0.19 U	0.018 U	0.19 U	0.019 U	0.18 U
Dimethyl phthalate	131-11-3	NS	NS	0.18 U	0.037 U	0.19 U	0.036 U	0.2 U	0.04 U	0.19 U	0.19 U	0.16 U	0.19 U	0.19 U	0.041 U	0.19 U	0.042 U	0.18 U
Fluoranthene	206-44-0	100	100	0.11 U	0.02 U	0.11 U	0.02 U	0.55	0.031 J	0.11 U	2.8	8.1	0.2	0.23	3.5	3	0.18	3.1
Fluorene	86-73-7	30	100	0.18 U	0.017 U	0.19 U	0.017 U	0.019 J	0.019 U	0.19 U	0.14 J	0.7 J	0.19 U	0.19 U	0.22	0.27	0.027 J	0.15 J
Hexachlorobenzene	118-74-1	0.33	1.2	0.11 U	0.02 U	0.11 U	0.019 U	0.12 U	0.021 U	0.11 U	0.12 U	0.086 U	0.11 U	0.11 U	0.022 U	0.11 U	0.023 U	0.11 U
Hexachlorobutadiene	87-68-3	NS	NS	0.18 U	0.026 U	0.19 U	0.025 U	0.2 U	0.028 U	0.19 U	0.19 U	0.11 U	0.19 U	0.19 U	0.029 U	0.19 U	0.03 U	0.18 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	0.51 U	0.16 U	0.54 U	0.16 U	0.56 U	0.17 U	0.53 U	0.56 U	0.69 U	0.54 U	0.54 U	0.18 U	0.54 U	0.18 U	0.53 U
Hexachloroethane	67-72-1	NS	NS	0.14 U	0.029 U	0.15 U	0.028 U	0.16 U	0.031 U	0.15 U	0.16 U	0.12 U	0.15 U	0.15 U	0.032 U	0.15 U	0.033 U	0.15 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	0.5	0.14 U	0.025 U	0.15 U	0.024 U	0.21	0.027 U	0.15 U	0.82	2.1	0.13 J	0.071 J	1.1	0.6	0.028 U	0.88
Isophorone	78-59-1	NS	NS	0.16 U	0.023 U	0.17 U	0.022 U	0.18 U	0.025 U	0.17 U	0.18 U	0.099 U	0.17 U	0.17 U	0.025 U	0.17 U	0.026 U	0.17 U
n-Nitrosodi-n-propylamine	621-64-7	NS	NS	0.18 U	0.027 U	0.19 U	0.027 U	0.2 U	0.03 U	0.19 U	0.19 U	0.12 U	0.19 U	0.19 U	0.03 U	0.19 U	0.031 U	0.18 U
Naphthalene	91-20-3	12	100	0.18 U	0.022 U	0.19 U	0.021 U	0.2 U	0.023 U	0.19 U	0.2	0.28 J	0.19 U	0.19 U	0.22	0.14 J	0.2	0.11 J
NDPA/DPA	86-30-6	NS	NS	0.14 U	0.02 U	0.15 U	0.02 U	0.16 U	0.022 U	0.15 U	0.16 U	0.087 U	0.15 U	0.15 U	0.022 U	0.15 U	0.023 U	0.15 U
Nitrobenzene	98-95-3	NS	NS	0.16 U	0.026 U	0.17 U	0.026 U	0.18 U	0.028 U	0.17 U	0.18 U	0.11 U	0.17 U	0.17 U	0.029 U	0.17 U	0.03 U	0.17 U
p-Chloro-m-cresol	59-50-7	NS	NS	0.18 U	0.026 U	0.19 U	0.026 U	0.2 U	0.028 U	0.19 U	0.19 U	0.11 U	0.19 U	0.19 U	0.029 U	0.19 U	0.03 U	0.18 U
Pentachlorophenol	87-86-5	0.8	6.7	0.14 U	0.039 U	0.15 U	0.038 U	0.16 U	0.042 U	0.15 U	0.16 U	0.17 U	0.15 U	0.15 U	0.043 U	0.15 U	0.044 U	0.15 U
Phenanthrene	85-01-8	100	100	0.11 U	0.022 U	0.11 U	0.021 U	0.26	0.023 J	0.11 U	1.5	6.2	0.11	0.11	2.6	1.9	0.11 J	2.2
Phenol	108-95-2	0.33	100	0.18 U	0.027 U	0.19 U	0.026 U	0.2 U	0.029 U	0.19 U	0.19 U	0.12 U	0.19 U	0.19 U	0.03 U	0.19 U	0.03 U	0.18 U
Pyrene	129-00-0	100	100	0.11 U	0.018 U	0.11 U	0.017 U	0.46	0.032 J	0.11 U	2.2	5.8	0.21	0.18	2.8	2.2	0.14	2.9

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 2

Soil Sample Analaytical Data - Semi-Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB005 (2-4)	SB005 (3-5)	SB005 (7-9)	SB006 (0-2)	SB006 (5-7)	SB006 (7.5-9.5)	SB006 (9-11)	SB007 (0-2)	SB007 (4-6)	SB007 (7-9)	SB007 (9-11)	SB008 (0-2)	SB008 (4-6)	SB008 (8-10)	SB008 (10-12)
SAMPLING DATE	Number	Use SCO[1]	Residential	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	2/25/2019	12/14/2017
LAB SAMPLE ID			SCO[2]	L1907512-03	L1746315-02	L1907512-04	L1746315-03	L1907512-05	L1746315-04	L1907512-06	L1746315-05	L1907512-07	L1746315-06	L1907512-08	L1746315-07	L1907512-09	L1907308-11	L1746315-08
Semi-Volatile Organic Compounds																		
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	0.021 U	0.2 U	0.019 U	0.19 U	0.02 U	0.19 U	0.02 U	0.19 U	0.021 U	0.18 U	0.019 U	0.18 U	0.02 U	0.018 U	0.19 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.023 U	0.2 U	0.021 U	0.19 U	0.022 U	0.19 U	0.021 U	0.19 U	0.023 U	0.18 U	0.021 U	0.18 U	0.022 U	0.02 U	0.19 U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.036 U	0.2 U	0.033 U	0.19 U	0.035 U	0.19 U	0.034 U	0.19 U	0.036 U	0.18 U	0.033 U	0.18 U	0.034 U	0.032 U	0.19 U
1,3-Dichlorobenzene	541-73-1	2.4	49	0.034 U	0.2 U	0.032 U	0.19 U	0.034 U	0.19 U	0.032 U	0.19 U	0.035 U	0.18 U	0.032 U	0.18 U	0.032 U	0.03 U	0.19 U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.035 U	0.2 U	0.032 U	0.19 U	0.034 U	0.19 U	0.033 U	0.19 U	0.035 U	0.18 U	0.032 U	0.18 U	0.033 U	0.031 U	0.19 U
2,4,5-Trichlorophenol	95-95-4	NS	NS	0.038 U	0.2 U	0.035 U	0.19 U	0.037 U	0.19 U	0.036 U	0.19 U	0.039 U	0.18 U	0.035 U	0.18 U	0.036 U	0.034 U	0.19 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	0.038 U	0.12 U	0.035 U	0.11 U	0.037 U	0.11 U	0.036 U	0.11 U	0.038 U	0.11 U	0.035 U	0.11 U	0.036 U	0.033 U	0.11 U
2,4-Dichlorophenol	120-83-2	NS	NS	0.032 U	0.18 U	0.03 U	0.17 U	0.031 U	0.17 U	0.03 U	0.17 U	0.032 U	0.16 U	0.03 U	0.16 U	0.03 U	0.028 U	0.17 U
2,4-Dimethylphenol	105-67-9	NS	NS	0.066 U	0.2 U	0.061 U	0.19 U	0.064 U	0.19 U	0.062 U	0.19 U	0.067 U	0.18 U	0.061 U	0.18 U	0.062 U	0.058 U	0.19 U
2,4-Dinitrophenol	51-28-5	NS	NS	0.094 U	0.95 U	0.086 U	0.92 U	0.091 U	0.89 U	0.087 U	0.91 U	0.094 U	0.88 U	0.086 U	0.88 U	0.088 U	0.082 U	0.9 U
2,4-Dinitrotoluene	121-14-2	NS	NS	0.04 U	0.2 U	0.037 U	0.19 U	0.039 U	0.19 U	0.038 U	0.19 U	0.04 U	0.18 U	0.037 U	0.18 U	0.038 U	0.035 U	0.19 U
2,6-Dinitrotoluene	606-20-2	NS	NS	0.034 U	0.2 U	0.032 U	0.19 U	0.033 U	0.19 U	0.032 U	0.19 U	0.035 U	0.18 U	0.032 U	0.18 U	0.032 U	0.03 U	0.19 U
2-Chloronaphthalene	91-58-7	NS	NS	0.02 U	0.2 U	0.018 U	0.19 U	0.019 U	0.19 U	0.019 U	0.19 U	0.02 U	0.18 U	0.018 U	0.18 U	0.019 U	0.017 U	0.19 U
2-Chlorophenol	95-57-8	NS	NS	0.024 U	0.2 U	0.022 U	0.19 U	0.023 U	0.19 U	0.022 U	0.19 U	0.024 U	0.18 U	0.022 U	0.18 U	0.022 U	0.021 U	0.19 U
2-Methylnaphthalene	91-57-6	NS	NS	0.037 J	0.24 U	0.022 U	0.084 J	0.024 U	0.22 U	0.023 U	0.12 J	0.024 U	0.22 U	0.022 U	0.074 J	0.023 U	0.021 U	0.22 U
2-Methylphenol	95-48-7	0.33	100	0.031 U	0.2 U	0.028 U	0.19 U	0.03 U	0.19 U	0.029 U	0.19 U	0.031 U	0.18 U	0.028 U	0.18 U	0.029 U	0.027 U	0.19 U
2-Nitroaniline	88-74-4	NS	NS	0.039 U	0.2 U	0.035 U	0.19 U	0.038 U	0.19 U	0.036 U	0.19 U	0.039 U	0.18 U	0.035 U	0.18 U	0.036 U	0.034 U	0.19 U
2-Nitrophenol	88-75-5	NS	NS	0.075 U	0.43 U	0.069 U	0.41 U	0.073 U	0.4 U	0.07 U	0.41 U	0.076 U	0.4 U	0.069 U	0.39 U	0.071 U	0.066 U	0.4 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	0.053 U	0.2 U	0.049 U	0.19 U	0.052 U	0.19 U	0.05 U	0.19 U	0.054 U	0.18 U	0.049 U	0.18 U	0.05 U	0.047 U	0.19 U
3-Methylphenol/4-Methylphenol	108-39-4	0.33	100	0.031 U	0.28 U	0.029 U	0.27 U	0.03 U	0.27 U	0.029 U	0.27 U	0.032 U	0.26 U	0.029 U	0.26 U	0.029 U	0.028 U	0.27 U
3-Nitroaniline	99-09-2	NS	NS	0.038 U	0.2 U	0.035 U	0.19 U	0.037 U	0.19 U	0.035 U	0.19 U	0.038 U	0.18 U	0.035 U	0.18 U	0.035 U	0.033 U	0.19 U
4,6-Dinitro-o-cresol	534-52-1	NS	NS	0.096 U	0.52 U	0.088 U	0.5 U	0.094 U	0.48 U	0.09 U	0.49 U	0.097 U	0.48 U	0.088 U	0.47 U	0.09 U	0.084 U	0.49 U
4-Bromophenyl phenyl ether	101-55-3	NS	NS	0.031 U	0.2 U	0.028 U	0.19 U	0.03 U	0.19 U	0.029 U	0.19 U	0.031 U	0.18 U	0.028 U	0.18 U	0.029 U	0.027 U	0.19 U
4-Chloroaniline	106-47-8	NS	NS	0.036 U	0.2 U	0.034 U	0.19 U	0.036 U	0.19 U	0.034 U	0.19 U	0.037 U	0.18 U	0.033 U	0.18 U	0.034 U	0.032 U	0.19 U
4-Chlorophenyl phenyl ether	7005-72-3	NS	NS	0.021 U	0.2 U	0.02 U	0.19 U	0.021 U	0.19 U	0.02 U	0.19 U	0.022 U	0.18 U	0.02 U	0.18 U	0.02 U	0.019 U	0.19 U
4-Nitroaniline	100-01-6	NS	NS	0.083 U	0.2 U	0.076 U	0.19 U	0.081 U	0.19 U	0.078 U	0.089 J	0.084 U	0.18 U	0.076 U	0.18 U	0.078 U	0.073 U	0.19 U
4-Nitrophenol	100-02-7	NS	NS	0.082 U	0.28 U	0.075 U	0.27 U	0.08 U	0.26 U	0.076 U	0.26 U	0.083 U	0.26 U	0.075 U	0.26 U	0.077 U	0.072 U	0.26 U
Acenaphthene	83-32-9	20	100	0.049 J	0.16 U	0.019 U	0.062 J	0.02 U	0.15 U	0.019 U	0.1 J	0.062 J	0.15 U	0.019 U	0.15 U	0.019 U	0.018 U	0.15 U
Acenaphthylene	208-96-8	100	100	0.066 J	0.16 U	0.028 U	0.078 J	0.03 U	0.15 U	0.029 U	0.29	0.069 J	0.15 U	0.028 U	0.095 J	0.029 U	0.027 U	0.15 U
Acetophenone	98-86-2	NS	NS	0.025 U	0.2 U	0.023 U	0.19 U	0.024 U	0.19 U	0.023 U	0.19 U	0.025 U	0.18 U	0.023 U	0.18 U	0.023 U	0.022 U	0.19 U
Anthracene	120-12-7	100	100	0.093 J	0.12 U	0.036 U	0.18	0.038 U	0.11 U	0.037 U	0.4	0.16	0.11 U	0.036 U	0.066 J	0.037 U	0.034 U	0.11 U
Benzo(a)anthracene	56-55-3	1	1	0.39	0.058 J	0.021 U	0.85	0.022 U	0.11 U	0.021 U	1.4	0.66	0.11 U	0.021 U	0.32	0.022 J	0.02 U	0.11 U
Benzo(a)pyrene	50-32-8	1	1	0.39	0.053 J	0.045 U	0.8	0.048 U	0.15 U	0.046 U	1.4	0.68	0.15 U	0.045 U	0.36	0.05 J	0.043 U	0.15 U
Benzo(b)fluoranthene	205-99-2	1	1	0.49	0.063 J	0.031 U	1	0.033 U	0.11 U	0.032 J	1.7	0.79	0.11 U	0.031 U	0.5	0.052 J	0.03 U	0.11 U
Benzo(ghi)perylene	191-24-2	100	100	0.22	0.035 J	0.022 U	0.5	0.023 U	0.15 U	0.022 U	0.81	0.38	0.15 U	0.022 U	0.26	0.026 J	0.021 U	0.15 U
Benzo(k)fluoranthene	207-08-9	0.8	3.9	0.18	0.12 U	0.029 J	0.37	0.031 U	0.11 U	0.03 U	0.64	0.28	0.11 U	0.029 U	0.16	0.034 J	0.028 U	0.11 U
Benzoic Acid	65-85-0	NS	NS	0.2 U	0.64 U	0.19 U	0.62 U	0.2 U	0.6 U	0.19 U	0.61 U	0.2 U	0.59 U	0.19 U	0.59 U	0.19 U	0.18 U	0.61 U
Benzyl Alcohol	100-51-6	NS	NS	0.061 U	0.2 U	0.056 U	0.19 U	0.06 U	0.19 U	0.057 U	0.19 U	0.062 U	0.18 U	0.056 U	0.18 U	0.058 U	0.054 U	0.19 U
Biphenyl	92-52-4	NS	NS	0.046 U	0.45 U	0.043 U	0.44 U	0.045 U	0.42 U	0.044 U	0.43 U	0.047 U	0.42 U	0.043 U	0.42 U	0.044 U	0.041 U	0.43 U
Bis(2-chloroethoxy)methane	111-91-1	NS	NS	0.02 U	0.21 U	0.018 U	0.21 U	0.02 U	0.2 U	0.019 U	0.2 U	0.02 U	0.2 U	0.018 U	0.2 U	0.019 U	0.018 U	0.2 U
Bis(2-chloroethyl)ether	111-44-4	NS	NS	0.027 U	0.18 U	0.025 U	0.17 U	0.026 U	0.17 U	0.025 U	0.17 U	0.027 U	0.16 U	0.025 U	0.16 U	0.025 U	0.024 U	0.17 U
Bis(2-chloroisopropyl)ether	108-60-1	NS	NS	0.034 U	0.24 U	0.031 U	0.23 U	0.033 U	0.22 U	0.032 U	0.23 U	0.034 U	0.22 U	0.031 U	0.22 U	0.032 U	0.03 U	0.22 U
Bis(2-ethylhexyl)phthalate	117-81-7	NS	NS	0.069 U	0.2 U	0.064 U	0.19 U	0.068 U	0.19 U	0.065 U	0.19 U	0.07 U	0.18 U	0.064 U	0.18 U	0.065 U	0.061 U	0.19 U
Butyl benzyl phthalate	85-68-7	NS	NS	0.05 U	0.2 U	0.046 U	0.19 U	0.049 U	0.19 U	0.047 U	0.19 U	0.051 U	0.18 U	0.046 U	0.18 U	0.047 U	0.044 U	0.19 U
Carbazole	86-74-8	NS	NS	0.049 J	0.2 U	0.018 U	0.091 J	0.019 U	0.19 U	0.018 U	0.23	0.074 J	0.18 U	0.018 U	0.027 J	0.018 U	0.017 U	0.19 U
Chrysene	218-01-9	1	3.9	0.38	0.058 J	0.019 U	0.89	0.02 U	0.11 U	0.02 U	1.5	0.62	0.11 U	0.019 U	0.36	0.02 U	0.018 U	0.11 U
Di-n-butylphthalate	84-74-2	NS	NS	0.038 U	0.2 U	0.035 U	0.19 U	0.037 U	0.19 U	0.036 U	0.19 U	0.038 U	0.18 U	0.035 U	0.18 U	0.036 U	0.033 U	0.19 U
Di-n-octylphthalate	117-84-0	NS	NS	0.068 U	0.2 U	0.062 U	0.19 U	0.066 U	0.19 U	0.064 U	0.19 U	0.069 U	0.18 U	0.062 U	0.18 U	0.064 U	0.06 U	0.19 U
Dibenzo(a,h)anthracene	53-70-3	0.33	0.33	0.071 J	0.12 U	0.021 U	0.14	0.022 U	0.11 U	0.022 U	0.22	0.082 J	0.11 U	0.021 U	0.07 J	0.022 U	0.02 U	0.11 U
Dibenzofuran	132-64-9	7	59	0.048 J	0.2 U	0.017 U	0.036 J	0.018 U	0.19 U	0.018 U	0.13 J	0.045 J	0.18 U	0.017 U	0.025 J	0.018 U	0.017 U	0.19 U
Diethyl phthalate	84-66-2	NS	NS	0.018 U	0.2 U	0.017 U	0.19 U	0.018 U	0.19 U	0.017 U	0.19 U	0.019 U	0.18 U	0.017 U	0.18 U	0.017 U	0.016 U	0.19 U
Dimethyl phthalate	131-11-3	NS	NS	0.042 U	0.2 U	0.039 U	0.19 U	0.041 U	0.19 U	0.039 U	0.19 U	0.042 U	0.18 U	0.039 U	0.18 U	0.039 U	0.037 U	0.19 U
Fluoranthene	206-44-0	100	100	0.62	0.11 J	0.021 U	1.6	0.022 U	0.11 U	0.022 U	2.9	1.8	0.11 U	0.021 U	0.51	0.022 U	0.02 U	0.11 U
Fluorene	86-73-7	30	100	0.086 J	0.2 U	0.018 U	0.071 J	0.019 U	0.19 U	0.018 U	0.24	0.11 J	0.18 U	0.018 U	0.18 U	0.018 U	0.017 U	0.19 U
Hexachlorobenzene	118-74-1	0.33	1.2	0.022 U	0.12 U	0.021 U	0.11 U	0.022 U	0.11 U	0.021 U	0.11 U	0.023 U	0.11 U	0.02 U	0.11 U	0.021 U	0.02 U	0.11 U
Hexachlorobutadiene	87-68-3	NS	NS	0.029 U	0.2 U	0.027 U	0.19 U	0.028 U	0.19 U	0.027 U	0.19 U	0.03 U	0.18 U	0.027 U	0.18 U	0.028 U	0.026 U	0.19 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	0.18 U	0.57 U	0.17 U	0.54 U	0.18 U	0.53 U	0.17 U	0.54 U	0.18 U	0.52 U	0.17 U	0.52 U	0.17 U	0.16 U	0.54 U
Hexachloroethane	67-72-1	NS	NS	0.032 U	0.16 U	0.03 U	0.15 U	0.032 U	0.15 U	0.03 U	0.15 U	0.033 U	0.15 U	0.03 U	0.15 U	0.03 U	0.028 U	0.15 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	0.5	0.26	0.039 J	0.026 U	0.54	0.027 U	0.15 U	0.026 U	0.9	0.44	0.15 U	0.026 U	0.28	0.032 J	0.024 U	0.15 U
Isophorone	78-59-1	NS	NS	0.026 U	0.18 U	0.024 U	0.17 U	0.025 U	0.17 U	0.024 U	0.17 U	0.026 U	0.16 U	0.024 U	0.16 U	0.024 U	0.023 U	0.17 U
n-Nitrosodi-n-propylamine	621-64-7	NS	NS	0.031 U	0.2 U	0.028 U	0.19 U	0.03 U	0.19 U	0.029 U	0.19 U	0.031 U	0.18 U	0.028 U	0.18 U	0.029 U	0.027 U	0.19 U
Naphthalene	91-20-3	12	100	0.16 J	0.2 U	0.022 U	0.083 J	0.024 U	0.19 U	0.023 U	0.2	0.04 J	0.18 U	0.022 U	0.082 J	0.023 U	0.021 U	0.19 U
NDPA/DPA	86-30-6	NS	NS	0.044 J	0.16 U	0.021 U	0.15 U	0.022 U	0.15 U	0.021 U	0.15 U	0.023 U	0.15 U	0.021 U	0.15 U	0.021 U	0.02 U	0.15 U
Nitrobenzene	98-95-3	NS	NS	0.03 U	0.18 U	0.027 U	0.17 U	0.029 U	0.17 U	0.028 U	0.17 U	0.03 U	0.16 U	0.027 U	0.16 U	0.028 U	0.026 U	0.17 U
p-Chloro-m-cresol	59-50-7	NS	NS	0.03 U	0.2 U	0.027 U	0.19 U	0.029 U	0.19 U	0.028 U	0.19 U	0.03 U	0.18 U	0.027 U	0.18 U	0.028 U	0.026 U	0.19 U
Pentachlorophenol	87-86-5	0.8	6.7	0.044 U	0.16 U	0.04 U	0.15 U	0.043 U	0.15 U	0.041 U	0.15 U	0.044 U	0.15 U	0.04 U	0.15 U	0.041 U	0.039 U	0.15 U
Phenanthrene	85-01-8	100	100	0.45	0.069 J	0.022 U	0.85	0.024 U	0.11 U	0.023 U	2.2	1.4	0.11 U	0.022 U	0.18	0.023 U	0.021 U	0.11 U
Phenol	108-95-2	0.33	100	0.03 U	0.2 U	0.028 U	0.19 U	0.029 U	0.19 U	0.028 U	0.19 U	0.03 U	0.18 U	0.028 U	0.18 U	0.028 U	0.026 U	0.19 U
Pyrene	129-00-0	100	100	0.55	0.088 J	0.018 U	1.4	0.019 U	0.11 U	0.019 U	2.5	1.5	0.11 U	0.018 U	0.48	0.021 J	0.017 U	0.11 U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Object
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup O
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL)
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 2

Soil Sample Analaytical Data - Semi-Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB008 (13-15)		SB009 (0-2)		SB009 (4-6)		SB009 (7-9)		SB009 (10-12)		SB010 (0-2)		SB010 (5-7)		SB010 (7-9)		SB011 (0-2)		SB011 (3-5)		SB011 (5-7)		SB012 (0-2)		SB012 (2-4)		SB012 (6-8)	
SAMPLING DATE	Number	Use SCO[1]	Residential	2/25/2019		12/14/2017		2/26/2019		12/14/2017		2/26/2019		12/14/2017		2/25/2019		12/14/2017		12/14/2017		2/25/2019		12/14/2017		12/14/2017		2/25/2019		12/14/2017	
LAB SAMPLE ID			SCO[2]	L1907308-12		L1746315-09		L1907512-10		L1746315-10		L1907512-11		L1746315-11		L1907308-09		L1746315-12		L1746315-13		L1907308-08		L1746315-14		L1746315-15		L1907308-07		L1746315-16	
Semi-Volatile Organic Compounds																															
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	0.019	U	0.19	U	0.021	U	0.19	U	0.02	U	0.21	U	0.02	U	0.19	U	0.19	U	0.02	U	0.18	U	0.19	U	0.021	U	0.18	U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	0.021	U	0.19	U	0.023	U	0.19	U	0.022	U	0.21	U	0.021	U	0.19	U	0.19	U	0.022	U	0.18	U	0.19	U	0.023	U	0.18	U
1,2-Dichlorobenzene	95-50-1	1.1	100	0.033	U	0.19	U	0.036	U	0.19	U	0.034	U	0.21	U	0.034	U	0.19	U	0.19	U	0.034	U	0.18	U	0.19	U	0.036	U	0.18	U
1,3-Dichlorobenzene	541-73-1	2.4	49	0.032	U	0.19	U	0.034	U	0.19	U	0.032	U	0.21	U	0.032	U	0.19	U	0.19	U	0.033	U	0.18	U	0.19	U	0.035	U	0.18	U
1,4-Dichlorobenzene	106-46-7	1.8	13	0.032	U	0.19	U	0.035	U	0.19	U	0.033	U	0.21	U	0.033	U	0.19	U	0.19	U	0.034	U	0.18	U	0.19	U	0.035	U	0.18	U
2,4,5-Trichlorophenol	95-95-4	NS	NS	0.035	U	0.19	U	0.038	U	0.19	U	0.036	U	0.21	U	0.036	U	0.19	U	0.19	U	0.037	U	0.18	U	0.19	U	0.039	U	0.18	U
2,4,6-Trichlorophenol	88-06-2	NS	NS	0.035	U	0.11	U	0.038	U	0.11	U	0.036	U	0.12	U	0.035	U	0.11	U	0.11	U	0.036	U	0.11	U	0.11	U	0.038	U	0.11	U
2,4-Dichlorophenol	120-83-2	NS	NS	0.03	U	0.17	U	0.032	U	0.17	U	0.03	U	0.19	U	0.03	U	0.17	U	0.17	U	0.031	U	0.16	U	0.17	U	0.033	U	0.16	U
2,4-Dimethylphenol	105-67-9	NS	NS	0.061	U	0.19	U	0.066	U	0.19	U	0.062	U	0.21	U	0.062	U	0.19	U	0.19	U	0.063	U	0.18	U	0.19	U	0.067	U	0.18	U
2,4-Dinitrophenol	51-28-5	NS	NS	0.086	U	0.9	U	0.093	U	0.9	U	0.088	U	0.99	U	0.087	U	0.9	U	0.9	U	0.089	U	0.85	U	0.91	U	0.094	U	0.86	U
2,4-Dinitrotoluene	121-14-2	NS	NS	0.037	U	0.19	U	0.04	U	0.19	U	0.038	U	0.21	U	0.037	U	0.19	U	0.19	U	0.038	U	0.18	U	0.19	U	0.04	U	0.18	U
2,6-Dinitrotoluene	606-20-2	NS	NS	0.032	U	0.19	U	0.034	U	0.19	U	0.032	U	0.21	U	0.032	U	0.19	U	0.19	U	0.033	U	0.18	U	0.19	U	0.035	U	0.18	U
2-Chloronaphthalene	91-58-7	NS	NS	0.018	U	0.19	U	0.02	U	0.19	U	0.019	U	0.21	U	0.018	U	0.19	U	0.19	U	0.019	U	0.18	U	0.19	U	0.02	U	0.18	U
2-Chlorophenol	95-57-8	NS	NS	0.022	U	0.19	U	0.024	U	0.19	U	0.022	U	0.21	U	0.022	U	0.19	U	0.19	U	0.023	U	0.18	U	0.19	U	0.024	U	0.18	U
2-Methylnaphthalene	91-57-6	NS	NS	0.022	U	0.27		0.024	U	0.22	U	0.023	U	0.049	J	0.022	U	0.22	U	0.024	J	0.036	J	0.21	U	0.23	U	0.024	U	0.22	U
2-Methylphenol	95-48-7	0.33	100	0.028	U	0.19	U	0.031	U	0.19	U	0.029	U	0.21	U	0.029	U	0.19	U	0.19	U	0.03	U	0.18	U	0.19	U	0.031	U	0.18	U
2-Nitroaniline	88-74-4	NS	NS	0.036	U	0.19	U	0.038	U	0.19	U	0.036	U	0.21	U	0.036	U	0.19	U	0.19	U	0.037	U	0.18	U	0.19	U	0.039	U	0.18	U
2-Nitrophenol	88-75-5	NS	NS	0.069	U	0.41	U	0.075	U	0.4	U	0.071	U	0.45	U	0.07	U	0.4	U	0.4	U	0.072	U	0.38	U	0.41	U	0.076	U	0.39	U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	0.049	U	0.19	U	0.053	U	0.19	U	0.05	U	0.21	U	0.05	U	0.19	U	0.19	U	0.051	U	0.18	U	0.19	U	0.054	U	0.18	U
3-Methylphenol/4-Methylphenol	108-39-4	0.33	100	0.029	U	0.27	U	0.031	U	0.27	U	0.03	U	0.3	U	0.029	U	0.27	U	0.27	U	0.03	U	0.25	U	0.27	U	0.032	U	0.26	U
3-Nitroaniline	99-09-2	NS	NS	0.035	U	0.19	U	0.038	U	0.19	U	0.036	U	0.21	U	0.035	U	0.19	U	0.19	U	0.036	U	0.18	U	0.19	U	0.038	U	0.18	U
4,6-Dinitro-o-cresol	534-52-1	NS	NS	0.088	U	0.49	U	0.096	U	0.49	U	0.091	U	0.54	U	0.09	U	0.48	U	0.48	U	0.092	U	0.46	U	0.49	U	0.097	U	0.47	U
4-Bromophenyl phenyl ether	101-55-3	NS	NS	0.028	U	0.19	U	0.03	U	0.19	U	0.029	U	0.21	U	0.028	U	0.19	U	0.19	U	0.029	U	0.18	U	0.19	U	0.031	U	0.18	U
4-Chloroaniline	106-47-8	NS	NS	0.034	U	0.19	U	0.036	U	0.19	U	0.034	U	0.21	U	0.034	U	0.19	U	0.19	U	0.035	U	0.18	U	0.19	U	0.037	U	0.18	U
4-Chlorophenyl phenyl ether	7005-72-3	NS	NS	0.02	U	0.19	U	0.021	U	0.19	U	0.02	U	0.21	U	0.02	U	0.19	U	0.19	U	0.02	U	0.18	U	0.19	U	0.022	U	0.18	U
4-Nitroaniline	100-01-6	NS	NS	0.076	U	0.19	U	0.082	U	0.19	U	0.078	U	0.091	J	0.077	U	0.19	U	0.19	U	0.079	U	0.18	U	0.19	U	0.084	U	0.18	U
4-Nitrophenol	100-02-7	NS	NS	0.075	U	0.26	U	0.081	U	0.26	U	0.077	U	0.29	U	0.076	U	0.26	U	0.26	U	0.078	U	0.25	U	0.26	U	0.083	U	0.25	U
Acenaphthene	83-32-9	20	100	0.019	U	0.15	U	0.022	J	0.15	U	0.02	U	0.025	J	0.019	U	0.15	U	0.15	U	0.044	J	0.14	U	0.025	J	0.021	U	0.14	U
Acenaphthylene	208-96-8	100	100	0.028	U	0.074	J	0.031	U	0.15	U	0.029	U	0.4		0.029	U	0.15	U	0.059	J	0.22		0.14	U	0.12	J	0.031	U	0.14	U
Acetophenone	98-86-2	NS	NS	0.023	U	0.091	J	0.025	U	0.19	U	0.023	U	0.056	J	0.023	U	0.19	U	0.19	U	0.024	U	0.18	U	0.19	U	0.025	U	0.18	U
Anthracene	120-12-7	100	100	0.036	U	0.082	J	0.071	J	0.11	U	0.037	U	0.29		0.036	U	0.11	U	0.037	J	0.29		0.11	U	0.1	J	0.04	U	0.11	U
Benzo(a)anthracene	56-55-3	1	1	0.021	U	0.42		0.42		0.11	U	0.021	U	1.4		0.021	U	0.11	U	0.11		1.3		0.11	U	0.54		0.05	J	0.11	U
Benzo(a)pyrene	50-32-8	1	1	0.045	U	0.34		0.46		0.15	U	0.046	U	1.4		0.046	U	0.15	U	0.13	J	1.1		0.14	U	0.52		0.049	U	0.14	U
Benzo(b)fluoranthene	205-99-2	1	1	0.031	U	0.52		0.55		0.11	U	0.032	J	1.8		0.031	U	0.11	U	0.18		1.5		0.11	U	0.74		0.059	J	0.11	U
Benzo(ghi)perylene	191-24-2	100	100	0.022	U	0.21		0.3		0.15	U	0.022	U	1		0.022	U	0.15	U	0.18		0.78		0.14	U	0.41		0.024	U	0.14	U
Benzo(k)fluoranthene	207-08-9	0.8	3.9	0.029	U	0.16		0.2		0.11	U	0.03	U	0.69		0.03	U	0.11	U	0.063	J	0.4		0.11	U	0.23		0.032	U	0.11	U
Benzoic Acid	65-85-0	NS	NS	0.19	U	0.61	U	0.2	U	0.61	U	0.19	U	0.67	U	0.19	U	0.6	U	0.6	U	0.19	U	0.57	U	0.61	U	0.2	U	0.58	U
Benzyl Alcohol	100-51-6	NS	NS	0.056	U	0.19	U	0.061	U	0.19	U	0.058	U	0.21	U	0.057	U	0.19	U	0.19	U	0.059	U	0.18	U	0.19	U	0.062	U	0.18	U
Biphenyl	92-52-4	NS	NS	0.043	U	0.046	J	0.046	U	0.43	U	0.044	U	0.47	U	0.043	U	0.42	U	0.43	U	0.044	U	0.4	U	0.43	U	0.047	U	0.41	U
Bis(2-chloroethoxy)methane	111-91-1	NS	NS	0.018	U	0.2	U	0.02	U	0.2	U	0.019	U	0.22	U	0.019	U	0.2	U	0.2	U	0.019	U	0.19	U	0.2	U	0.02	U	0.19	U
Bis(2-chloroethyl)ether	111-44-4	NS	NS	0.025	U	0.17	U	0.027	U	0.17	U	0.026	U	0.19	U	0.025	U	0.17	U	0.17	U	0.026	U	0.16	U	0.17	U	0.028	U	0.16	U
Bis(2-chloroisopropyl)ether	108-60-1	NS	NS	0.031	U	0.22	U	0.034	U	0.22	U	0.032	U	0.25	U	0.032	U	0.22	U	0.22	U	0.033	U	0.21	U	0.23	U	0.035	U	0.22	U
Bis(2-ethylhexyl)phthalate	117-81-7	NS	NS	0.064	U	0.077	J	0.069	U	0.19	U	0.065	U	2		0.065	U	0.19	U	0.19	U	0.086	J	0.18	U	0.19	U	0.07	U	0.18	U
Butyl benzyl phthalate	85-68-7	NS	NS	0.046	U	0.19	U	0.05	U	0.19	U	0.048	U	0.59		0.047	U	0.19	U	0.31		0.048	U	0.18	U	0.19	U	0.051	U	0.18	U
Carbazole	86-74-8	NS	NS	0.018	U	0.023	J	0.032	J	0.19	U	0.018	U	0.11	J	0.018	U	0.19	U	0.19	U	0.12	J	0.18	U	0.053	J	0.02	U	0.18	U
Chrysene	218-01-9	1	3.9	0.019	U	0.58		0.4		0.11	U	0.02	U	1.5		0.019	U	0.11	U	0.13		1.3		0.11	U	0.62		0.038	J	0.11	U
Di-n-butylphthalate	84-74-2	NS	NS	0.035	U	0.19	U	0.038	U	0.19	U	0.036	U	0.075	J	0.035	U	0.19	U	0.19	U	0.036	U	0.18	U	0.19	U	0.038	U	0.18	U
Di-n-octylphthalate	117-84-0	NS	NS	0.063	U	0.19	U	0.068	U	0.19	U	0.064	U	0.21	U	0.064	U	0.19	U	0.19	U	0.065	U	0.18	U	0.19	U	0.069	U	0.18	U
Dibenzo(a,h)anthracene	53-70-3	0.33	0.33	0.021	U	0.075	J	0.11	J	0.11	U	0.022	U	0.26		0.022	U	0.11	U	0.11	U	0.18		0.11	U	0.11		0.023	U	0.11	U
Dibenzofuran	132-64-9	7	59	0.017	U	0.04	J	0.019	U	0.19	U	0.018	U	0.023	J	0.018	U	0.19	U	0.19	U	0.044	J	0.18	U	0.19	U	0.019	U	0.18	U
Diethyl phthalate	84-66-2	NS	NS	0.017	U	0.19	U	0.018	U	0.19	U	0.017	U	0.21	U	0.017	U	0.19	U	0.19	U	0.018	U	0.18	U	0.19	U	0.019	U	0.18	U
Dimethyl phthalate	131-11-3	NS	NS	0.039	U	0.19	U	0.042	U	0.19	U	0.04	U	0.87		0.039	U	0.19	U	0.19	U	0.04	U	0.18	U	0.19	U	0.043	U	0.18	U
Fluoranthene	206-44-0	100	100	0.021	U	0.63		0.62		0.11	U	0.022	U	2.1		0.022	J	0.11	U	0.16		1.8		0.11	U	0.97		0.062	J	0.11	U
Fluorene	86-73-7	30	100	0.018	U	0.19	U	0.022	J	0.19	U	0.018	U	0.051	J	0.018	U	0.19	U	0.19	U	0.08	J	0.18	U	0.025	J	0.02	U	0.18	U
Hexachlorobenzene	118-74-1	0.33	1.2	0.021	U	0.11	U	0.022	U	0.11	U	0.021	U	0.12	U	0.021	U	0.11	U	0.11	U	0.022	U	0.11	U	0.11	U	0.023	U	0.11	U
Hexachlorobutadiene	87-68-3	NS	NS	0.027	U	0.19	U	0.029	U	0.19	U	0.028	U	0.21	U	0.027	U	0.19	U	0.19	U	0.028	U	0.18	U	0.19	U	0.03	U	0.18	U
Hexachlorocyclopentadiene	77-47-4	NS	NS	0.17	U	0.54	U	0.18	U	0.54	U	0.17	U	0.59	U	0.17	U	0.53	U	0.53	U	0.17	U	0.51	U	0.54	U	0.18	U	0.51	U
Hexachloroethane	67-72-1	NS	NS	0.03	U	0.15	U	0.032	U	0.15	U	0.03	U	0.16	U	0.03	U	0.15	U	0.15	U	0.031	U	0.14	U	0.15	U	0.033	U	0.14	U
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	0.5	0.026	U	0.23		0.34		0.15	U	0.026	U	1		0.026	U	0.15	U	0.16		0.78		0.14	U	0.42		0.028	U	0.14	U
Isophorone	78-59-1	NS	NS	0.024	U	0.17	U	0.026	U	0.17	U	0.024	U	0.19	U	0.024	U	0.17	U	0.17	U	0.025	U	0.16	U	0.17	U	0.026	U	0.16	U
n-Nitrosodi-n-propylamine	621-64-7	NS	NS	0.028	U	0.19	U	0.031	U	0.19	U	0.029	U	0.21	U	0.029	U	0.19	U	0.19	U	0.03	U	0.18	U	0.19	U	0.031	U	0.18	U
Naphthalene	91-20-3	12	100	0.022	U	0.15	J	0.024	U	0.19	U	0.023	U	0.052	J	0.023	U	0.19	U	0.19	U	0.079	J	0.18	U	0.023	J	0.025	U	0.18	U
NDPA/DPA	86-30-6	NS	NS	0.021	U	0.15	U	0.023	U	0.15	U	0.022	U	0.16	U	0.021	U	0.15	U	0.15	U	0.022	U	0.14	U	0.15	U	0.023	U	0.14	U
Nitrobenzene	98-95-3	NS	NS	0.027	U	0.17	U	0.03	U	0.17	U	0.028	U	0.19	U	0.028	U	0.17	U	0.17	U	0.028	U	0.16	U	0.17	U	0.03	U	0.16	U
p-Chloro-m-cresol	59-50-7	NS	NS	0.027	U	0.19	U	0.03	U	0.19	U	0.028	U	0.21	U	0.028	U	0.19	U	0.19	U	0.029	U	0.18	U	0.19	U	0.03	U	0.18	U
Pentachlorophenol	87-86-5	0.8	6.7	0.04	U	0.15	U	0.044	U	0.15	U	0.042	U	0.16	U	0.041	U	0.15	U	0.15	U	0.042	U	0.14	U	0.15	U	0.045	U	0.14	U
Phenanthrene	85-01-8	100	100	0.022	U	0.36		0.31		0.11	U	0.023	U	0.74		0.023	U	0.11	U	0.072	J	1		0.11	U	0.46		0.028	J	0.11	U
Phenol	108-95-2	0.33	100	0.028	U	0.19	U	0.03	U	0.19	U	0.028	U	0.21	U	0.028	U	0.19	U	0.19	U	0.029	U	0.18	U	0.19	U	0.031	U	0.18	U
Pyrene	129-00-0	100	100	0.018	U	0.58		0.56		0.11	U	0.019	U	2.2		0.02	J	0.11	U	0.17		1.9		0.11	U	0.9		0.059	J	0.11	U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Object
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup O
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL)
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 3

Soil Sample Analaytical Data - Metals
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB001 (0-2)	SB001 (3-5)	SB001 (8-10)	SB001 (11-13)	SB002 (0-2)	SB002 (2-4)	SB002 (7-9)	SB003 (0-2)	SB003 (2-4)	SB003 (7-9)	SB004 (0-2)	SB004 (3-5)	SB004 (7-9)	SB004 (10-12)	SB005 (0-2)	SB005 (2-4)	SB005 (3-5)	SB005 (7-9)	SB006 (0-2)	SB006 (5-7)	SB006 (7.5-9.5)	SB006 (9-11)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/11/2017	2/26/2019	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/11/2017	12/11/2017	2/26/2019	12/11/2017	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019
LAB SAMPLE ID			SCO[2]	L1745804-01	L1907512-01	L1745804-02	L1907308-05	L1745804-03	L1907308-06	L1745804-04	L1745804-05	L1907512-02	L1745804-06	L1745804-07	L1907308-02	L1745804-08	L1907308-03	L1746315-01	L1907512-03	L1746315-02	L1907512-04	L1746315-03	L1907512-05	L1746315-04	L1907512-06
Metals																									
Aluminum, Total	7429-90-5	NS	NS	11000	9390	11600	16500	15200	16000	9960	6470	6060	8390	5930	5900	5460	4480	2090	7720	12200	17500	10800	11000	10600	8740
Antimony, Total	7440-36-0	NS	NS	4.11 U	0.312 U	4.39 U	2.63 J	4.59 U	2.16 J	4.4 U	4.54 U	0.368 J	4.49 U	4.4 U	1.3 J	4.58 U	0.442 J	0.359 J	8.95	4.7 U	0.318 U	2.29 J	0.356 U	0.387 J	0.337 U
Arsenic, Total	7440-38-2	13	16	0.847	1.17	1.5	0.172 U	2.48	2.84	0.616 J	5.32	4.4	3.75	3.15	4.03	3.45	0.452 J	6.4	8.61	2.99	0.174 U	5.22	4.57	1.79	1.01
Barium, Total	7440-39-3	350	400	109	62.2	80.7	132	91.4	116	67.2	72.1	65.8	109	76	91.7	65.9	56	123	318	39.5	162	225	51.4	76.6	75.8
Beryllium, Total	7440-41-7	7.2	72	0.773	0.279 J	0.8	0.571	0.634	0.765	0.669	0.318 J	0.138 J	0.386 J	0.255 J	0.324 J	0.275 J	0.23 J	0.242 J	0.364 J	0.254 J	0.028 U	0.486	0.3 J	0.683	0.399 J
Cadmium, Total	7440-43-9	2.5	4.3	0.822 U	0.427 J	0.879 U	0.67 J	0.919 U	0.449 J	0.88 U	0.907 U	0.331 J	0.897 U	0.88 U	0.414 J	0.916 U	0.173 J	0.171 J	1.88	0.941 U	0.527 J	0.799 J	0.422 J	0.126 J	0.532 J
Calcium, Total	7440-70-2	NS	NS	1950	1690	1100	1680	1400	1640	1570	90800	53200	33500	50300	59000	57900	14800	1680	19400	1200	1560	2790	1750	1520	1150
Chromium, Total	7440-47-3	30	180	25.9	27	34.6	28.6	24.3	26.5	25.5	9.34	7.76	11.6	10.1	10.3	11.8	17.3	4.54	25.2	19.4	29.6	24.9	37.3	25.8	25.8
Cobalt, Total	7440-48-4	NS	NS	12.1	13.5	12.2	23.4	9.44	9.22	13.3	3.23	3.53	3	3.25	4.08	3.56	3.36	2.75	8.09	5.98	24.3	8.17	13.3	11.7	15.6
Copper, Total	7440-50-8	50	270	27.6	29.8	30.4	6.32	12.8	17.2	23.5	12.1	12.6	16.9	11.5	16.5	28.2	10.1	28.4	158	13.6	6.15	84.5	21	22.8	26.8
Iron, Total	7439-89-6	NS	NS	21800	22400	21300	35100	19200	20200	21000	9340	9990	7930	7940	11300	9640	7820	3060	40100	14700	34300	20800	26500	21300	25300
Lead, Total	7439-92-1	63	400	3.62 J	4.26 J	4.78	4.8	16.8	45.4	4.85	76.3	103	80.4	85.8	161	94.2	2.8 J	34.9	1590	11.6	5.38	420	8.14	9.41	4.4 J
Magnesium, Total	7439-95-4	NS	NS	4840	4580	3910	7840	3010	3860	4030	14800	4420	5060	3410	4490	4340	1660	238	3550	2690	9190	2910	4280	4580	4640
Manganese, Total	7439-96-5	1600	2000	968	655	693	660	490	544	624	149	177	192	140	162	194	364	20.7	376	172	643	681	415	552	848
Mercury, Total	7439-97-6	0.18	0.81	0.07 U	0.014 U	0.07 U	0.014 U	0.07 J	0.015 U	0.07 U	0.05 J	0.016 U	0.11	0.08	0.016 U	7.6	0.016 U	0.12	1.54	0.08 U	0.015 U	0.45	0.016 U	0.02 J	0.015 U
Nickel, Total	7440-02-0	30	310	22.3	17.9	18.8	41.1	14.5	16	17.2	8.74	8.68	6.97	10.6	11.6	10.6	6.16	8.15	39	11.2	39.2	15	16.5	17.9	18.5
Potassium, Total	7440-09-7	NS	NS	2040	1560	2480	9000	706	912	2220	842	851	627	899	978	1080	969	187 J	643	476	9260	1050	972	1700	2280
Selenium, Total	7782-49-2	3.9	180	1.64 U	0.493 J	1.76 U	0.306 J	1.84 U	0.299 J	1.76 U	1.81 U	0.303 J	1.79 U	1.76 U	0.522 J	1.83 U	0.248 U	0.26 J	0.927 J	0.499 J	0.427 J	1.02 J	0.628 J	0.558 J	0.532 J
Silver, Total	7440-22-4	2	180	0.822 U	0.232 U	0.879 U	0.234 U	0.919 U	0.249 U	0.88 U	0.907 U	0.26 U	0.897 U	0.88 U	0.255 U	0.916 U	0.272 U	0.898 U	1.1	0.941 U	0.237 U	0.868 U	0.265 U	0.899 U	0.251 U
Sodium, Total	7440-23-5	NS	NS	223	96.7 J	60.2 J	307	52.5 J	82.2 J	50.7 J	445	418	824	303	352	260	260	89.3 J	155 J	9.64 J	212	38.1 J	79.5 J	59.3 J	84 J
Thallium, Total	7440-28-0	NS	NS	1.64 U	0.259 U	1.76 U	0.26 U	1.84 U	0.277 U	1.76 U	1.81 U	0.289 U	1.79 U	1.76 U	0.284 U	1.83 U	0.303 U	1.8 U	0.286 U	1.88 U	0.264 U	1.74 U	0.295 U	1.8 U	0.279 U
Vanadium, Total	7440-62-2	NS	NS	40.2	36.1	40.5	44.9	35.5	37.2	33.5	14	15	15.2	16	17	15.1	13.5	11.8	28.8	32.4	52.9	32.5	43.8	35.1	35.2
Zinc, Total	7440-66-6	109	10000	53	52.5	51.5	99.9	51.1	80.8	53	53.5	79.8	93	105	93.6	132	16.2	126	924	34.9	101	378	44.6	58.9	59.8

LOCATION	CAS	Unrestricted	Restricted	SB007 (0-2)	SB007 (4-6)	SB007 (7-9)	SB007 (9-11)	SB008 (0-2)	SB008 (4-6)	SB008 (8-10)	SB008 (10-12)	SB008 (13-15)	SB009 (0-2)	SB009 (4-6)	SB009 (7-9)	SB009 (10-12)	SB010 (0-2)	SB010 (5-7)	SB010 (7-9)	SB011 (0-2)	SB011 (3-5)	SB011 (5-7)	SB012 (0-2)	SB012 (2-4)	SB012 (6-8)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	2/25/2019	12/14/2017	2/25/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017
LAB SAMPLE ID			SCO[2]	L1746315-05	L1907512-07	L1746315-06	L1907512-08	L1746315-07	L1907512-09	L1907308-11	L1746315-08	L1907308-12	L1746315-09	L1907512-10	L1746315-10	L1907512-11	L1746315-11	L1907308-09	L1746315-12	L1746315-13	L1907308-08	L1746315-14	L1746315-15	L1907308-07	L1746315-16
Metals																									
Aluminum, Total	7429-90-5	NS	NS	4750	12100	9090	11500	10200	12100	11200	12200	17400	10100	10800	10900	18800	19400	14900	12600	19800	9920	11700	16600	17700	23800
Antimony, Total	7440-36-0	NS	NS	6.5	2.82 J	4.3 U	0.332 U	1.63 J	0.337 U	1.9 J	4.47 U	3.18 J	26.3 J	2.45 J	0.387 J	0.346 U	9.39	2.44 J	4.39 U	9.42	1.65 J	4.36 U	0.918 J	2.32 J	4.12 U
Arsenic, Total	7440-38-2	13	16	19.6	3.38	0.74 J	0.182 U	2.54	3.12	0.284 J	0.68 J	0.178 U	6.63	4.72	0.686 J	1.91	4.96	1.48	0.65 J	9.34	0.58 J	0.488 J	2.8	3.04	0.346 J
Barium, Total	7440-39-3	350	400	160	68.7	81	135	284	81.5	101	58.8	149	322	388	67	124	650	187	98.7	418	88.4	95.1	144	137	204
Beryllium, Total	7440-41-7	7.2	72	1.5	0.143 J	0.645	0.029 U	0.442	0.204 J	0.749	0.814	0.683	0.427 J	0.085 J	0.378 J	0.155 J	15.8	0.914	0.545	5.46	0.524	0.47	0.726	0.923	0.767
Cadmium, Total	7440-43-9	2.5	4.3	10.7	0.361 J	0.163 J	0.341 J	0.277 J	0.674 J	0.56 J	0.125 J	0.709 J	1.42	1.31	0.88 U	0.547 J	6.53	1.15	0.879 U	4.79	0.432 J	0.871 U	0.262 J	0.631 J	0.124 J
Calcium, Total	7440-70-2	NS	NS	4000	1250	1310	2010	3480	3380	1950	1100	1980	8800	9280	2680	3100	17000	1750	1160	13300	1730	1060	3590	3550	2140
Chromium, Total	7440-47-3	30	180	79.1	37.4	23.9	19	21.1	26.1	24.7	42.8	37.5	26.1	30.9	16.2	41.2	668	36.4	29.9	341	22.6	20.5	25.1	28.5	36.7
Cobalt, Total	7440-48-4	NS	NS	21.8	9.85	13.7	15.7	8.11	11.9	15	14.6	25.2	7.82	10.1	21.5	17.2	451	31.9	17.7	111	10.3	12.7	9.12	11.6	28.6
Copper, Total	7440-50-8	50	270	263	19.8	22.7	19.2	40.5	27.9	24.4	25	10	120	61.7	133	32.6	2160	42.5	39.7	721	30.4	26.5	24.4	20.3	57.1
Iron, Total	7439-89-6	NS	NS	36300	20600	20800	22700	14900	22000	26200	24900	34600	18700	21700	23100	30700	111000	34900	21400	68100	21900	18900	17300	25600	32200
Lead, Total	7439-92-1	63	400	385	78.9	3.9 J	4.72	186	167	4.16 J	4.28 J	3.71 J	624	647	6.85	11.8	1770	8.39	12.7	986	5.43	4.44	82.6	50.1	5.05
Magnesium, Total	7439-95-4	NS	NS	1000	2900	4220	6290	3350	4500	5680	4920	10300	2860	4500	14000	6090	4410	6210	4840	3730	4220	4890	3790	4490	12200
Manganese, Total	7439-96-5	1600	2000	255	184	628	344	392	639	667	631	547	320	395	408	868	641	3070	400	358	397	329	604	693	579
Mercury, Total	7439-97-6	0.18	0.81	0.11	0.033 J	0.07 U	0.015 U	0.06 J	0.049 J	0.014 U	0.07 U	0.015 U	1.1	0.41	0.12	0.016 U	0.09	0.015 U	0.07 U	0.08	0.016 U	0.07 U	0.24	0.051 J	0.07 U
Nickel, Total	7440-02-0	30	310	109	14.3	18.6	23.4	14.4	17.6	22.5	17.2	43	23.6	17.7	85.6	25.2	1020	39.8	21.9	341	17.1	18.8	15.7	19.6	50.2
Potassium, Total	7440-09-7	NS	NS	408	458	2160	7430	1270	1280	4800	1760	11000	944	2100	1300	3490	1380	2880	5270	3820	3410	5660	972	1120	12100
Selenium, Total	7782-49-2	3.9	180	2.42	0.713 J	0.422 J	0.323 J	0.459 J	0.807 J	0.222 U	0.572 J	0.22 U	0.64 J	0.536 J	0.554 J	0.638 J	9.68	0.227 U	0.395 J	2.34	0.237 U	0.488 J	0.551 J	0.33 J	0.717 J
Silver, Total	7440-22-4	2	180	0.912 U	0.269 U	0.86 U	0.247 U	0.866 U	0.251 U	0.244 U	0.894 U	0.242 U	2.11	0.357 J	0.88 U	0.258 U	1.02	0.248 U	0.879 U	0.848 U	0.26 U	0.871 U	0.875 U	0.266 U	0.824 U
Sodium, Total	7440-23-5	NS	NS	217	62.4 J	31.4 J	131 J	36.9 J	84 J	85.9 J	8.58 J	152 J	30.4 J	125 J	307	152 J	4600	83.9 J	42.8 J	1420	72.1 J	23.8 J	85.4 J	235	168
Thallium, Total	7440-28-0	NS	NS	1.82 U	0.3 U	1.72 U	0.275 U	1.73 U	0.279 U	0.271 U	1.79 U	0.269 U	1.78 U	0.296 U	1.76 U	0.287 U	2.72	1.18 J	1.76 U	0.695 J	0.29 U	1.74 U	1.75 U	0.296 U	1.65 U
Vanadium, Total	7440-62-2	NS	NS	24.3	38.4	33.8	30.5	27.4	35.9	38.9	44.6	62.1	29.3	35.1	27.8	51.8	36.8	51.4	38.6	39.6	35.2	34.1	33.5	39.3	60.6
Zinc, Total	7440-66-6	109	10000	809	66.4	50.5	66.6	273	212	66.7	68.2	96.1	714	622	51	70.1	8000	89	81.9	2110	45.9	49	114	79.5	117

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
U - Not detected at the reported detection limit for the sample.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 4

Soil Sample Analaytical Data - Pesticides and PCBs
Willimasbridge Plaza (C203113)

LOCATION	CAS	Unrestricted	Restricted	SB001 (0-2)	SB001 (3-5)	SB001 (8-10)	SB001 (11-13)	SB002 (0-2)	SB002 (2-4)	SB002 (7-9)	SB003 (0-2)	SB003 (2-4)	SB003 (7-9)	SB004 (0-2)	SB004 (3-5)	SB004 (7-9)	SB004 (10-12)	SB005 (0-2)	SB005 (2-4)	SB005 (3-5)	SB005 (7-9)	SB006 (0-2)	SB006 (5-7)	SB006 (7.5-9.5)	SB006 (9-11)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/11/2017	2/26/2019	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/11/2017	12/11/2017	2/26/2019	12/11/2017	12/11/2017	2/25/2019	12/11/2017	2/25/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019
LAB SAMPLE ID			SCO[2]	L1745804-01	L1907512-01	L1745804-02	L1907308-05	L1745804-03	L1907308-06	L1745804-04	L1745804-05	L1907512-02	L1745804-06	L1745804-07	L1907308-02	L1745804-08	L1907308-03	L1746315-01	L1907512-03	L1746315-02	L1907512-04	L1746315-03	L1907512-05	L1746315-04	L1907512-06
Pesticides																									
4,4'-DDD	72-54-8	0.0033	13	0.00162 U	0.00061 U	0.00181 U	0.00058 U	0.00188 U	0.00066 U	0.00174 U	0.00184 U	0.0063 U	0.0014 J	0.00067 J	0.00067 U	0.00181 J	0.00066 U	0.0246	0.0342	0.00181 U	0.00062 U	0.00875	0.00066 U	0.00173 U	0.00063 U
4,4'-DDE	72-55-9	0.0033	8.9	0.00162 U	0.0004 U	0.00181 U	0.00037 U	0.00188 U	0.00043 U	0.00174 U	0.00124 J	0.00041 U	0.00215 J	0.00179	0.00044 U	0.00174 J	0.00043 U	0.00975	0.00798	0.00181 U	0.0004 U	0.0056 P	0.00043 U	0.00173 U	0.00041 U
4,4'-DDT	50-29-3	0.0033	7.9	0.00305 U	0.00138 U	0.0034 U	0.0013 U	0.00352 U	0.0015 U	0.00327 U	0.00345 U	0.00142 U	0.00606 P	0.00564	0.00412	0.00408	0.00149 U	0.0127 P	0.00465	0.00339 U	0.0014 U	0.00339 U	0.00148 U	0.00325 U	0.00142 U
Aldrin	309-00-2	0.005	0.097	0.00162 U	0.0006 U	0.00181 U	0.00057 U	0.00188 U	0.00066 U	0.00174 U	0.00184 U	0.00062 U	0.00268 U	0.00179 U	0.00066 U	0.00183 U	0.00065 U	0.00174 U	0.00065 U	0.00181 U	0.00062 U	0.00181 U	0.00065 U	0.00173 U	0.00062 U
Alpha-BHC	319-84-6	0.02	0.48	0.00068 U	0.0002 U	0.00076 U	0.00019 U	0.00078 U	0.00022 U	0.00073 U	0.00077 U	0.00021 U	0.00112 U	0.00075 U	0.00022 U	0.00076 U	0.00022 U	0.00073 U	0.00022 U	0.00075 U	0.00021 U	0.00075 U	0.00022 U	0.00072 U	0.00021 U
Beta-BHC	319-85-7	0.036	0.36	0.00162 U	0.00065 U	0.00181 U	0.00061 U	0.00188 U	0.00071 U	0.00174 U	0.00184 U	0.00067 U	0.00268 U	0.00179 U	0.00072 U	0.00183 U	0.0007 U	0.00174 U	0.00069 U	0.00181 U	0.00066 U	0.00181 U	0.0007 U	0.00173 U	0.00067 U
Chlordane	57-74-9	NS	NS	0.0132 U	0.00566 U	0.0147 U	0.00536 U	0.0152 U	0.00616 U	0.0142 U	0.015 U	0.00585 U	0.045	0.0145 U	0.00625 U	0.0149 U	0.00615 U	0.128	0.00606 U	0.0147 U	0.00578 U	0.0147 U	0.00612 U	0.0141 U	0.00584 U
cis-Chlordane	5103-71-9	0.094	4.2	0.00203 U	0.0006 U	0.00227 U	0.00056 U	0.00235 U	0.00065 U	0.00218 U	0.0023 U	0.0062 U	0.0073 P	0.00224 U	0.00066 U	0.00229 U	0.00065 U	0.0279	0.00356	0.00226 U	0.00061 U	0.0011 J	0.00064 U	0.00216 U	0.00061 U
Delta-BHC	319-86-8	0.04	100	0.00037 J	0.00034 U	0.00181 U	0.00032 U	0.00188 U	0.00036 U	0.00099 J	0.00184 U	0.00035 U	0.00268 U	0.00054 J	0.00037 U	0.00108 J	0.00036 U	0.00174 U	0.00036 U	0.00181 U	0.00034 U	0.00156 J	0.00036 U	0.00173 U	0.00035 U
Dieldrin	60-57-1	0.005	0.2	0.00102 U	0.00053 U	0.00113 U	0.00051 U	0.00117 U	0.00058 U	0.00109 U	0.00115 U	0.00055 U	0.00342	0.00112 U	0.00059 U	0.00269	0.00058 U	0.00109 U	0.00057 U	0.00113 U	0.00055 U	0.00113 U	0.00058 U	0.00108 U	0.00055 U
Endosulfan I	959-98-8	2.4	24	0.00162 U	0.0004 U	0.00181 U	0.00038 U	0.00188 U	0.00044 U	0.00174 U	0.00184 U	0.00042 U	0.00268 U	0.00179 U	0.00045 U	0.00183 U	0.00044 U	0.00174 U	0.00043 U	0.00181 U	0.00041 U	0.00181 U	0.00044 U	0.00173 U	0.00042 U
Endosulfan II	33213-65-9	2.4	24	0.00162 U	0.00057 U	0.00181 U	0.00054 U	0.00188 U	0.00062 U	0.00174 U	0.00067 JPI	0.00059 U	0.00268 U	0.00179 U	0.00063 U	0.00183 U	0.00062 U	0.00174 U	0.00061 U	0.00181 U	0.00058 U	0.00181 U	0.00062 U	0.00173 U	0.00059 U
Endosulfan sulfate	1031-07-8	2.4	24	0.00068 U	0.00034 U	0.00076 U	0.00032 U	0.00078 U	0.00037 U	0.00073 U	0.00077 U	0.00035 U	0.00112 U	0.00075 U	0.00037 U	0.00076 U	0.00037 U	0.00073 U	0.00036 U	0.00075 U	0.00035 U	0.00075 U	0.00037 U	0.00072 U	0.00035 U
Endrin	72-20-8	0.014	11	0.00068 U	0.00029 U	0.00076 U	0.00028 U	0.00078 U	0.00032 U	0.00073 U	0.00082 PI	0.0003 U	0.00112 U	0.00075 U	0.00032 U	0.00076 U	0.00032 U	0.00073 U	0.00031 U	0.00075 U	0.0003 U	0.00075 U	0.00032 U	0.00072 U	0.0003 U
Endrin aldehyde	7421-93-4	NS	NS	0.00203 U	0.00075 U	0.00227 U	0.00071 U	0.00235 U	0.00081 U	0.00218 U	0.0023 U	0.00077 U	0.00335 U	0.00224 U	0.00083 U	0.00229 U	0.00081 U	0.00218 U	0.0008 U	0.00226 U	0.00076 U	0.00226 U	0.00081 U	0.00216 U	0.00077 U
Endrin ketone	53494-70-5	NS	NS	0.00162 U	0.00044 U	0.00181 U	0.00042 U	0.00188 U	0.00048 U	0.00174 U	0.00184 U	0.00045 U	0.00268 U	0.00179 U	0.00049 U	0.00183 U	0.00048 U	0.00174 U	0.00047 U	0.00181 U	0.00045 U	0.00181 U	0.00048 U	0.00173 U	0.00045 U
Heptachlor	76-44-8	0.042	2.1	0.00081 U	0.00038 U	0.00091 U	0.00036 U	0.00094 U	0.00042 U	0.00087 U	0.00092 U	0.0004 U	0.00134 U	0.0009 U	0.00042 U	0.00092 U	0.00042 U	0.00087 U	0.00041 U	0.0009 U	0.00039 U	0.0009 U	0.00041 U	0.00087 U	0.0004 U
Heptachlor epoxide	1024-57-3	NS	NS	0.00305 U	0.00096 U	0.0034 U	0.00091 U	0.00352 U	0.00105 U	0.00327 U	0.00345 U	0.00099 U	0.00502 U	0.00336 U	0.00106 U	0.00344 U	0.00104 U	0.00326 U	0.00399	0.00339 U	0.00098 U	0.00339 U	0.00104 U	0.00325 U	0.00099 U
Lindane	58-89-9	0.1	1.3	0.00068 U	0.00032 U	0.00076 U	0.0003 U	0.00078 U	0.00035 U	0.00073 U	0.00077 U	0.00033 U	0.00112 U	0.00075 U	0.00035 U	0.00076 U	0.00035 U	0.00073 U	0.00034 U	0.00075 U	0.00033 U	0.00075 U	0.00034 U	0.00072 U	0.00033 U
Methoxychlor	72-43-5	NS	NS	0.00305 U	0.001 U	0.0034 U	0.00095 U	0.00352 U	0.00108 U	0.00327 U	0.00345 U	0.00103 U	0.00502 U	0.00336 U	0.0011 U	0.00344 U	0.00108 U	0.00326 U	0.00107 U	0.00339 U	0.00102 U	0.00339 U	0.00108 U	0.00325 U	0.00103 U
Toxaphene	8001-35-2	NS	NS	0.0305 U	0.00898 U	0.034 U	0.0085 U	0.0352 U	0.00977 U	0.0327 U	0.0345 U	0.00926 U	0.0502 U	0.0336 U	0.0099 U	0.0344 U	0.00975 U	0.0326 U	0.00961 U	0.0339 U	0.00917 U	0.0339 U	0.0097 U	0.0325 U	0.00925 U
trans-Chlordane	5103-74-2	NS	NS	0.00203 U	0.00056 U	0.00227 U	0.00053 U	0.00235 U	0.00061 U	0.00218 U	0.0023 U	0.00058 U	0.00332 JPI	0.00224 U	0.00062 U	0.00229 U	0.00061 U	0.0218 PI	0.00211 J	0.00226 U	0.00058 U	0.00091 JPI	0.00061 U	0.00216 U	0.00058 U
Polychloriniated Biphenyls																									
Aroclor 1016	12674-11-2	0.1	1	0.0354 U	0.00317 U	0.0375 U	0.00312 U	0.0375 U	0.0033 U	0.0367 U	0.0378 U	0.00337 U	0.0747 U	0.0364 U	0.00338 U	0.038 U	0.00352 U	0.0371 U	0.00351 U	0.0381 U	0.00317 U	0.0366 U	0.00349 U	0.0368 U	0.00327 U
Aroclor 1221	11104-28-2	0.1	1	0.0354 U	0.00358 U	0.0375 U	0.00352 U	0.0375 U	0.00372 U	0.0367 U	0.0378 U	0.0038 U	0.0747 U	0.0364 U	0.00382 U	0.038 U	0.00398 U	0.0371 U	0.00396 U	0.0381 U	0.00358 U	0.0366 U	0.00394 U	0.0368 U	0.00369 U
Aroclor 1232	11141-16-5	0.1	1	0.0354 U	0.00758 U	0.0375 U	0.00745 U	0.0375 U	0.00787 U	0.0367 U	0.0378 U	0.00805 U	0.0747 U	0.0364 U	0.00807 U	0.038 U	0.00842 U	0.0371 U	0.00839 U	0.0381 U	0.00758 U	0.0366 U	0.00834 U	0.0368 U	0.00781 U
Aroclor 1242	53469-21-9	0.1	1	0.0354 U	0.00482 U	0.0375 U	0.00474 U	0.0375 U	0.00501 U	0.0367 U	0.0508	0.0327 J	0.0747 U	0.0364 U	0.00513 U	0.038 U	0.00535 U	0.0371 U	0.127	0.0381 U	0.00482 U	0.0289 J	0.0053 U	0.0368 U	0.00496 U
Aroclor 1248	12672-29-6	0.1	1	0.0354 U	0.00536 U	0.0375 U	0.00527 U	0.0375 U	0.00557 U	0.0367 U	0.0378 U	0.0057 U	0.0747 U	0.0364 U	0.00619 J	0.038 U	0.00595 U	0.0371 U	0.00593 U	0.0381 U	0.00536 U	0.0366 U	0.0059 U	0.0368 U	0.00552 U
Aroclor 1254	11097-69-1	0.1	1	0.0354 U	0.00391 U	0.0375 U	0.00384 U	0.0375 U	0.00406 U	0.0367 U	0.0131 J	0.0285 J	0.0747 U	0.0364 U	0.00417 U	0.038 U	0.00434 U	0.0371 U	0.039 J	0.0381 U	0.00391 U	0.0266 J	0.0043 U	0.0368 U	0.00403 U
Aroclor 1260	11096-82-5	0.1	1	0.0354 U	0.0066 U	0.0375 U	0.00649 U	0.0375 U	0.00686 U	0.0367 U	0.0378 U	0.0102 J	0.0747 U	0.0364 U	0.00704 U	0.038 U	0.00734 U	0.0191 J	0.038 J	0.0381 U	0.00661 U	0.0213 J	0.00727 U	0.0368 U	0.00681 U
Aroclor 1262	37324-23-5	0.1	1	0.0354 U	0.00454 U	0.0375 U	0.00446 U	0.0375 U	0.00472 U	0.0367 U	0.0378 U	0.00482 U	0.0747 U	0.0364 U	0.00484 U	0.038 U	0.00504 U	0.0371 U	0.00502 U	0.0381 U	0.00454 U	0.0366 U	0.005 U	0.0368 U	0.00468 U
Aroclor 1268	11100-14-4	0.1	1	0.0354 U	0.0037 U	0.0375 U	0.00364 U	0.0375 U	0.00385 U	0.0367 U	0.0378 U	0.0142 J	0.0747 U	0.0364 U	0.00394 U	0.038 U	0.00411 U	0.00886 J	0.0236 J	0.0381 U	0.0037 U	0.00861 J	0.00408 U	0.0368 U	0.00382 U
PCBs, Total	1336-36-3	0.1	1	0.0354 U	0.00317 U	0.0375 U	0.00312 U	0.0375 U	0.0033 U	0.0367 U	0.0639 J	0.0856 J	0.0747 U	0.0364 U	0.00619 J	0.038 U	0.00352 U	0.028 J	0.228 J	0.0381 U	0.00317 U	0.0854 J	0.00349 U	0.0368 U	0.00327 U

LOCATION	CAS	Unrestricted	Restricted	SB007 (0-2)	SB007 (4-6)	SB007 (7-9)	SB007 (9-11)	SB008 (0-2)	SB008 (4-6)	SB008 (8-10)	SB008 (10-12)	SB008 (13-15)	SB009 (0-2)	SB009 (4-6)	SB009 (7-9)	SB009 (10-12)	SB010 (0-2)	SB010 (5-7)	SB010 (7-9)	SB011 (0-2)	SB011 (3-5)	SB011 (5-7)	SB012 (0-2)	SB012 (2-4)	SB012 (6-8)
SAMPLING DATE	Number	Use SCO[1]	Residential	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	2/25/2019	12/14/2017	2/25/2019	12/14/2017	2/26/2019	12/14/2017	2/26/2019	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017	12/14/2017	2/25/2019	12/14/2017
LAB SAMPLE ID			SCO[2]	L1746315-05	L1907512-07	L1746315-06	L1907512-08	L1746315-07	L1907512-09	L1907308-11	L1746315-08	L1907308-12	L1746315-09	L1907512-10	L1746315-10	L1907512-11	L1746315-11	L1907308-09	L1746315-12	L1746315-13	L1907308-08	L1746315-14	L1746315-15	L1907308-07	L1746315-16
Pesticides																									
4,4'-DDD	72-54-8	0.0033	13	0.0107	0.0007 U	0.00173 U	0.00063 U	0.00882	0.00063 U	0.0006 U	0.00172 U	0.00062 U	0.00347	0.00067 U	0.00174 U	0.00065 U	0.00189 JPI	0.00064 U	0.00175 U	0.00348	0.0205	0.00168 U	0.00172 U	0.00067 U	0.0017 U
4,4'-DDE	72-55-9	0.0033	8.9	0.00923	0.00046 U	0.00173 U	0.00041 U	0.0619	0.00041 U	0.00039 U	0.00172 U	0.0004 U	0.0031 P	0.00043 U	0.00174 U	0.00042 U	0.0132	0.00504	0.00175 U	0.0040	0.0498	0.00168 U	0.00172 U	0.00044 U	0.0017 U
4,4'-DDT	50-29-3	0.0033	7.9	0.0109	0.00158 U	0.00324 U	0.00143 U	0.0603	0.00143 U	0.00136 U	0.00322 U	0.00139 U	0.0124	0.0015 U	0.00326 U	0.00147 U	0.062	0.0159	0.00328 U	0.0253	0.188	0.00316 U	0.00323 U	0.00151 U	0.00318 U
Aldrin	309-00-2	0.005	0.097	0.00184 U	0.00069 U	0.00173 U	0.00063 U	0.00168 U	0.00063 U	0.0006 U	0.00172 U	0.00061 U	0.00177 U	0.00066 U	0.00174 U	0.00064 U	0.002 U	0.00063 U	0.00175 U	0.00173 U	0.0322	0.00168 U	0.00172 U	0.00066 U	0.0017 U
Alpha-BHC	319-84-6	0.02	0.48	0.00077 U	0.00023 U	0.00072 U	0.00021 U	0.0007 U	0.00021 U	0.0002 U	0.00072 U	0.00021 U	0.00074 U	0.00022 U	0.00073 U	0.00022 U	0.00083 U	0.00021 U	0.00073 U	0.00072 U	0.00022 U	0.0007 U	0.00072 U	0.00022 U	0.00071 U
Beta-BHC	319-85-7	0.036	0.36	0.00184 U	0.00075 U	0.00173 U	0.00067 U	0.00168 U	0.00067 U	0.00064 U	0.00172 U	0.00066 U	0.00177 U	0.00071 U	0.00174 U	0.00069 U	0.002 U	0.00068 U	0.00175 U	0.00173 U	0.00069 U	0.00168 U	0.00172 U	0.00071 U	0.0017 U
Chlordane	57-74-9	NS	NS	0.0569	0.00651 U	0.014 U	0.00588 U	0.0552	0.00589 U	0.00561 U	0.014 U	0.00573 U	0.0474 P	0.00619 U	0.0141 U	0.00604 U	0.061	0.00595 U	0.0142 U	0.012 J	0.00601 U	0.0137 U	0.014 U	0.00623 U	0.0138 U
cis-Chlordane	5103-71-9	0.094	4.2	0.00802 P	0.00069 U	0.00216 U	0.00062 U	0.0118	0.00062 U	0.00059 U	0.00215 U	0.0006 U	0.00218 J	0.00065 U	0.00218 U	0.00064 U	0.0142 P	0.00699	0.00218 U	0.00205 J	0.00629	0.00211 U	0.00216 U	0.00066 U	0.00212 U
Delta-BHC	319-86-8	0.04	100	0.00184 U	0.00039 U	0.00173 U	0.00035 U	0.00168 U	0.00035 U	0.00033 U	0.00172 U	0.00034 U	0.00177 U	0.00037 U	0.00174 U	0.00036 U	0.002 U	0.00035 U	0.00175 U	0.00173 U	0.00036 U	0.00168 U	0.00172 U	0.00037 U	0.0017 U
Dieldrin	60-57-1	0.005	0.2	0.00115 U	0.00061 U	0.00108 U	0.00056 U	0.00105 U	0.00056 U	0.00053 U	0.00107 U	0.00054 U	0.00111 U	0.00058 U	0.00109 U	0.00057 U	0.0543	0.0104	0.00109 U	0.00733	0.251	0.00105 U	0.00108 U	0.00059 U	0.00106 U
Endosulfan I	959-98-8	2.4	24	0.00184 U	0.00046 U	0.00173 U	0.00042 U	0.00168 U	0.00042 U	0.0004 U	0.00172 U	0.00041 U	0.00177 U	0.00044 U	0.00174 U	0.00043 U	0.002 U	0.00043 U	0.00175 U	0.00173 U	0.00043 U	0.00168 U	0.00172 U	0.00045 U	0.0017 U
Endosulfan II	33213-65-9	2.4	24	0.00184 U	0.00066 U	0.00173 U	0.00059 U	0.00168 U	0.00059 U	0.00057 U	0.00172 U	0.00058 U	0.00177 U	0.00062 U	0.00174 U	0.00061 U	0.002 U	0.0006 U	0.00175 U	0.00173 U	0.00473	0.00168 U	0.00172 U	0.00063 U	0.0017 U
Endosulfan sulfate	1031-07-8	2.4	24	0.00077 U	0.00039 U	0.00072 U	0.00035 U	0.0007 U	0.00035 U	0.00034 U	0.00072 U	0.00034 U	0.00074 U	0.00037 U	0.00073 U	0.00036 U	0.00083 U	0.00036 U	0.00073 U	0.00072 U	0.00036 U	0.0007 U	0.00072 U	0.00037 U	0.00071 U
Endrin	72-20-8	0.014	11	0.00077 U	0.00034 U	0.00072 U	0.0003 U	0.0007 U	0.0003 U	0.00029 U	0.00072 U	0.0003 U	0.00074 U	0.00032 U	0.00073 U	0.00031 U	0.00083 U	0.00031 U	0.00073 U	0.00072 U	0.00031 U	0.0007 U	0.00072 U	0.00032 U	0.00071 U
Endrin aldehyde	7421-93-4	NS	NS	0.0023 U	0.00086 U	0.00216 U	0.00078 U	0.0021 U	0.00078 U	0.00074 U	0.00215 U	0.00076 U	0.00222 U	0.00082 U	0.00218 U	0.0008 U	0.0025 U	0.00079 U	0.00218 U	0.00216 U	0.00079 U	0.00211 U	0.00216 U	0.00082 U	0.00212 U
Endrin ketone	53494-70-5	NS	NS	0.00184 U	0.00051 U	0.00173 U	0.00046 U	0.00168 U	0.00046 U	0.00044 U	0.00172 U	0.00045 U	0.00177 U	0.00048 U	0.00174 U	0.00047 U	0.002 U	0.00046 U	0.00175 U	0.00173 U	0.00047 U	0.00168 U	0.00172 U	0.00049 U	0.0017 U
Heptachlor	76-44-8	0.042	2.1	0.00092 U	0.00044 U	0.00086 U	0.0004 U	0.00084 U	0.0004 U	0.00038 U	0.00086 U	0.00039 U	0.00089 U	0.00042 U	0.00087 U	0.00041 U	0.001 U	0.0004 U	0.00087 U	0.00086 U	0.00041 U	0.00084 U	0.00086 U	0.00042 U	0.00085 U
Heptachlor epoxide	1024-57-3	NS	NS	0.00346 U	0.00111 U	0.00324 U	0.001 U	0.00328 PI	0.001 U	0.00095 U	0.00322 U	0.00097 U	0.00211 J	0.00105 U	0.00326 U	0.00103 U	0.00254 J	0.00101 U	0.00328 U	0.00324 U	0.00102 U	0.00316 U	0.00323 U	0.00106 U	0.00318 U
Lindane	58-89-9	0.1	1.3	0.00077 U	0.00037 U	0.00072 U	0.00033 U	0.0007 U	0.00033 U	0.00032 U	0.00072 U	0.00032 U	0.00074 U	0.00035 U	0.00073 U	0.00034 U	0.00083 U	0.00034 U	0.00073 U	0.00072 U	0.00034 U	0.0007 U	0.00072 U	0.00035 U	0.00071 U
Methoxychlor	72-43-5	NS	NS	0.00346 U	0.00115 U	0.00324 U	0.00104 U	0.00315 U	0.00104 U	0.00099 U	0.00322 U	0.00101 U	0.00333 U	0.00109 U	0.00326 U	0.00106 U	0.00375 U	0.00105 U	0.00328 U	0.00324 U	0.00106 U	0.00316 U	0.00323 U	0.0011 U	0.00318 U
Toxaphene	8001-35-2	NS	NS	0.0346 U	0.0103 U	0.0324 U	0.00932 U	0.0315 U	0.00933 U	0.00889 U	0.0322 U	0.00908 U	0.0333 U	0.0098 U	0.0326 U	0.00958 U	0.0375 U	0.00944 U	0.0328 U	0.0324 U	0.00953 U	0.0316 U	0.0323 U	0.00988 U	0.0318 U
trans-Chlordane	5103-74-2	NS	NS	0.00884 PI	0.00065 U	0.00216 U	0.00059 U	0.0113 P	0.00059 U	0.00056 U	0.00215 U	0.00057 U	0.00357 PI	0.00062 U	0.00218 U	0.0006 U	0.0113 P	0.00461	0.00218 U	0.00252 PI	0.0105	0.00211 U	0.00216 U	0.00062 U	0.00212 U
Polychloriniated Biphenyls																									
Aroclor 1016	12674-11-2	0.1	1	0.0366 U	0.00357 U	0.0366 U	0.00334 U	0.0358 U	0.0033 U	0.00308 U	0.0355 U	0.00326 U	0.0367 U	0.00346 U	0.0369 U	0.00336 U	0.0406 U	0.00336 U	0.0357 U	0.0355 U	0.00334 U	0.0355 U	0.0366 U	0.00359 U	0.0355 U
Aroclor 1221	11104-28-2	0.1	1	0.0366 U	0.00403 U	0.0366 U	0.00377 U	0.0358 U	0.00372 U	0.00348 U	0.0355 U	0.00368 U	0.0367 U	0.0039 U	0.0369 U	0.00379 U	0.0406 U	0.00379 U	0.0357 U	0.0355 U	0.00377 U	0.0355 U	0.0366 U	0.00405 U	0.0355 U
Aroclor 1232	11141-16-5	0.1	1	0.0366 U	0.00853 U	0.0366 U	0.00798 U	0.0358 U	0.00788 U	0.00736 U	0.0355 U	0.00778 U	0.0367 U	0.00825 U	0.0369 U	0.00803 U	0.0406 U	0.00802 U	0.0357 U	0.0355 U	0.00797 U	0.0355 U	0.0366 U	0.00857 U	0.0355 U
Aroclor 1242	53469-21-9	0.1	1	0.0366 U	0.00542 U	0.0366 U	0.00508 U	0.0358 U	0.00501 U	0.00468 U	0.0355 U	0.00495 U	0.0367 U	0.00525 U	0.0369 U	0.0051 U	0.0406 U	0.0051 U	0.0357 U	0.0355 U	0.00507 U	0.0355 U	0.0366 U	0.00545 U	0.0355 U
Aroclor 1248	12672-29-6	0.1	1	0.0359 J	0.00603 U	0.0366 U	0.00565 U	0.0511	0.00557 U	0.00521 U	0.0355 U	0.00551 U	0.0367 U	0.00584 U	0.0369 U	0.00568 U	0.0406 U	0.00567 U	0.0357 U	0.0355 U	0.00564 U	0.0355 U	0.0366 U	0.00606 U	0.0355 U
Aroclor 1254	11097-69-1	0.1	1	0.0416 P	0.0044 U	0.0366 U	0.00412 U	0.0759	0.00407 U	0.0038 U	0.0355 U	0.00402 U	0.0367 U	0.00426 U	0.0369 U	0.00414 U	0.0406 U	0.00414 U	0.0357 U	0.0355 U	0.00411 U	0.0355 U	0.0366 U	0.00442 U	0.0355 U
Aroclor 1260	11096-82-5	0.1	1	0.03 J	0.00743 U	0.0366 U	0.00696 U	0.0425	0.00687 U	0.00642 U	0.0355 U	0.00678 U	0.0682	0.0072 U	0.0369 U	0.007 U	0.0396 J	0.00699 U	0.0357 U	0.0355 U	0.00695 U	0.0355 U	0.0277 J	0.00747 U	0.0355 U
Aroclor 1262	37324-23-5	0.1	1	0.0366 U	0.00511 U	0.0366 U	0.00478 U	0.0358 U	0.00472 U	0.00441 U	0.0355 U	0.00466 U	0.0367 U	0.00494 U	0.0369 U	0.00481 U	0.0406 U	0.0048 U	0.0357 U	0.0355 U	0.00477 U	0.0355 U	0.0366 U	0.00513 U	0.0355 U
Aroclor 1268	11100-14-4	0.1	1	0.0124 J	0.00417 U	0.0366 U	0.0039 U	0.0156 J	0.00385 U	0.0036 U	0.0355 U	0.0038 U	0.0367 U	0.00403 U	0.0369 U	0.00392 U	0.0173 J	0.00392 U	0.0357 U	0.0355 U	0.00389 U	0.0355 U	0.00753 J	0.00419 U	0.0355 U
PCBs, Total	1336-36-3	0.1	1	0.12 J	0.00357 U	0.0366 U	0.00334 U	0.185 J	0.0033 U	0.00308 U	0.0355 U	0.00326 U	0.0682	0.00346 U	0.0369 U	0.00336 U	0.0569 J	0.00336 U	0.0357 U	0.0355 U	0.00334 U	0.0355 U	0.0352 J	0.00359 U	0.0355 U

Notes:
All Concentrations are ppm (mg/kg)
1 - Unrestricted Use SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
2 - Restricted Residential SCO, 6NYCRR Part 375-6, Remediation Program Soil Cleanup Objectives
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
U - Not detected at the reported detection limit for the sample.
P - The RPD between the results for the two columns exceeds the method-specified criteria.
NS - No standard established
NA - Analyte was not analyzed for
Yellow highlighted values exceed Unrestricted Use SCO
Orange highlighted values exceed Restricted Residential SCO

Table 5

Groundwater Sample Analaytical Data - Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION SAMPLING DATE LAB SAMPLE ID	CAS Number	NYSDEC AWQS[1]	MW001 2/27/2019 L190701-01	MW002 2/25/2019 L1907307-01	MW003 2/25/2019 L1907307-02	DUP001 2/25/2019 L1907307-03
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	630-20-6	5	2.5 U	2.5 U	2.5 U	2.5 U
1,1,1-Trichloroethane	71-55-6	5	2.5 U	2.5 U	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	79-34-5	5	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	79-00-5	1	1.5 U	1.5 U	1.5 U	1.5 U
1,1-Dichloroethane	75-34-3	5	2.5 U	2.5 U	2.5 U	2.5 U
1,1-Dichloroethene	75-35-4	5	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloropropene	563-58-6	5	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3-Trichlorobenzene	87-61-6	5	2.5 U	2.5 U	2.5 U	2.5 U
1,2,3-Trichloropropane	96-18-4	0.04	2.5 U	2.5 U	2.5 U	2.5 U
1,2,4,5-Tetramethylbenzene	95-93-2	5	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	5	2.5 U	2.5 U	2.5 U	2.5 U
1,2,4-Trimethylbenzene	95-63-6	5	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dibromo-3-chloropropane	96-12-8	0.04	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dibromoethane	106-93-4	0.0006	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	95-50-1	3	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloroethane	107-06-2	0.6	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene, Total	540-59-0	NS	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloropropane	78-87-5	1	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	5	2.5 U	2.5 U	2.5 U	2.5 U
1,3-Dichlorobenzene	541-73-1	3	2.5 U	2.5 U	2.5 U	2.5 U
1,3-Dichloropropane	142-28-9	5	2.5 U	2.5 U	2.5 U	2.5 U
1,3-Dichloropropene, Total	542-75-6	NS	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	106-46-7	3	2.5 U	2.5 U	2.5 U	2.5 U
1,4-Dioxane	123-91-1	NS	250 U	250 U	250 U	250 U
2,2-Dichloropropane	594-20-7	5	2.5 U	2.5 U	2.5 U	2.5 U
2-Butanone	78-93-3	50	5 U	5 U	5 U	5 U
2-Hexanone	591-78-6	50	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	108-10-1	NS	5 U	5 U	5 U	5 U
Acetone	67-64-1	50	5 U	5 U	5 U	5 U
Acrylonitrile	107-13-1	5	5 U	5 U	5 U	5 U
Benzene	71-43-2	1	0.5 U	0.5 U	0.5 U	0.5 U
Bromobenzene	108-86-1	5	2.5 U	2.5 U	2.5 U	2.5 U
Bromochloromethane	74-97-5	5	2.5 U	2.5 U	2.5 U	2.5 U
Bromodichloromethane	75-27-4	50	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	75-25-2	50	2 U	2 U	2 U	2 U
Bromomethane	74-83-9	5	2.5 U	2.5 U	2.5 U	2.5 U
Carbon disulfide	75-15-0	60	5 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	5	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	5	2.5 U	2.5 U	2.5 U	2.5 U
Chloroethane	75-00-3	5	2.5 U	2.5 U	2.5 U	2.5 U
Chloroform	67-66-3	7	2.5 U	2.5 U	2.5 U	2.5 U
Chloromethane	74-87-3	NS	2.5 U	2.5 U	2.5 U	2.5 U
cis-1,2-Dichloroethene	156-59-2	5	2.5 U	2.5 U	2.5 U	2.5 U
cis-1,3-Dichloropropene	10061-01-5	0.4	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	124-48-1	50	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	74-95-3	5	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	75-71-8	5	5 U	5 U	5 U	5 U
Ethyl ether	60-29-7	NS	2.5 U	2.5 U	2.5 U	2.5 U
Ethylbenzene	100-41-4	5	2.5 U	2.5 U	2.5 U	2.5 U
Hexachlorobutadiene	87-68-3	0.5	2.5 U	2.5 U	2.5 U	2.5 U
Isopropylbenzene	98-82-8	5	3 U	2.5 U	2.5 U	2.5 U
Methyl tert butyl ether	1634-04-4	10	2.5 U	2.5 U	2.5 U	2.5 U
Methylene chloride	75-09-2	5	2.5 U	2.5 U	2.5 U	2.5 U
n-Butylbenzene	104-51-8	5	2.5 U	2.5 U	2.5 U	2.5 U
n-Propylbenzene	103-65-1	5	2.5 U	2.5 U	2.5 U	2.5 U
Naphthalene	91-20-3	10	2.5 U	2.5 U	2.5 U	2.5 U
o-Chlorotoluene	95-49-8	5	2.5 U	2.5 U	2.5 U	2.5 U
o-Xylene	95-47-6	5	2.5 U	2.5 U	2.5 U	2.5 U
p-Chlorotoluene	106-43-4	5	2.5 U	2.5 U	2.5 U	2.5 U
p-Diethylbenzene	105-05-5	NS	2 U	2 U	2 U	2 U
p-Ethyltoluene	622-96-8	NS	2 U	2 U	2 U	2 U
p-Isopropyltoluene	99-87-6	5	2.5 U	2.5 U	2.5 U	2.5 U
p/m-Xylene	179601-23-1	5	2.5 U	2.5 U	2.5 U	2.5 U
sec-Butylbenzene	135-98-8	5	2.5 U	2.5 U	2.5 U	2.5 U
Styrene	100-42-5	5	2.5 U	2.5 U	2.5 U	2.5 U
tert-Butylbenzene	98-06-6	5	2.5 U	2.5 U	2.5 U	2.5 U
Tetrachloroethene	127-18-4	5	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	5	2.5 U	2.5 U	2.5 U	2.5 U
trans-1,2-Dichloroethene	156-60-5	5	2.5 U	2.5 U	2.5 U	2.5 U
trans-1,3-Dichloropropene	10061-02-6	0.4	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,4-Dichloro-2-butene	110-57-6	5	2.5 U	2.5 U	2.5 U	2.5 U
Trichloroethene	79-01-6	5	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	5	2.5 U	2.5 U	2.5 U	2.5 U
Vinyl Acetate	108-05-4	NS	5 U	5 U	5 U	5 U
Vinyl chloride	75-01-4	2	1 U	1 U	1 U	1 U
Xylenes, Total	1330-20-7	NS	2.5 U	2.5 U	2.5 U	2.5 U

Notes:
All Concentrations are ppb (ug/L)
1 - Ambient Water Quality Standard, NYSDEC TOGS 1.1.1, Ambient Water Quality Standards and Groundwater Effluent Limitations
NS - No standard
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J - Estimated value
Highlighted text indicates exceedence of AWQS or Guidance Value

Table 6

Groundwater Sample Analaytical Data - Semi-Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION SAMPLING DATE LAB SAMPLE ID	CAS Number	NYSDEC AWQS[1]	MW001 2/27/2019 L190701-01	MW002 2/25/2019 L1907307-01	MW003 2/25/2019 L1907307-02	DUP001 2/25/2019 L1907307-03
Semi-Volatile Organic Compounds						
1,2,4,5-Tetrachlorobenzene	95-94-3	5	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	120-82-1	5	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	3	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene	541-73-1	3	2 U	2 U	2 U	2 U
1,4-Dichlorobenzene	106-46-7	3	2 U	2 U	2 U	2 U
2,4,5-Trichlorophenol	95-95-4	NS	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	NS	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	120-83-2	1	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	105-67-9	50	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	10	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	5	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	5	5 U	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	10	0.2 U	0.2 U	0.2 U	0.2 U
2-Chlorophenol	95-57-8	NS	2 U	2 U	2 U	2 U
2-Methylnaphthalene	91-57-6	NS	0.1 U	0.1 U	0.02 J	0.1 U
2-Methylphenol	95-48-7	NS	5 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	5	5 U	5 U	5 U	5 U
2-Nitrophenol	88-75-5	NS	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	91-94-1	5	5 U	5 U	5 U	5 U
3-Methylphenol/4-Methylphenol	108-39-4	NS	5 U	5 U	5 U	5 U
3-Nitroaniline	99-09-2	5	5 U	5 U	5 U	5 U
4,6-Dinitro-o-cresol	534-52-1	NS	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	101-55-3	NS	2 U	2 U	2 U	2 U
4-Chloroaniline	106-47-8	5	5 U	5 U	5 U	5 U
4-Chlorophenyl phenyl ether	7005-72-3	NS	2 U	2 U	2 U	2 U
4-Nitroaniline	100-01-6	5	5 U	5 U	5 U	5 U
4-Nitrophenol	100-02-7	NS	10 U	10 U	10 U	10 U
Acenaphthene	83-32-9	20	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthylene	208-96-8	NS	0.1 U	0.1 U	0.1 U	0.1 U
Acetophenone	98-86-2	NS	5 U	5 U	5 U	5 U
Anthracene	120-12-7	50	0.1 U	0.1 U	0.03 J	0.1 U
Benzo(a)anthracene	56-55-3	0.002	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)pyrene	50-32-8	0	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.002	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(ghi)perylene	191-24-2	NS	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	207-08-9	0.002	0.1 U	0.1 U	0.1 U	0.1 U
Benzoic Acid	65-85-0	NS	50 U	50 U	50 U	50 U
Benzyl Alcohol	100-51-6	NS	2 U	2 U	2 U	2 U
Biphenyl	92-52-4	NS	2 U	2 U	2 U	2 U
Bis(2-chloroethoxy)methane	111-91-1	5	5 U	5 U	5 U	5 U
Bis(2-chloroethyl)ether	111-44-4	1	2 U	2 U	2 U	2 U
Bis(2-chloroisopropyl)ether	108-60-1	5	2 U	2 U	2 U	2 U
Bis(2-ethylhexyl)phthalate	117-81-7	5	3 U	3 U	3 U	3 U
Butyl benzyl phthalate	85-68-7	50	5 U	5 U	5 U	5 U
Carbazole	86-74-8	NS	2 U	2 U	2 U	2 U
Chrysene	218-01-9	0.002	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzo(a,h)anthracene	53-70-3	NS	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	NS	2 U	2 U	2 U	2 U
Diethyl phthalate	84-66-2	50	5 U	5 U	5 U	5 U
Dimethyl phthalate	131-11-3	50	5 U	5 U	5 U	5 U
Di-n-butylphthalate	84-74-2	50	5 U	5 U	5 U	5 U
Di-n-octylphthalate	117-84-0	50	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	50	0.03 J	0.1 U	0.03 J	0.1 U
Fluorene	86-73-7	50	0.02 J	0.1 U	0.02 J	0.1 U
Hexachlorobenzene	118-74-1	0.04	0.8 U	0.8 U	0.8 U	0.8 U
Hexachlorobutadiene	87-68-3	0.5	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorocyclopentadiene	77-47-4	5	20 U	20 U	20 U	20 U
Hexachloroethane	67-72-1	5	0.8 U	0.8 U	0.8 U	0.8 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	0.1 U	0.1 U	0.1 U	0.1 U
Isophorone	78-59-1	50	5 U	5 U	5 U	5 U
Naphthalene	91-20-3	10	0.1 U	0.1 U	0.1 U	0.1 U
NDPA/DPA	86-30-6	50	2 U	2 U	2 U	2 U
Nitrobenzene	98-95-3	0.4	2 U	2 U	2 U	2 U
n-Nitrosodi-n-propylamine	621-64-7	NS	5 U	5 U	5 U	5 U
p-Chloro-m-cresol	59-50-7	NS	2 U	2 U	2 U	2 U
Pentachlorophenol	87-86-5	1	0.8 U	0.8 U	0.8 U	0.8 U
Phenanthrene	85-01-8	50	0.05 J	0.1 U	0.03 J	0.1 U
Phenol	108-95-2	1	5 U	5 U	5 U	5 U
Pyrene	129-00-0	50	0.05 J	0.04 J	0.03 J	0.1 U

Table 7

Remedial Permits
Williamsbridge Plaza (C203113)

LOCATION	CAS	NYSDEC	MW001		MW002		MW003		DUP001	
SAMPLING DATE	Number	AWQS[1]	2/27/2019		2/25/2019		2/25/2019		2/25/2019	
LAB SAMPLE ID			L1907701-01		L1907307-01		L1907307-02		L1907307-03	
Sample Type:			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Total Metals										
Aluminum	7429-90-5	NS	676	6.54 J	134	6.03 J	452	4.4 J	344	3.38 J
Antimony	7440-36-0	3	0.95 J	0.78 J	2.03 J	1.75 J	0.42 U	0.42 U	0.42 U	0.42 U
Arsenic	7440-38-2	25	0.36 J	0.16 U	0.53	0.45 J	0.26 J	0.17 J	0.33 J	0.23 J
Barium	7440-39-3	1,000	59	49.99	69.15	65.08	77.85	70.07	80	70.76
Beryllium	7440-41-7	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium	7440-43-9	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Calcium	7440-70-2	NS	60,000	58,800	225,000	227,000	125,000	120,000	129,000	119,000
Chromium	7440-47-3	50	1.83	0.17 U	2.24	1.7	1.99	1.02	1.68	0.97 J
Cobalt	7440-48-4	NS	1.98	1.46	0.67	0.49 J	1.09	0.51	1	0.77
Copper	7440-50-8	200	4.02	0.92 J	2.34	1.86	3.22	1.59	3.11	1.36
Iron	7439-89-6	300	1,190	52.2	228	19 U	802	19 U	626	19.1 U
Lead	7439-92-1	25	0.85 J	0.34 U	0.35 J	0.34 U	3.41	0.34 U	2.41	0.34 U
Magnesium	7439-95-4	35,000	22,500	21,900	34,400	34,800	26,000	25,500	27,100	25,500
Manganese	7439-96-5	300	498	471	39	37	238	193	280.6	240
Mercury	7439-97-6	0.7	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Nickel	7440-02-0	100	2.93	1.77 J	1.79 J	1.77 J	2.05	1.54 J	2.3	1.22 J
Potassium	7440-09-7	NS	4,540	4,380	12,600	12,500	4,720	4,410	4,760	4,230
Selenium	7782-49-2	10	1.73 U	1.73 U	9.73	9.1	3.62 J	3.05 J	3.86 J	2.76 J
Silver	7440-22-4	50	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Sodium	7440-23-5	20,000	37,600	37,900	19,800	17,200	32,100	32,000	31,500	29,700
Thallium	7440-28-0	0.5	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
Vanadium	7440-62-2	NS	2.07 J	1.57 U	1.57 U	1.57 U	1.57 U	1.57 U	1.57 U	1.57 U
Zinc	7440-66-6	5,000	3.41 U	3.41 U	8.57 J	3.41 U	4.23 J	3.41 U	3.96 J	3.41 U

Notes:
All Concentrations are ppb (ug/L)
1 - Ambient Water Quality Standard, NYSDEC TOGS 1.1.1, Ambient Water Quality Standards and Groundwater Effluent Limitations
NS - No standard
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J - Estimated value
Highlighted text indicates exceedence of AWQS or Guidance Value

Table 8

Groundwater Sample Analaytical Data - Pesticides and PCBs
Willimasbridge Plaza (C203113)

Organochlorine Pesticides						
4,4'-DDD	72-54-8	0.3	0.029 U	0.029 U	0.029 U	0.029 U
4,4'-DDE	72-55-9	0.2	0.029 U	0.029 U	0.029 U	0.029 U
4,4'-DDT	50-29-3	0.2	0.029 U	0.029 U	0.029 U	0.029 U
Aldrin	309-00-2	0	0.014 U	0.014 U	0.014 U	0.014 U
Alpha-BHC	319-84-6	0.01	0.014 U	0.014 U	0.014 U	0.014 U
Beta-BHC	319-85-7	0.04	0.014 U	0.014 U	0.014 U	0.014 U
Chlordane	57-74-9	0.05	0.143 U	0.143 U	0.143 U	0.143 U
cis-Chlordane	5103-71-9	NS	0.014 U	0.014 U	0.014 U	0.014 U
Delta-BHC	319-86-8	0.04	0.014 U	0.014 U	0.014 U	0.014 U
Dieldrin	60-57-1	0.004	0.029 U	0.029 U	0.029 U	0.029 U
Endosulfan I	959-98-8	NS	0.014 U	0.014 U	0.014 U	0.014 U
Endosulfan II	33213-65-9	NS	0.029 U	0.029 U	0.029 U	0.029 U
Endosulfan sulfate	1031-07-8	NS	0.029 U	0.029 U	0.029 U	0.029 U
Endrin	72-20-8	0	0.029 U	0.029 U	0.029 U	0.029 U
Endrin aldehyde	7421-93-4	5	0.029 U	0.029 U	0.029 U	0.029 U
Endrin ketone	53494-70-5	5	0.029 U	0.029 U	0.029 U	0.029 U
Heptachlor	76-44-8	0.04	0.014 U	0.014 U	0.014 U	0.014 U
Heptachlor epoxide	1024-57-3	0.03	0.014 U	0.014 U	0.014 U	0.014 U
Lindane	58-89-9	0.05	0.014 U	0.014 U	0.014 U	0.014 U
Methoxychlor	72-43-5	35	0.143 U	0.143 U	0.143 U	0.143 U
Toxaphene	8001-35-2	0.06	0.143 U	0.143 U	0.143 U	0.143 U
trans-Chlordane	5103-74-2	NS	0.014 U	0.014 U	0.014 U	0.014 U
Polychlorinated Biphenyls						
Aroclor 1016	12674-11-2	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1221	11104-28-2	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1232	11141-16-5	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1242	53469-21-9	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1248	12672-29-6	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1254	11097-69-1	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1260	11096-82-5	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1262	37324-23-5	0.09	0.082 U	0.082 U	0.082 U	0.082 U
Aroclor 1268	11100-14-4	0.09	0.082 U	0.082 U	0.082 U	0.082 U
PCBs, Total	1336-36-3	NS	0.082 U	0.082 U	0.082 U	0.082 U

Table 9

Soil-Vapor Sample Analaytical Data - Volatile Organic Compounds
Willimasbridge Plaza (C203113)

LOCATION	CAS	VP001	VP002	VP003	VP004	VP005	VP006	VP007	VP008	AA001
SAMPLING DATE	Number	L1745989-01	L1745989-02	L1745989-03	L1745989-04	L1745989-05	L1745989-06	L1745989-07	L1745989-08	L1745989-09
LAB SAMPLE ID		12/12/2017	43081	43081	43081	43081	43081	43081	43081	43081
Volatile Organic Compounds										
1,1,1-Trichloroethane	71-55-6	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
1,1,2,2-Tetrachloroethane	79-34-5	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloroethane	79-00-5	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	75-34-3	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	75-35-4	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
1,2,4-Trichlorobenzene	120-82-1	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	95-63-6	4.59	2.28	1.76	1.72	2.19	2.22	2.27	0.983 U	1.85
1,2-Dibromoethane	106-93-4	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U	1.54 U
1,2-Dichlorobenzene	95-50-1	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	107-06-2	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	78-87-5	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U	0.924 U
1,3,5-Trimethylbenzene	108-67-8	1.66	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U
1,3-Butadiene	106-99-0	11	9.98	9.36	0.442 U	4.07	50.4	0.442 U	0.442 U	0.442 U
1,3-Dichlorobenzene	541-73-1	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	106-46-7	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane	123-91-1	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	540-84-1	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U	0.934 U
2-Butanone	78-93-3	32.4	35.4	42.8	62.5	11.2	56	11.6	15.7	1.47 U
2-Hexanone	591-78-6	6.56	7.05	7.05	8.85	1.19	8.2	1.38	1.29	0.82 U
3-Chloropropene	107-05-1	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U	0.626 U
4-Ethyltoluene	622-96-8	1.17	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U	0.983 U
4-Methyl-2-pentanone	108-10-1	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U	2.05 U
Acetone	67-64-1	55.3	79.8	142	287	2.38 U	155	47.7	63.7	4.85
Benzene	71-43-2	7.76	8.56	5.85	0.831	5.21	8.63	1.26	0.687	1.74
Benzyl chloride	100-44-7	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	75-27-4	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U	1.34 U
Bromoform	75-25-2	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U	2.07 U
Bromomethane	74-83-9	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U	0.777 U
Carbon disulfide	75-15-0	4.39	7.85	6.1	0.623 U	8.03	102	2.1	0.623 U	0.623 U
Carbon tetrachloride	56-23-5	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U
Chlorobenzene	108-90-7	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U	0.921 U
Chloroethane	75-00-3	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U	0.528 U
Chloroform	67-66-3	2.24	4.34	2.25	0.977 U	2.3	3.59	2.38	0.977 U	0.977 U
Chloromethane	74-87-3	0.413 U	0.413 U	0.45	1.2	0.593	0.487	0.413 U	0.748	1.08
cis-1,2-Dichloroethene	156-59-2	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U	0.793 U
cis-1,3-Dichloropropene	10061-01-5	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U
Cyclohexane	110-82-7	1.08	1.24	10.3	0.688 U	3.2	6.85	0.688 U	0.688 U	0.688 U
Dibromochloromethane	124-48-1	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	75-71-8	1.6	2.16	1.07	1.69	1.13	0.989 U	1.79	1.74	1.4
Ethanol	64-17-5	10.6	9.42 U	13	51.4	9.42 U	9.42 U	9.42 U	9.42 U	9.42 U
Ethyl Acetate	141-78-6	1.8 U	1.8 U	1.8 U	3.24	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Ethylbenzene	100-41-4	3.43	4.07	1.99	3.69	1.62	3.85	1.32	0.869 U	2.5
Freon-113	76-13-1	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U
Freon-114	76-14-2	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Heptane	142-82-5	3.94	4.07	2.36	0.82 U	5	13.6	0.82 U	0.82 U	0.82 U
Hexachlorobutadiene	87-68-3	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U	2.13 U
Isopropanol	67-63-0	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.23 U	1.42
Methyl tert butyl ether	1634-04-4	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U	0.721 U
Methylene chloride	75-09-2	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U
n-Hexane	110-54-3	7.72	9.87	7.58	0.705 U	10	40.9	0.705 U	0.705 U	0.705 U
o-Xylene	95-47-6	3.79	4.33	2.49	1.57	2.76	4	2.01	0.869	0.869 U
p/m-Xylene	179601-23-1	10.3	12.2	6.69	4.31	6.65	11	5.91	2.26	1.74 U
Styrene	100-42-5	1.63	2.02	1.63	4.3	1.66	2.17	1.22	0.852 U	0.852 U
Tertiary butyl Alcohol	75-65-0	3.36	6.15	3.02	1.99	1.52 U	3.03	4.06	1.52 U	1.52 U
Tetrachloroethene	127-18-4	39.3	8.54	1.36 U	1.36 U	1.36 U	3.52	18.9	1.36 U	1.36 U
Tetrahydrofuran	109-99-9	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U	1.47 U
Toluene	108-88-3	11.7	17.5	7.08	2.6	4.71	17.5	2.76	1.66	0.81
trans-1,2-Dichloroethene	156-60-5	1.34	1.8	1.04	0.793 U	0.793 U	2.98	0.793 U	0.793 U	0.793 U
trans-1,3-Dichloropropene	10061-02-6	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U	0.908 U
Trichloroethene	79-01-6	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U	1.07 U
Trichlorofluoromethane	75-69-4	1.62	1.28	1.12 U	1.25	1.12 U	1.6	1.28	1.22	1.12 U
Vinyl bromide	593-60-2	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U	0.874 U
Vinyl chloride	75-01-4	0.511 U	0.511 U	0.511 U	0.511 U	0.511 U	0.511 U	0.511 U	0.511 U	0.511 U

Notes:
All Concentrations are ug/m^3
1 - USEPA Vapor Intrusion Screening Level (May 2018), www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator
J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL).
U - Not detected at the reported detection limit for the sample.
Yellow highlighted values exceed VISL

Table 10

Soil Vapor Sample Analaytical Data Summary - Volatile Organic Compounds
Henry Phipps Plaza South (Parcel 1) - 14RHAZ082M

Contaminant	CAS Number	Unrestricted Use
Volatile organic compounds		
1,1,1-Trichloroethane f	71-55-6	0.68
1,1-Dichloroethane f	75-34-3	0.27
1,1-Dichloroethene f	75-35-4	0.33
1,2-Dichlorobenzene f	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 c
cis -1,2-Dichloroethene f	156-59-2	0.25
trans-1,2-Dichloroethene f	156-60-5	0.19
1,3-Dichlorobenzene f	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 b
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene f	104-51-8	12
Carbon tetrachloride f	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene f	100-41-4	1
Hexachlorobenzene f	118-74-1	0.33b
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether f	1634-04-4	0.93
Methylene chloride	75-09-2	0.05
n - Propylbenzene f	103-65-1	3.9
sec-Butylbenzene f	135-98-8	11
tert-Butylbenzene f	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene f	95-63-6	3.6
1,3,5-Trimethylbenzenef	108-67-8	8.4
Vinyl chloridef	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenapthylene f	208-96-8	100 a
Anthracene f	120-12-7	100 a
Benz(a)anthracene f	56-55-3	1c
Benzo(a)pyrene	50-32-8	1c
Benzo(b)fluoranthene f	205-99-2	1c
Benzo(g,h,i)perylene f	191-24-2	100
Benzo(k)fluoranthene f	207-08-9	0.8 c
Chrysene f	218-01-9	1c
Dibenz(a,h)anthracene f	53-70-3	0.33 b
Fluoranthene f	206-44-0	100 a
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene f	193-39-5	0.5 c
m-Cresol f	108-39-4	0.33 b
Naphthalene f	91-20-3	12
o-Cresol f	95-48-7	0.33 b
p-Cresol f	106-44-5	0.33 b
Pentachlorophenol	87-86-5	0.8 b
Phenanthrene f	85-01-8	100
Phenol	108-95-2	0.33 b
Pyrene f	129-00-0	100

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 c
Barium	7440-39-3	350 c
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 c
Chromium, hexavalent e	18540-29-9	1b
Chromium, trivalent e	16065-83-1	30 c
Copper	7440-50-8	50
Total Cyanide e, f		27
Lead	7439-92-1	63 c
Manganese	7439-96-5	1600 c
Total Mercury		0.18 c
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9c
Silver	7440-22-4	2
Zinc	7440-66-6	109 c
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) f	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 b
4,4'-DDT	50-29-3	0.0033 b
4,4'-DDD	72-54-8	0.0033 b
Aldrin	309-00-2	0.005 c
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094
delta-BHC g	319-86-8	0.04
Dibenzofuran f	132-64-9	7
Dieldrin	60-57-1	0.005 c
Endosulfan I d, f	959-98-8	2.4
Endosulfan II d, f	33213-65-9	2.4
Endosulfan sulfate d, f	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1

Notes:
All concentrations are mg/kg (ppm)
a The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.
b For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
c For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.
d SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
e The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.
f Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with "NS". Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

Table 12

Remedial Permits
Williamsbridge Plaza (C203113)

Permit	Citation of the Law, Statute, or Code	Agency	Contact Name	Contact Phone Number
Sheeting / Shoring	Chapter 33 of NYC Construction Code	NYCDOB		718-802-3675
Waste Disposal Facility	6 NYCRR Part 360	TBD	TBD	TBD

Table 13

Emergency Contact Numbers
Williamsbridge Gardens (C203113)

Contact	Firm or Agency	Telephone Number
Police	NYPD	911
Fire	FDNY	911
Hospital	Bronx State Hospital	(718) 882-3328
Project Manager / Health and Safety Manager	Thomas Melia PWGC	(631) 589-6353
Health and Safety Officer	Steven Labrecque PWGC	(631) 589-6353
NYSDEC Site Contact	Mandy Yau	(718) 482-4897
NYSDOH Site Contact	Sarah Bogardus	(518) 402-7860
Poison Control Center		(800) 962-1253
Chemtrec		(800) 424-9300

Appendix A

Site Survey/Metes and Bounds

SURVEY NO. 66250—1
66250—1.dwg
66250001.crd
66250—1B.crd
EAST 212th STREET
(LOGAN STREET)
EAST 211th STREET
(RUSKIN STREET)
WHITE PLAINS ROAD
ELEVATED RAIL ROAD
HOLAND AVENUE
(MARLE AVENUE)
50' WIDE
60' WIDE
IRREG. WIDTH
Present Street Line
Formerly Street Marie Avenue
City Combined Sewer
Asphalt Pavement
Concrete Curb
Concrete Walk
Chain Link Fence
Construction Fence
2 STORY BRICK & STUCCO BUILDING
2 STORY CONCRETE & STUCCO BUILDING
ST. NO. 709
3 STORY BRICK BUILDING
ST. NO. 715
Open Porch
1 STORY
4 STORY BRICK & STUCCO BUILDING
ST. NO. 719-723
4 STORY BRICK & STUCCO BUILDING
ST. NO. 729
1 STORY BRICK BUILDING
ST. NO. 3558 WHITE PLAINS ROAD
TAX LOT 60
1 STORY EXT.
EXTENSION
1 STORY BRICK & STONE BUILDING
HIGH 1 STORY BRICK BUILDING
ST. NO. 707 EAST 211th STREET
TAX LOT 51
ST. NO. 718
VACANT
TENTATIVE TAX LOT 71
PARCEL AREA=19,956 SQ. FT.
OR 0.458132 ACRE
PARKED
TRAILERS
VACANT
TENTATIVE TAX LOT 42
PARCEL AREA=15,051 SQ. FT.
OR 0.345513 ACRE
ST. NO. 711
2 STORY FRAME BUILDING
ST. NO. 730 EAST 212th STREET
TAX LOT 74
Platform Above Cellar
METAL SHED
1 STORY BRICK & STUCCO
ST. NO. 3537 HOLLAND AVENUE
TAX LOT 77
1 STORY CONC. BLOCK
2 STORY CONC. BLOCK & FRAME BUILDING
ST. NO. 3535 HOLLAND AVENUE
TAX LOT 78
3 STORY BRICK & STUCCO BUILDING
TAX LOT 175
ST. NO. 721 EAST 211th STREET
PARALLEL WITH HOLAND AVENUE
PARALLEL WITH EAST 212th STREET
3 STORY BRICK & STUCCO BUILDING
ST. NO. 3510
ST. NO. 702
BRICK GARAGE
ST. NO. 711
2 STORY BRICK BUILDING GARAGE @ 1st
ST. NO. 710-712
2 STORY & BSMT, ATTIC, BRICK BUILDINGS
Parking Area
100.37'
94°37'0"
200'
200.02'(U.S.)
50'
45'
90°
100.01'
100'
100.01'(U.S.)
94'
94.01'(U.S.)
79'
79.01'(U.S.)
12'
71'
71.01'(U.S.)
6'
50'
50.01'(U.S.)
106'
106.01'(U.S.)
150'
150.01'(U.S.)
95'
95.01'(U.S.)
GENERAL NOTES
1.ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREON REFER TO NAVD 1988 WHICH IS 1.508 FEET BELOW THE BRONX TOPOGRAPHICAL BUREAU DATUM.
2.ESTABLISHED GRADES SHOWN HEREON REFER TO TOP OF CURB. IF ESTABLISHED GRADES VARY SUBSTANTIALLY WITH EXISTING ELEVATIONS CONSULT WITH THE HIGHWAY DEPARTMENT BEFORE DESIGNING IMPROVEMENTS.
3.SIZES AND LOCATIONS OF WATER MAINS SHOWN HEREON AS SUPPLIED BY THE DEPARTMENT OF WATER SUPPLY, BOROUGH OF THE BRONX. LOCATIONS OF WATER SUPPLY MANHOLES, HYDRANTS AND WATER VALVES AS OBTAINED FROM FIELD MEASUREMENT.
4.SIZES AND TYPES OF SEWERS SHOWN HEREON AS OBTAINED FROM THE BOROUGH OF THE BRONX SEWER DEPARTMENT RECORDS. SEWER MANHOLE RIM AND INVERT ELEVATIONS SHOWN HEREON OBTAINED BY FIELD MEASUREMENTS UNLESS INDICATED (*) WHICH DENOTES INVERT INACCESSIBLE OR MANHOLE NOT FOUND IN FIELD. INFORMATION SHOWN IN THIS MANNER IS AS OBTAINED FROM THE BOROUGH OF THE BRONX SEWER DEPARTMENT RECORDS.
5.LOCATIONS OF ALL UTILITIES AND SUBSTRUCTURES ARE APPROXIMATE ONLY. THE INFORMATION GIVEN ON THE SURVEY PERTAINING TO UTILITIES AND SUBSTRUCTURES IS NOT CERTIFIED AS TO ACCURACY OR COMPLETENESS. CONSULT WITH THE APPROPRIATE COMPANY OR AGENCY BEFORE DESIGNING IMPROVEMENTS.
6.THE OWNER, CONTRACTOR AND/OR HIS AGENTS MUST NOTIFY THE APPROPRIATE UTILITY COMPANIES AND/OR AGENCIES AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION IN ACCORDANCE WITH INDUSTRIAL CODE RULE 53.
7.NO EVIDENCE OF EXISTING STREAMS, CREEKS, DITCHES OR WATER COURSES ON/OR CROSSING PROPERTY SURVEYED.
8.NOT ALL SUBSURFACE INFORMATION PLOTTED.
FLOOD HAZARD NOTE
THE PARCEL SURVEYED IS COMPRISED OF AREAS DESIGNATED AS ZONE X (LESS THAN 0.2% CHANCE OF FLOODING)
FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
COMMUNITY PANEL NUMBER 360497 0081 F
EFFECTIVE DATE SEPTEMBER 5, 2007
LEGEND
ASPH.......ASPHALT
BK..........BRICK
BSMT.......BASEMENT
CC..........CURB CUT
CCR.........CONCRETE CURB ROUND
CD...........CELLAR DOOR
CLF..........CHAIN LINK fence
CO...........CATCH BASIN CLEAN OUT
CONC.......CONCRETE
CRF.........CHAIN ROPE fence
CWA.........CELLAR WINDOW AREA
DR...........DRAIN
EL............ELEVATION
FAB..........FIRE ALARM BOX
FC...........FILL CAP
FL EL......FLOOR ELEVATION
GP...........GUARD POLE
GV...........GAS VALVE
IF.............IRON fence
INL....CATCH BASIN INLET ELEVATION
INV.........SEWER INVERT ELEVATION
.........LIGHT POLE
MB...........MAIL BOX
MHU.........UNKNOWN MANHOLE
OF...........OIL FILL
OHW.........OVERHEAD WIRES
P..............POLE
PAVT........PAVEMENT
PM...........PARKING METER
PMULT......POLE, MULTIPLE USAGE
..........SIAMESE
(rim 12.42).....ELEVATIONS IN (inv 2.6) BOROUGH DATUM
PR........PEDESTRIAN RAMP
RET......RETAINING
RIM...RIM ELEVATION SEWER MANHOLE
SFCR.....STEEL FACED CURB ROUND
STY.......STORY
TB.......TOP OF BANK ELEVATION
........TRAFFIC LIGHT
TEL.......TELEPHONE
TP.......TREE PIT
......TRAFFIC SIGN
TW........ELEVATION AT TOP OF WALL
UP........UTILITY POLE
VU.........VALVE UNKNOWN
VLTU......VAULT UNKNOWN
VP.........VENT PIPE
WV.........WATER VALVE
12"G......GAS MAIN WITH SIZE
12"S......SEWER MAIN WITH SIZE
12"W......WATER MAIN WITH SIZE
.......CATCH BASIN
E ..ELECTRIC MANHOLE / VAULT
F.....FIRE MANHOLE
G.....GAS MANHOLE
S.....SEWER MANHOLE
T.....TELEPHONE MANHOLE
W.....WATER MANHOLE
TR.......TRAFFIC VAULT
....HYDRANT
T8.....TREE WITH SIZE
...TRAFFIC FLOW
54.96 ...ESTABLISHED/LEGAL GRADE
TOTAL PARCEL AREA=35,007 SQ.FT.
OR 0.803645 ACRES
BRONX TOPO BUREAU DATUM
MEAN SEA LEVEL 0.00 (NAVD 1988)
MEAN SEA LEVEL 0.00 (NGVD1929)
1.508
2.608
1.1
NAVD 1988 DATUM IS 1.508 FEET BELOW THE BRONX TOPO BUREAU DATUM
STANDARD: FILED MAP
EXCEPT WHERE OTHERWISE NOTED U.S.
16 0 16 32 48
GRAPHIC SCALE - FEET
DRAWN: K.OP/GP/M.S.
REV | DATE | DESCRIPTION | ck
12-22-17 | ARCHITECTURAL SURVEY
A | 04-10-18 | INFORMATION ADDED
B | 09-07-18 | ADJOINING ELEVATIONS ADDED
C | 04-16-19 | ARCHITECTURAL SURVEY UPDATED WITH SUBDIVISION
UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW
ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S INKED SEAL OR HIS EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES
CERTIFICATIONS INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS
MONTROSE
SURVEYING CO., LLP.
CITY & LAND SURVEYORS
116 20 METROPOLITAN AVE * RICHMOND HILL NY 11418-1090 * (718) 849-0600
© ALL RIGHTS RESERVED 2017/2018
STATE OF NEW YORK
SAEID JALILVAND
050236
LICENSED LAND SURVEYOR
CITY OF NEW YORK
COUNTY THE BRONX
TAX BLOCK 4657
TAX LOT 42, 67, 69, 71 & 72
SCALE: 1" = 16'
ESTABLISHED 1876 * SUCCESSOR TO:
B.G. MEINIKHEIM C.S.*C.U. POWELL C.E.,C.S.*L.C.L. SMITH C.S.*NATHAN CAMPBELL C.E.,C.S.*A.U. WHITSON C.E.,C.S.*
WILLIAM L. SAVACOOL C.E.,L.S.,C.S.*A.U. WHITSON INC. C.E.,C.S.*G. WEBER L.S.,C.S.*C. STIDOLPH R.A.,L.S.*WHITSON &
POWELL INC. P.E.,L.S.,C.S.*KELLER & POWELL P.E.,L.S.,C.S.*LOUIS MONTROSE C.E.,L.S.,C.S.*FRED J. POWELL P.E.,L.S.,C.S.*

NYC DEPARTMENT OF FINANCE
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2019012500436002001E459E

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 8**

Document ID: 2019012500436002 Document Date: 01-22-2019 Preparation Date: 01-25-2019
Document Type: CERTIFICATE
Document Page Count: 6

PRESENTER:
PHILIP OHARA ASSOCIATES (HOLD FOR P/U REDVISION)
A/A/F FIRST AMERICAN TITLE INSURANCE COMPANY
55 WASHINGTON STREET, SUITE 655
BROOKLYN, NY 11201

RETURN TO:
BELL URBAN LLC
ATTN: ALAN BELL
419 PARK AVENUE SOUTH, 18TH FLOOR
NEW YORK, NY 10016
BTB-40655-AMD-ZLC (CB)

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BRONX	4657	42	Entire Lot		N/A EAST 211 STREET

Property Type: OTHER

Borough	Block	Lot		Unit	Address
BRONX	4657	67	Entire Lot		718 EAST 212 STREET

Property Type: OTHER

☒ Additional Properties on Continuation Page

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

PARTY 1:
FIRST AMERICAN TITLE INSURANCE COMPANY BY PHILIP O'HARA ASSOCIATES, INC., 55 WASHINGTON STREET, SUITE 655
BROOKLYN, NY 11201

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	79.00
Affidavit Fee:	$	0.00

Filing Fee: $ 0.00

NYC Real Property Transfer Tax: $ 0.00

NYS Real Estate Transfer Tax: $ 0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 01-28-2019 14:51
City Register File No.(CRFN): **2019000031255**

City Register Official Signature

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2019012500436002001C471E

RECORDING AND ENDORSEMENT COVER PAGE (CONTINUATION) **PAGE 2 OF 8**

Document ID: 2019012500436002 Document Date: 01-22-2019 Preparation Date: 01-25-2019
Document Type: CERTIFICATE

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BRONX	4657	69	Entire Lot		720 EAST 212 STREET
Property Type: OTHER					
Borough	**Block**	**Lot**		**Unit**	**Address**
BRONX	4657	71	Entire Lot		722 EAST 212 STREET
Property Type: OTHER					
Borough	**Block**	**Lot**		**Unit**	**Address**
BRONX	4657	72	Entire Lot		728 EAST 212 STREET
Property Type: OTHER					

EXHIBIT I

CERTIFICATION PURSUANT TO ZONING LOT SUBDIVISION C OF SECTION 12-10 OF THE ZONING RESOLUTION OF DECEMBER 15, 1961 CITY OF NEW YORK - AS AMENDED EFFECTIVE AUGUST 18, 1977

Title No.: BTB-40655AMD -ZLC

N.B. # 2101801877
2101788866

First American Title Insurance Company, a title insurance company licensed to do business in the State of New York, by Philip O'Hara Associates, Inc., its authorized agent, having its principal office at 55 Washington Street, Suite 655, Brooklyn, NY 11201 hereby certifies that as to the land hereinafter described, being a tract of land either unsubdivided or consisting of two or more lots of record contiguous for a minimum of ten linear feet, located within a single block, that all the parties in interest constituting a party as defined in Section 12-10, Subdivision (C) of the Zoning Resolution of the City of New York, effective December 15, 1961, as amended are the following:

NAME AND ADDRESS	INTEREST
211 RESIDENTIAL ASSOCIATES LLC 419 Park Avenue South, 7th Floor New York, NY 10016	**FEE OWNER**
WELLS FARGO BANK, NATIONAL ASSOCIATION 150 East 42nd Street, 36th Floor New York, NY 10017	**MORTGAGEE**

The subject tract of land with respect to which the foregoing parties are the parties in interest as aforesaid is/are known as current Tax Lots 42, 67, 69, 71,& 72 (Tentative Lots 42 & 71) in Block 4657 on the Tax Map of the City of New York, County of Bronx, and more particularly bounded and described as follows:

TENTATIVE TAX LOT 42

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Bronx, City and State of New York, bounded and described as follows:

BEGINNING at a point on the northerly side of East 211th Street (50' wide) distant 95 feet westerly from the corner formed by the intersection of the northerly side of East 211th Street and the westerly side of Holland Avenue (60' wide);

RUNNING THENCE westerly along the northerly side of East 211th Street 150 feet;

THENCE northerly parallel with Holland Avenue 106 feet;

THENCE easterly parallel with East 211th Street 79 feet;

THENCE southerly parallel with Holland Avenue 12 feet;

THENCE easterly parallel with East 211th Street 71 feet;

THENCE southerly parallel with Holland Avenue 94 feet to the northerly side of East 211th Street and the point or place of BEGINNING.

TENTATIVE TAX LOT 71

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Bronx, City and State of New York, bounded and described as follows:

BEGINNING at a point on the southerly side of East 212th Street (50' wide) distant 45 feet westerly from the corner formed by the intersection of the southerly side of East 212th Street and the westerly side of Holland Avenue (60' wide);

RUNNING THENCE southerly parallel with Holland Avenue 100 feet;

THENCE westerly parallel with East 212th Street 50 feet;

THENCE southerly parallel with Holland Avenue 6 feet;

THENCE westerly parallel with East 212th Street 71 feet;

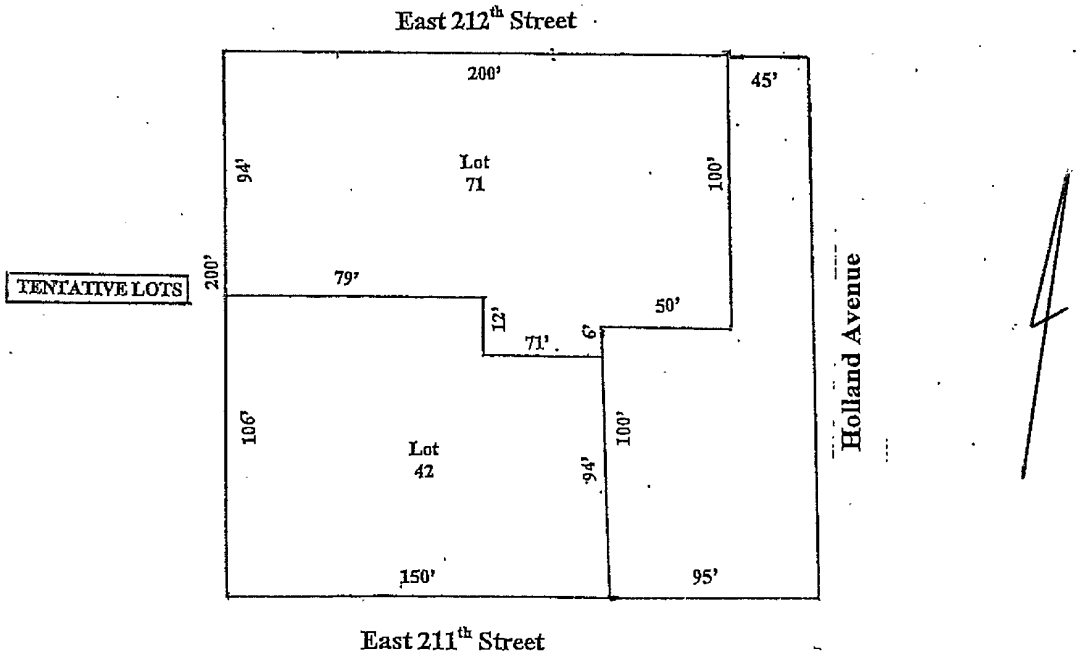
THENCE northerly parallel with Holland Avenue 12 feet;

THENCE westerly parallel with East 212th Street 79 feet;

THENCE northerly parallel with Holland Avenue 94 feet to the southerly side of East 212th Street;

THENCE easterly along the southerly side of East 212th Street 200 feet to the point or place of BEGINNING.

The said premises are known as and by the street addresses 713 East 211th Street and 718 East 212th Street, Bronx, NY, as shown on the following diagram:



NOTE: A Zoning Lot may or may not coincide with a lot as shown on the Official Tax Map of the City of New York, or on any recorded subdivision plot or deed. A Zoning Lot may be subdivided into two or more zoning lots and all the buildings thereon shall comply with the applicable provisions of the zoning lot resolution.

THIS CERTIFICATE IS MADE FOR AND ACCEPTED BY THE APPLICANT UPON THE EXPRESS UNDERSTANDING THAT THE LIABILITY HEREUNDER IS LIMITED TO ONE THOUSAND ($1,000) DOLLARS.

First American Title Insurance Company
By: Philip O'Hara Associates, Inc., its authorized agent

By: _____
Richard Merlo, Executive V.P.

DATED AS OF:
January 22, 2019

STATE OF NEW YORK)
COUNTY OF KINGS) ss:

On the 24th day of January in the year 2019 before me, the undersigned, a notary public in and for said state, personally appeared **Richard Merlo**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

NOTARY PUBLIC

DANA NAHAS
NOTARY PUBLIC, STATE OF NEW YORK
NO. 01NA6003973
QUALIFIED IN KINGS COUNTY
COMMISSION EXPIRES 4-19-2022

NYC DEPARTMENT OF FINANCE
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2019012500436001001E45DA

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 8**

Document ID: 2019012500436001 Document Date: 01-24-2019 Preparation Date: 01-25-2019
Document Type: ZONING LOT DESCRIPTION
Document Page Count: 6

PRESENTER:
PHILIP OHARA ASSOCIATES (HOLD FOR P/U REDVISION)
A/A/F FIRST AMERICAN TITLE INSURANCE COMPANY
55 WASHINGTON STREET, SUITE 655
BROOKLYN, NY 11201

RETURN TO:
BELL URBAN LLC
ATTN: ALAN BELL
419 PARK AVENUE SOUTH, 18TH FLOOR
NEW YORK, NY 10016
BTB-40655-AMD-ZLC (CB)

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BRONX	4657	42	Entire Lot		N/A EAST 211 STREET

Property Type: OTHER

Borough	Block	Lot		Unit	Address
BRONX	4657	67	Entire Lot		718 EAST 212 STREET

Property Type: OTHER

☒ Additional Properties on Continuation Page

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

PARTY ONE:
211 RESIDENTIAL ASSOCIATES LLC
419 PARK AVENUE SOUTH, 7TH FLOOR
NEW YORK, NY 10016

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	79.00
Affidavit Fee:	$	0.00

Filing Fee: $ 0.00
NYC Real Property Transfer Tax: $ 0.00
NYS Real Estate Transfer Tax: $ 0.00

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Recorded/Filed 01-28-2019 14:51
City Register File No.(CRFN): **2019000031254**

City Register Official Signature

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2019012500436001001C475A

RECORDING AND ENDORSEMENT COVER PAGE (CONTINUATION) **PAGE 2 OF 8**

Document ID: 2019012500436001 Document Date: 01-24-2019 Preparation Date: 01-25-2019
Document Type: ZONING LOT DESCRIPTION

PROPERTY DATA

Borough	Block	Lot		Unit	Address
BRONX	4657	69	Entire Lot		720 EAST 212 STREET
Property Type: OTHER					
Borough	**Block**	**Lot**		**Unit**	**Address**
BRONX	4657	71	Entire Lot		722 EAST 212 STREET
Property Type: OTHER					
Borough	**Block**	**Lot**		**Unit**	**Address**
BRONX	4657	72	Entire Lot		728 EAST 212 STREET
Property Type: OTHER					

EXHIBIT III

ZONING LOT DESCRIPTION AND OWNERSHIP STATEMENT

Title No.: BTB-40655AMD -ZLC

N.B. # 210180187
210178886

211 RESIDENTIAL ASSOCIATES LLC, having its principal office at 419 Park Avenue South, 7th Floor, New York, NY 10016 an applicant for present or future permits pursuant to the Zoning Resolution of the City of New York, effective as of December 15, 1961, and as subsequently amended, states that the Zoning Lot to which the aforementioned permit or permits pertain are shown on the Tax Map of the City of New York, County of Bronx, as current Tax Lots 42, 67, 69, 71,& 72 (Tentative Lots 42 & 71) in Block 4657 on the Tax Map of the City of New York, County of Bronx, and more particularly bounded and described as follows:

TENTATIVE TAX LOT 42

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Bronx, City and State of New York, bounded and described as follows:

BEGINNING at a point on the northerly side of East 211th Street (50' wide) distant 95 feet westerly from the corner formed by the intersection of the northerly side of East 211th Street and the westerly side of Holland Avenue (60' wide);

RUNNING THENCE westerly along the northerly side of East 211th Street 150 feet;

THENCE northerly parallel with Holland Avenue 106 feet;

THENCE easterly parallel with East 211th Street 79 feet;

THENCE southerly parallel with Holland Avenue 12 feet;

THENCE easterly parallel with East 211th Street 71 feet;

THENCE southerly parallel with Holland Avenue 94 feet to the northerly side of East 211th Street and the point or place of BEGINNING.

TENTATIVE TAX LOT 71

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Bronx, City and State of New York, bounded and described as follows:

BEGINNING at a point on the southerly side of East 212th Street (50' wide) distant 45 feet westerly from the corner formed by the intersection of the southerly side of East 212th Street and the westerly side of Holland Avenue (60' wide);

RUNNING THENCE southerly parallel with Holland Avenue 100 feet;

THENCE westerly parallel with East 212th Street 50 feet;

THENCE southerly parallel with Holland Avenue 6 feet;

THENCE westerly parallel with East 212th Street 71 feet;

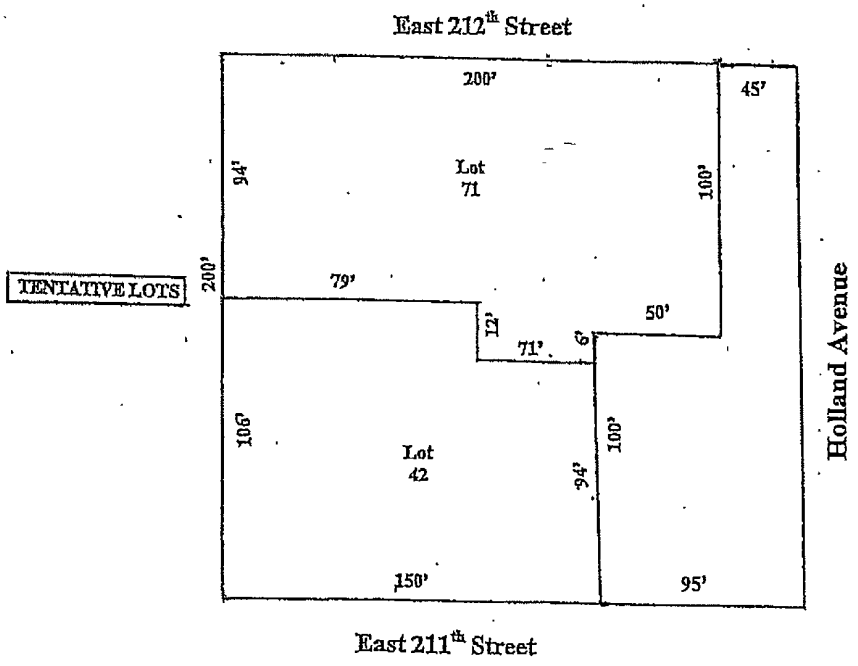
THENCE northerly parallel with Holland Avenue 12 feet;

THENCE westerly parallel with East 212th Street 79 feet;

THENCE northerly parallel with Holland Avenue 94 feet to the southerly side of East 212th Street;

THENCE easterly along the southerly side of East 212th Street 200 feet to the point or place of BEGINNING.

The said premises are known as and by the street addresses 713 East 211th Street and 718 East 212th Street, Bronx, NY, as shown on the following diagram:



The above described Zoning Lot is presently owned by:

BLOCK	TAX LOTS	NAME	ADDRESS
4657	(Current) **42, 67, 69, 71, 72** (Tentative) **42 & 71**	211 Residential Associates LLC	419 Park Avenue South, 7th Floor New York, NY 10016

IN WITNESS WHEREOF the applicant for permit has executed this instrument this 24th day of January, 2019.

211 RESIDENTIAL ASSOCIATES LLC

By: _____

ALAN BELL, Member and Manager

STATE OF NEW YORK)
COUNTY OF New York) ss:

On the 24 day of January in the year 2019 before me, the undersigned, a notary public in and for said state, personally appeared , Alan Bell ,
personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Ajaenae Spearmer
NOTARY PUBLIC

AJAENAE SPEARMAN
NOTARY PUBLIC-STATE OF NEW YORK
No. 01SP6333554
Qualified In Kings County
My Commission Expires November 23, 2019

NOTE: Section C26-110.2 Subdivision (a) Paragraph (1) of the Administrative Code requires submission of an accurate lot diagram in accordance with an attached boundary survey made by a licensed surveyor, which need not be recorded but which must be submitted with the application for the permit.

Appendix B

Health and Safety Plan

WILLIAMSBRIDGE GARDENS
EAST 211TH – EAST 212TH STREET
BRONX, NEW YORK
NYSDEC BCP ID: C203113

HEALTH & SAFETY PLAN

SUBMITTED TO:

New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, New York 11101

PREPARED FOR:

B&B Urban, LLC
419 Park Avenue South, 7th Floor
New York, New York 10016

PREPARED BY:

P.W. Grosser Consulting, Inc.
630 Johnson Avenue, Suite 7
Bohemia, New York 11716
Phone: 631-589-6353
Fax: 631-589-8705

James P. Rhodes, PG, Sr. Principal jimr@pwgrosser.com
Thomas Melia, PG, Sr. Project Manager thomasm@pwgrosser.com

PWGC Project Number: BBU1702

JANUARY 2019

HEALTH & SAFETY PLAN
WILLIAMSBRIDGE GARDENS
NYSDEC BCP ID: C203113

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P.W. GROSSER CONSULTING, INC.
PROJECT No. BBU1801
New York State Department of Environmental Conservation
Brownfield Site No. C203113

HEALTH AND SAFETY PLAN

Williamsbridge Gardens
East 211th – East 212th Street
Bronx, New York

SUBMITTED:

January 2019

PREPARED FOR:

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

ON BEHALF OF:

B&B Urban LLC
419 Park Avenue South, 7th Floor
New York, New York 10019

PREPARED BY:

P.W. Grosser Consulting, Inc.
630 Johnson Avenue, Suite 7
Bohemia, New York 11716

1.0 STATEMENT OF COMMITMENT

On-site employees may be exposed to risks from hazardous conditions related to Remedial Investigation (RI) activities to be performed at the Williamsbridge Gardens project site. P.W. Grosser Consulting Inc.'s (PWGC's) policy is to minimize the possibility of work-related injury through awareness and qualified supervision, health and safety training, medical monitoring, use of appropriate personal protective equipment, and the following activity specific safety protocols contained in this Health and Safety Plan (HASP). PWGC has established a guidance program to implement this policy in a manner that protects personnel to the maximum reasonable extent.

This HASP, which applies to PWGC personnel actually or potentially exposed to safety or health hazards, describes emergency response procedures for actual and potential physical and chemical hazards. This HASP is also intended to inform and guide personnel entering site work zones. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy by signing off on receipt of their individual copy of the document. Contractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees.

PWGC may require that its personnel take certain precautions in accordance with this HASP, and PWGC requests that others protect their personnel in a manner that they deem necessary or sufficient.

2.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by PWGC at the request of the "Volunteer" for the proposed RI to be performed at the Williamsbridge Gardens project site ("the site") to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) Final rule, this HASP, including the attachments, addresses safety and health hazards relating to each phase of site operations and is based on the best information available. The HASP may be revised by PWGC at the request of the Volunteer, and/or regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by PWGC's project director, project manager and/or site safety officer.

2.1 Training Requirements

Personnel entering the exclusion zone or decontamination zone must meet the training requirements for hazardous waste site operations and emergency response operations in accordance with OSHA 29 CFR 1910.120(e).

Each subcontractor and supplier working on the job must provide the site safety officer with training documentation for its personnel upon request.

2.2 Medical Monitoring Requirements

PWGC personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f). Medical monitoring enables a physician to monitor each employee's health, physical condition, and his fitness to wear respiratory protective equipment and carry out on-site tasks.

Evidence of compliance with additional medical monitoring requirements for this site must also be included upon request.

2.3 Fit Test Requirements

Personnel and visitors entering a work zone using a negative pressure air purifying respirator (APR) must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1910.134 or the American National Standards Institute (ANSI).

Fit testing documentation is the responsibility of each subcontractor. Documentation of PWGC's personnel fit-testing is maintained on file. PWGC does not anticipate the need for work to be performed using APR's.

2.4 Site Safety Plan Acceptance, Acknowledgement and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (P.W. Grosser employees and/or owner or owners representatives) entering a work area of the contents of this plan and ensuring that each person signs the safety plan acknowledging the on-site hazards and procedures required to minimize exposure to adverse effects of these hazards. A copy of the Acknowledgement Form is included in **Appendix A**.

Site conditions may warrant an amendment to the HASP. Amendments to the HASP are acknowledged by completing forms included in **Appendix B**.

2.5 Daily Safety Meetings

Each day before work begins; the site safety officer will hold safety (tailgate or tool box) meetings to ensure that on-site personnel understand the site conditions and operating procedures and to address safety questions and concerns. Meeting minutes and attendance will be recorded. Personnel eligible to enter a work zone must attend the meetings. Project staff will discuss and remedy health and safety issues at these meetings.

2.6 Key Personnel – Roles and Responsibilities

The following PWGC key personnel are planned for this project:

- PWGC Project Director — Mr. James Rhodes
- PWGC Project Manager — Mr. Thomas Melia
- PWGC Site Safety Officer — Ms. Janelle Cooley, or assignee

The PWGC project manager is responsible for overall project administration and, with guidance from the PWGC site safety officer, for supervising the implementation of this HASP. The site safety officer will conduct daily (tail gate or tool box) safety meetings at the project site and oversee daily safety issues. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the project manager will be consulted.

The PWGC site safety officer is also responsible for coordinating and enforcing health and safety activities on-

site. The site safety officer must meet the emergency response and hazardous materials training requirements of OSHA 29 CFR Part 1910.120; must have completed OSHA supervisor training, 29 CFR 1910.120 (e) 4; and must have appropriate experience to the related site work. The site safety officer is authorized to suspend the site work based on safety concerns, and is responsible for the following:

1. Educating personnel about information in this HASP and other safety requirements to be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, fit testing, and emergency procedures dealing with fire and first aid.
2. Coordinating site safety decisions with the project manager.
3. Designating exclusion, decontamination and support zones (work zones) on a daily basis.
4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this HASP.
5. Maintaining the work zone entry/exit log and site entry/exit log.
6. Maintaining records of safety problems, corrective measures and documentation of chemical exposures or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).

The person who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

3.0 SITE BACKGROUND AND SCOPE OF WORK

The Site is located in the Williamsbridge section of the Borough of The Bronx and is identified as Block 4657, Lots 42, 67, 69, 71, and 72. Currently, the Site is a vacant lot used for the storage of carnival rides and equipment. One small storage building is present.

Proposed redevelopment of the site consists of construction of two new eight-story residential buildings with partial basements at the site. Building footprints are expected to cover the majority of the site. Preliminary development plans include excavation for the basement areas to approximately 12 feet below ground surface (bgs) for the floor slab, and approximately 16 feet bgs for footings.

PWGC prepared a Phase I Environmental Site Assessment (ESA) in August 2017. The Phase I ESA identified the following Recognized Environmental Conditions (RECs) associated with the subject property:

- The site has been assigned an E-Designation for Hazardous Materials by the New York City Department of Planning.
- Chemical drums and containers were stored throughout the property. Staining and evidence of spillage was noted in the vicinity of these containers.
- Potential vapor encroachment related to offsite sources.

Based on the Phase I ESA, PWGC performed a Phase II ESA at the site in January 2018. The Phase II ESA identified the following:

- Based on a geophysical survey no underground storage tanks (USTs) or other subsurface anomalies were identified at the site.
- VOCs, SVOCs, metals, pesticides and PCBS were detected at concentrations exceeding NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) in soils at the site.
- Groundwater was not encountered during the Phase II ESA. As such, groundwater quality beneath the site is currently unknown.
- Soil vapor beneath the site was not impacted at levels that would require vapor mitigation, based on comparison to NYSDOH Decision Matricies.

4.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general site operations which may also be conducted at site, and the standard operating procedures (SOPs) that should be implemented to reduce the hazards; identifies general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

4.1 Activity-Specific Hazards and Standard Operating Procedures

4.1.1 Drilling and Probing Operations

Soil borings and/or groundwater monitoring wells using Geoprobe® direct push technology and/or rotary drilling technology will be installed as part of the proposed subsurface investigation. PWGC and/or subcontractors shall follow the standard drilling protocols included as **Appendix C**.

4.1.2 Work in Extreme Temperatures

Work under extremely hot or cold weather conditions requires special protocols to minimize the chance that employees will be affected by heat or cold stress. As necessary, PWGC shall follow the heat and cold stress safety protocols included as **Appendix D**.

4.1.3 Dust Control and Monitoring

Dust generated during work activities may contain contaminants associated with the site characteristics. Dust generation is not anticipated during the subsurface investigation. In the event that fugitive dust is generated, PWGC shall control the dust by wetting the working surface with water, or other approved method of dust suppression.

4.2 Chemical Hazards

Historic environmental investigations at the subject site have identified elevated VOCs, SVOCs, metals, pesticides and PCBs in soils at the site. The primary routes of exposure to contaminants in soil are inhalation, ingestion and absorption.

Appendix E includes information sheets for the potential chemicals that may be encountered at the site.

4.2.1 Respirable Dust

The subsurface investigation activities are not anticipated to generate particulate dust; however dust may be generated from vehicular traffic and/or other construction activities. If visible observation detects elevated

levels of dust, a program of wetting will be employed by the site safety officer. If elevated dust levels persist, the site safety office will employ dust monitoring using a particulate monitor (Miniram or equivalent). If monitoring detects concentrations greater than 150 µg/m3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this is not effective, requiring workers to wear APRs with efficiency particulate air (HEPA) cartridges.

Absorption pathways for dust and direct contact with soils will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

4.2.2 Organic Vapors

Based upon historical environmental investigations, the potential for isolated areas of VOCs impacts exists. Therefore, drilling/excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will monitor organic vapors with a Photoionization Detector (PID) during drilling activities to determine whether organic vapor concentrations exceed action levels shown below.

PID Response	Action
Sustained readings of 5 ppm or greater	Shut down drilling equipment and allow area to vent. Resume when readings return to background
Sustained readings of 5 ppm or greater that do not subside after venting	Implement Vapor Release Plan (Section 9.8). Re-evaluate respiratory protection as upgrade may be required.

4.3 General Site Hazards

Applicable OSHA 29 CFR 1910.120(m) standards for illumination shall apply. Work is to be conducted during daylight hours whenever possible.

Electrical power must be provided through a ground fault circuit interrupter. Equipment that will enter an excavation must be suitable and approved (i.e. intrinsically safe) for use in potentially explosive environments. Applicable OSHA 29 CFR 1926 Subpart K standards for use of electricity shall apply.

Work where there is a fall hazard will be performed using appropriate ladders and/or protection (e.g. body harness and lifeline). All work should be conducted at the ground surface or in trench excavations.

In accordance with 29 CFR 1910.151(c), workers involved in operations where there is the risk of eye injury, (chemical splash, etc.), must have ready access to an approved eye wash unit. Protective eye wear shall be

donned in Level D, when directed by the site safety officer.

Operations where there is a potential for fire will be conducted in a manner that minimizes risk. Non-sparking tools and fire extinguishers shall be used or available as directed by the site safety officer when work is in potentially explosive atmospheres. Ignition sources shall be removed from work areas. Explosion-proof instruments and/or bonding and grounding will be used to prevent fire or explosion when the site safety officer directs their use.

Overhead and underground utilities shall be identified and/or inspected and appropriate safety precautions taken before conducting operations where there is potential for contact or interference.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH-approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection.

PWGC anticipates that work performed under the scope of the proposed Phase II investigation will be conducted in Level D PPE.

5.1 Level D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

- Standard work uniform, coveralls, or Tyvek (as needed).
- Steel toe and steel shank work boots (or equivalent).
- Hard hat.
- Gloves (as needed).
- Safety glasses.
- Hearing protection (as needed)
- Equipment replacements are available as needed.

5.2 Level C

Level C PPE shall be donned when the concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable PID, or equivalent), but are less than 5 ppm. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

- Chemical resistant or coated Tyvek coveralls.
- Steel toe and steel shank work boots (or equivalent).
- Chemical resistant over boots or disposable boot covers.

- Disposable inner gloves (surgical gloves).
- Disposable outer gloves.
- Full-face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants.
- Hard hat.
- Splash shield (as needed)
- Ankles/wrists taped with duct tape.

The site safety officer will verify if Level C is appropriate by checking organic vapor concentrations using compound and/or class-specific detector tubes.

5.3 Level B

Level B PPE shall be donned when the contaminants have not been identified and/or the concentrations of unknown measured total organic vapors in the breathing zone exceed 5 ppm (using a portable OVA, or equivalent). Level B PPE shall be donned if the IDLH of a known contaminant is exceeded. If a contaminant is identified or is expected to be encountered for which NIOSH and/or OSHA recommend the use of a positive pressure self-contained breathing apparatus (SCBA) when that contaminant is present, Level B PPE shall be donned even though the total organic vapors in the breathing zone may not exceed 5 ppm. Level B shall be donned for confined space entry, and when the atmosphere is oxygen deficient (oxygen less than 19.5%) or potentially oxygen deficient. If Level B PPE is required for a task, at least three people shall be donned in Level B at any one time during that task. PPE shall only be donned at the direction of the site safety officer. Level B PPE consists of:

- Supplied air SCBA or air line system with five minute egress system.
- Chemical resistant or coated Tyvek coveralls.
- Steel toe and steel shank work boots (or equivalent).
- Chemical resistant over boots or disposable boot covers.
- Disposable inner gloves (surgical gloves).
- Disposable outer gloves.
- Hard hat.
- Ankles/wrists taped with duct tape.

The exact PPE ensemble is decided on a site-by-site basis by the PWGC Health and Safety Officer with the intent to provide the most protective and efficient worker PPE.

5.4 Activity Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 7.0) and properties of identified or expected contaminants. It is expected that all site work will be performed in Level D. If air monitoring results indicate the necessity to upgrade the level of protection engineering controls (i.e. Facing equipment away from the wind and placing site personnel upwind of excavations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

6.0 DECONTAMINATION PROCEDURES

Equipment and PPE exiting the exclusion zone must be decontaminated or properly discarded upon exit. Personnel must enter and exit the exclusion zone through the decontamination area. The exclusion and decontamination zones may change depending on the nature of the site work. Plastic bags containing personal protective clothing and equipment will be placed in designated receptacles.

Boots and other potentially contaminated garments that have come in contact with hazardous materials will be cleaned in wash tubs with detergent/water solution and rinsed with water and must remain on site. The wash water, rinse water, and residues will be collected and properly stored until sampling results are received and the final method of disposal can be determined. Disposable PPE, including spent respirator cartridges and canisters, will be properly bagged and disposed. Contaminated boots, clothing, and equipment (e.g. leather boots, equipment carrying straps) that cannot be decontaminated will be disposed of with the disposable garments or left on site in the decontamination area.

The ***minimum*** measures for Level B doffing and decontamination are:

1. Deposit equipment on plastic drop cloths.
2. Scrub outer boots and gloves with a water and detergent solution and rinse.
3. Remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided.
4. Remove SCBA and face piece and place on rack provided.
5. Remove Tyvek/outer garment and place in receptacle provided.
6. Remove inner gloves and deposit in receptacle provided.
7. Shower/wash face and hands.

The ***minimum*** measures for Level C doffing and decontamination are:

1. Deposit equipment on plastic drop cloths.
2. Scrub outer boots and gloves (if worn) with a water and detergent solution and rinse.
3. Remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided.
4. Remove Tyvek/outer garment and place in receptacle provided.
5. Remove first pair of inner gloves.
6. Remove respirator (using "clean" inner gloves) and place on rack provided.
7. Remove last pair of inner gloves and deposit in receptacle provided.

8. Shower/wash face and hands.

The second to last item to be removed is the APR, and the last item to be removed is the last of several pairs of surgical gloves. Wearing several pairs of inner gloves permits layers to be removed as needed during various stages of the doffing procedure, and if the APR inadvertently becomes contaminated, inner gloves guard against bare hands contacting the APR.

Equipment that comes into contact with site contaminants is decontaminated according to manufacturer specifications. Decontamination is done in the exclusion or decontamination zones. Rented equipment is photographed after decontamination.

7.0 AIR MONITORING AND ACTION LEVELS

Air monitoring will be performed for protection for on-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities at the site. Air monitoring will be used to help to confirm that the remedial work will not spread contamination off-site through the air.

Perimeter air monitoring will be performed in accordance with the Community Air Monitoring Plan (CAMP) for the site included as Appendix E of the RI Work Plan. Air monitoring will be performed for protection for on-site workers as described below.

7.1 Work Zone Monitoring

Respirable dust will be monitored using a MiniRAM Model PDM-3 aerosol monitor (or equivalent) and air will be monitored for VOCs with a MiniRAE 2000 PID (or equivalent) during intrusive activities such as excavation and drilling. Monitoring will be performed continuously during intrusive activities and hourly, at a minimum, otherwise. Upwind readings will be recorded at least twice daily to determine background concentrations at the site.

Monitoring Instrument	**Monitoring Location**	**Monitoring Frequency**	**Action Level (above background)**	**Action**
PID	Work Area	Continuous during intrusive activities; hourly, at a minimum, otherwise	<5ppm* ≥5ppm, ≤50ppm* >50ppm*	Level D PPE, continue work Level C PPE, notify PM/HSM Stop work, notify PM/HSM
Particulate monitor	Work Area	Continuous during intrusive activities; hourly, at a minimum, otherwise	≤150 µg/m3 >150 µg/m3	Continue work Take corrective actions (see below)
*Sustained levels in the breathing zone for a minimum of 5 minutes				

If particulate monitoring detects concentrations greater than 150 µg/m3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this

is not effective, requiring workers to wear APRs with efficiency particulate air (HEPA) cartridges.

7.2 Air Monitoring Recordkeeping

The field team lead will document air monitoring data in a log book. Data will include instrument used, calibration date, wind/weather conditions and work activities.

7.3 Calibration Requirements

The PID will be calibrated daily, prior to the start of work. Calibration details (i.e., date, time, span gas, etc…) will be recorded in a log book.

8.0 SITE CONTROL

8.1 Work Zones

The primary purpose of site controls is to establish the perimeter of a hazardous area, to reduce the migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. When operations are to take place involving hazardous materials, the site safety officer will establish an exclusion zone, a decontamination zone, and a support zone. These zones "float" (move around the site) depending on the tasks being performed on any given day. The site safety officer will outline these locations before work begins and when zones change. The site safety officer records this information in the site log book. It is expected that for subsurface investigation activities, identification of an exclusion zone, decontamination zone, and support zone will not be necessary.

Tasks requiring OSHA 40-hour Hazardous Waste Operations and Emergency Response Operations training are carried out in the exclusion zone. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone; all other decontamination is performed in the decontamination zone or trailer.

Protective equipment is removed in the decontamination zone. Disposable protective equipment is stored in receptacles staged in the decontamination zone, and non-disposable equipment is decontaminated. All personnel and equipment exit the exclusion zone through the decontamination zone. If a decontamination trailer is provided the first aid equipment, an eye wash unit, and drinking water are kept in the decontamination trailer.

The support zone is used for vehicle parking, daily safety meetings, and supply storage. Eating, drinking, and smoking are permitted only in the support zone. When a decontamination trailer is not provided, the eye wash unit, first aid equipment, and drinking water are kept at a central location designated by the site safety officer.

8.2 General Field Safety and Standard Operating Procedures

PWGC's policy is to control hazards at all site areas by limiting entrance to exclusion zones to essential personnel and by implementing the following rules:

- Non-essential (as judged by the site safety officer) personnel and unauthorized persons will not enter the exclusion or decontamination zone.

- Before entering the exclusion or decontamination zones, all personnel must be familiar with emergency response procedures (Section 9.0), site safety locations, first aid and communication equipment, and the location of the map to the hospital and the list of emergency telephone numbers.
- The buddy system will be used at all times by field personnel in the exclusion zone; no one is to perform work within the exclusion zone alone. When in Level D or C, visual contact or radio contact shall be maintained at all times.
- Contact with contaminated and potentially contaminated surfaces should be avoided. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or place equipment on the ground. Protect equipment from contamination.
- Eating, drinking, or smoking is permitted only in designated areas in the support zone.

Each worker must be supplied with and maintain his/her own personal protective equipment.

9.0 CONFINED SPACE

OSHA published a Final Rule on permit-required confined spaces on January 14, 1993, for General Industry at 29 CFR 1910.146 et seq., with an implementation date of April 15, 1993. The rule specifically excludes agriculture, construction, or shipyard employment. Confined space entry and work within confined spaces is not anticipated to be performed under the proposed scope of work. However, if confined space work is conducted it will be performed in accordance with the applicable OSHA regulations. OSHA defines confined space as:

1. is large enough and so configured that an employee can bodily enter and perform assigned work;
2. has limited or restricted areas for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited entry); and
3. is not designed for continuous worker occupancy.

OSHA further requires that an "entry supervisor" (the site designated safety officer) decide at the time of entry whether the space is permit-required or non-permit required space. The site safety officer will monitor the space two hours prior to entry and continuously during work to ensure that the atmosphere is not hazardous. OSHA defines as hazardous atmosphere as:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
2. Airborne combustible dust at a concentration that meets or exceeds its LEL;NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z. Toxic
5. and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
6. Any other atmospheric condition that is immediately dangerous to life or health.

A space is non-permit required if none of the above defined hazardous conditions are present. OSHA requires that an attendant (e.g., an individual stationed outside one or more spaces who monitors the entrants and who performs air monitoring of the space(s)) be assigned to each space. The attendant is not allowed to perform any direct rescue related duties, but is there to communicate with the entrant and call for rescue procedures if required.

The following protocol applies when PWGC employees must enter a confined space:

- The site safety officer evaluates the space and site conditions to determine whether the space must be considered "confined".
- If so, the site safety officer monitors the space for hazardous atmospheres prior to entry and fills out a pre-entry checklist (**Appendix F**) to determine whether an entry-permit is required.
- If there is no hazardous atmosphere, the space will be continuously monitored during the entry to assure that the atmosphere remains non-hazardous.
- If the space contains a hazardous atmosphere, an entry permit (**Appendix F**) will be prepared and the space will only be entered in accordance with 29 CFR 1910.146.

10.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather.

Emergency telephone numbers and a map to the hospital (Figure 1) will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment.

10.1 Emergency Equipment On-site

Private telephones:	Site personnel.
Two-way radios:	Site personnel where necessary.
Emergency Alarms:	On-site vehicle horns*.
First aid kits:	On-site, in vehicles or office.
Fire extinguisher:	On-site, in office or on equipment.

* Horns: Air horns will be supplied to personnel at the discretion of the project manager or site safety officer.

10.2 Emergency Telephone Numbers

General Emergencies - New York City Police/Fire Department/Ambulance	911
Non-Emergency Hotline - New York City Police/Fire Department/Ambulance	311
Local Emergency Medical Center (Bronx State Hospital)	1-718-882-3328
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYC Office of Environmental Remediation	1-212-788-8841
NYC Department of Health	1-212-788-4711
PWGC Project Director, James Rhodes	1-631-589-6353
PWGC Project Manager, Thomas Melia	1-631-589-6353
PWGC Site Safety Officer, Janelle Cooley (or assignee)	1-516-967-7752

A copy of this page shall be posted in the office and a copy is provided in **Appendix G**.

10.3 Personnel Responsibilities During an Emergency

The project manager is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer shall act as the project manager's on-site designee and perform the following tasks:

- Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;
- Ensure that appropriate federal, state, and local agencies are informed and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;
- Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;
- Determine the cause of incidents and make recommendations to prevent recurrence; and,
- Ensure that all required reports have been prepared.

The following PWGC key personnel are planned for this project:

- PWGC Project Director — Mr. James Rhodes
- PWGC Project Manager — Mr. Thomas Melia
- PWGC Site Safety Officer — Ms. Janelle Cooley, or assignee

10.4 Medical Emergencies

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. A Field Accident Report (**Appendix G**) must be filled out for any injury.

A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital and information on the chemical(s) to which they may have been exposed (**Appendix G**).

10.5 Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of

the hazardous materials on-site. If it is safe to do so, site personnel may:

- use firefighting equipment available on site; or,
- remove or isolate flammable or other hazardous materials that may contribute to the fire.

10.6 Evacuation Routes

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed.

Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication.

- When evacuating the site, personnel will follow these instructions:
- Keep upwind of smoke, vapors, or spill location.
- Exit through the decontamination corridor if possible.
- If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.
- The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.
- If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

10.7 Spill Control Procedures

Spills associated with site activities may be attributed to project specific heavy equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

10.8 Vapor Release Plan

If work zone organic vapor (excluding methane) exceeds 5 ppm, then a downwind reading will be made either 200 feet from the work zone or at the property line, whichever is closer. If readings at this location exceed 5 ppm over background, the work will be stopped.

If 5 ppm of VOCs are recorded over background on a PID at the property line, then an off-site reading will be taken within 20 feet of the nearest residential or commercial property, whichever is closer. If efforts to mitigate the emission source are unsuccessful for 30 minutes, then the designated site safety officer will:

- contact the local police;
- continue to monitor air every 30 minutes, 20 feet from the closest off-site property. If two successive readings are below 5 ppm (non-methane), off-site air monitoring will be halted.
- All property line and off site air monitoring locations and results associated with vapor releases will be recorded in the site safety log book.

APPENDIX A
SITE SAFETY ACKNOWLEDGMENT FORM

PWGC
CLIENT DRIVEN SOLUTIONS

SITE SAFETY ACKNOWLEDGMENT FORM

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of the HASP/EAP. It is maintained on site by the FTL/SHSO as a project record. Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read, or have been informed of, the Health and Safety Plan/Emergency Action Plan and understand the information presented. I will comply with the provisions contained therein.

Name (Print and Sign)	Date

APPENDIX B
SITE SAFETY PLAN AMENDMENTS

SITE SAFETY PLAN AMENDMENT FORM

SITE SAFETY PLAN AMENDMENT NUMBER: _____

SITE NAME: _____

REASON FOR AMENDMENT: _____

_____

_____

_____

_____

ALTERNATIVE PROCEDURES: _____

_____

_____

_____

_____

REQUIRED CHANGES IN PPE: _____

_____

_____

_____

_____

_____ _____

SITE SAFETY OFFICER DATE

_____ _____

PROJECT MANAGER DATE

_____ _____

PROJECT DIRECTOR DATE

APPENDIX C
DRILLING PROTOCOLS

SAFETY PROCEDURES DURING THE OPERATION OF DRILLING/PROBING MACHINESINCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- All site personnel should know the location of the rig emergency shut-off switch prior to beginning operations.
- The rig should be inspected prior to operation to ensure that it is in proper working condition and that all safety devices are functioning.
- Each rig should have a first-aid kit and fire extinguisher which should be inspected to ensure that they are adequate.
- All operators should wear, at a minimum, hard hats, steel-toe safety shoes or boots, gloves and safety glasses. Additional clothing and protective equipment may be required at sites where hazardous conditions are likely. Clothing must be close fitting, without loose ends, straps, draw strings or belts or other unfastened parts that might catch on moving machinery.
- Work areas should be kept free of materials, debris and obstruction, and substances such as grease or oil that could cause a surface to become slick or otherwise hazardous.
- Prior to drilling, the site must be checked to determine whether it can accommodate the rig and supplies and provide a safe working area.
- The drill rig mast (derrick) must be lowered prior to moving between drilling locations.
- The drill rig masts should not be raised if the rig will not be at least 20 feet away from overhead utilities.
- The location of underground utilities should be determined prior to erecting the rig.
- The drill rigs must be properly erected, leveled and stabilized prior to drilling.
- The operator must shut down the vehicle engine before leaving the vicinity of the machine.
- All personnel not directly involved in operating the rig or in sampling should remain clear of the drilling equipment when it is in operation.
- All unattended boreholes must be adequately covered or otherwise protected to prevent trip and fall hazards. All open boreholes should be covered, protected or backfilled as specified in local or state regulations.
- When climbing to or working on a derrick platform that is higher than 20 feet, a safety climbing device should be used.
- The user of wire line hoists, wire rope and hoisting hardware should be as stipulated by the American Iron and Steel Institute Wire Rope User's Manual.
- The rig should be operated in a manner which is consistent with the manufacturers' ratings of speed, force, torque, pressure, flow, etc. The rig and tools should be used for the purposes for which they were intended.

APPENDIX D
HEAT/COLD STRESS PROTOCOLS

HEAT STRESS

Heat Stress (Hyperthermia)

Heat stress is the body's inability to regulate the core temperature. A worker's susceptibility to heat stress can vary according to his/her physical fitness, degree of acclimation to heat, humidity, age and diet.

1. Prior to site activity, the field team leader may make arrangements for heat stress monitoring (i.e., monitoring heart rate, body temperature, and body water loss) during actual site work if conditions warrant. In addition, the FTL is to ensure that each team member has been acclimatized to the prevailing environmental conditions, that personnel are aware of the signs and symptoms of heat sickness, that they have been adequately trained in first aid procedures, and that there are enough personnel on-site to rotate work assignments and schedule work during hours of reduced temperatures. Personnel should not consume alcoholic or caffeinated beverages but rather drink moderate levels of an electrolyte solution and eat well prior to commencing site work.
2. Although there is no specific test given during a baseline physical that would identify a person's intolerance to heat, some indicators are tobacco or medication use, dietary habits, body weight, and chronic conditions such as high blood pressure or diabetes.
3. *Heat cramps*, caused by profuse perspiration with inadequate fluid intake and salt replacement, most often afflict people in good physical condition who work in high temperature and humidity. Heat cramps usually come on suddenly during vigorous activity. Untreated, heat cramps may progress rapidly to heat exhaustion or heat stroke. First aid treatment: remove victim to a cool place and replace lost fluids with water.
4. Thirst is not an adequate indicator of heat exposure. Drinking fluid by itself does not indicate sufficient water replacement during heat exposure. A general rule, the amount of water administered should replace the amount of water lost, and it should be administered at regular intervals throughout the day. For every half pound of water lost, 8 ounces of water should be ingested. Water should be replaced by drinking 2 – 4 ounce servings during every rest period. A recommended alternative to water is an electrolyte drink split 50/50 with water.
5. Heat exhaustion results from salt and water loss along with peripheral pooling of blood. Like heat cramps, heat exhaustion tends to occur in persons in good physical health who are working in high temperatures and humidity. Heat exhaustion may come on suddenly as dizziness and collapse. Untreated, heat exhaustion may progress to heat stroke.

6. Treatment for heat exhaustion: Move the victim to a cool environment (e.g. air-conditioned room/car), lay victim down and fan him/her. If the air-conditioning is not available, remove the victim to a shaded area, remove shirt, and fan. If symptoms do not subside within an hour, notify 911 to transport to hospital.
7. Heat stroke results from the body's inability to dissipate excess heat. A true medical emergency that requires immediate care, it usually occurs when one ignores the signs of heat exhaustion and continues strenuous activities. Working when the relative humidity exceeds 60% is a particular problem. Workers in the early phase of heat stress may not be coherent of they will be confused, delirious or comatose. Changes in behavior, irritability and combativeness are useful early signs of heat stroke.
8. Treatment of heat stroke: Move the victim to a cool, air-conditioned environment. Place victim in a semi-reclined position with head elevated and strip to underclothing. Cool victim as rapidly as possible, applying ice packs to the arms and legs and massaging the neck and torso. Spray victim with tepid water and constantly fan to promote evaporation. Notify 911 to transport to hospital as soon as possible.

SYMPTOMS OF HEAT STRESS

Heat cramps are caused by heavy sweating with inadequate fluid intake. Symptoms include;

- Muscle cramps
- Cramps in the hands, legs, feet and abdomen

Heat exhaustion occurs when body organs attempt to keep the body cool. Symptoms include;

- Pale, cool moist skin
- Core temperature elevated 1-2o
- Thirst
- Anxiety
- Rapid heart rate
- Heavy sweating
- Dizziness
- Nausea

Heat stroke is the most serious form of heat stress. Immediate action must be taken to cool the body before serious injury and death occur. Symptoms are;

- Red, hot, dry skin
- Lack of perspiration
- Seizures
- Dizziness and confusion
- Strong, rapid pulse
- Core temperature of 104o or above
- Coma

HEAT STRESS INDICATORS

Heat stress indicator:	When to measure:	If Exceeds:	Action:
Heart rate (pulse)	Beginning of rest period	110 beats per minute	Shorten next work period by 33%
Oral temperature	Beginning of rest period	99°F (after thermometer is under tongue for 3 minutes) 100.6°F (after thermometer is under tongue for 3 minutes)	Shorten next work period by 33% Prohibit work in impermeable clothing
Body Weight	1. Before workday begins 2. After workday ends		Increase fluid intake

COLD STRESS

Cold stress (Hypothermia)

In hypothermia the core body temperature drops below 95°F. Hypothermia can be attributed to a decrease in heat production, increased heat loss or both.

Prevention

Institute the following steps to prevent overexposure of workers to cold:

1. Maintain body core temperature at 98.6oF or above by encouraging workers to drink warm liquids during breaks (preferably not coffee) and wear several layers of clothing that can keep the body warm even when the clothing is wet.
2. Avoid frostbite by adequately covering hands, feet and other extremities. Clothing such as insulated gloves or mittens, earmuffs and hat liners should be worn. To prevent contact frostbite (from touching metal and cold surfaces below 20°F), workers should wear gloves. Tool handles should be covered with insulating material.
3. Adjust work schedules to provide adequate rest periods. When feasible, rotate personnel and perform work during the warmer hours of the day.
4. Provide heated shelter. Workers should remove their outer layer(s) of clothing while in the shelter to allow sweat to evaporate.
5. In the event that wind barriers are constructed around an intrusive operation (such as drilling), the enclosure must be properly vented to prevent the buildup of toxic or explosive gases or vapors. Care must be taken to keep a heat source away from flammable substances.
6. Using a wind chill chart such as the one included below, obtain the equivalent chill temperature (ECT) based on actual wind speed and temperature. Refer to the ECT when setting up work warm-up schedules, planning appropriate clothing, etc. Workers should use warming shelters at regular intervals at or below an ECT of 20°F. For exposed skin, continuous exposure should not be permitted at or below an ECT of -25°F.

FROSTBITE

Personnel should be aware of symptoms of frostbite/hypothermia. If the following symptoms are noticed in any worker, he/she should immediately go to a warm shelter.

Condition	Skin Surface	Tissue Under Skin	Skin Color
Frostnip	Soft	Soft	Initially red, then white
Frostbite	Hard	Soft	White and waxy
Freezing	Hard	Hard	Blotchy, white to yellow-grey to grey

1. Frostnip is the incipient stage of frostbite, brought about by direct contact with a cold object or exposure of a body part to cool/cold air. Wind chill or cold water also can be major factors. This condition is not serious. Tissue damage is minor and the response to care is good. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostnip.
2. Treatment of frostnip: Care for frostnip by warming affected areas. Usually the worker can apply warmth from his/her bare hands, blow warm air on the site, or, if the fingers are involved, hold them in the armpits. During recovery, the worker may complain of tingling or burning sensation, which is normal. If the condition does not respond to this simple care, begin treatment for frostbite.
3. Frostbite: The skin and subcutaneous layers become involved. If frostnip goes untreated, it becomes superficial frostbite. This condition is serious. Tissue damage may be serious. The worker must be transported to a medical facility for evaluation. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostbite. The affected area will feel frozen, but only on the surface. The tissue below the surface must still be soft and have normal response to touch. DO NOT squeeze or poke the tissue. The condition of the deeper tissues can be determined by gently palpating the affected area. The skin will turn mottled or blotchy. It may also be white and then turn grayish-yellow.
4. Treatment of frostbite: When practical, transport victim as soon as possible. Get the worker inside and keep him/her warm. Do not allow any smoking or alcohol consumption. Thaw frozen parts by immersion, re-warming in a 100°F to 106°F water bath. Water temperature will drop rapidly, requiring additional warm water throughout the process. Cover the thawed part with a dry sterile dressing. Do not puncture or drain any blisters. NOTE: Never listen to myths and folk tales about the care of frostbite. Never rub a

frostbitten or frozen area. Never rub snow on a frostbitten or frozen area. Rubbing the area may cause serious damage to already injured tissues. Do not attempt to thaw a frozen area if there is any chance it will be re-frozen.

5. General cooling/Hypothermia: General cooling of the body is known as systemic hypothermia. This condition is not a common problem unless workers are exposed to cold for prolonged periods of time without any shelter.

Body Temp (°F)	Body Temp (°C)	Symptoms
99-96	37-35.5	Intense uncontrollable shivering
95-91	35.5-32.7	Violent shivering persists. If victim is conscious, has difficulty speaking.
90-86	32.6-30	Shivering decreases and is replaced by strong muscular rigidity. Muscle coordination is affected. Erratic or jerkey movements are produced. Thinking is less clear. General comprehension is dulled. There may be total amnesia. The worker is generally still able to maintain the appearance of psychological contact with his surroundings.
85-81	29.9-27.2	Victim becomes irrational, loses contact with his environment, and drifts into a stupor. Muscular rigidity continues. Pulse and respirations are slow and the worker may develop cardiac arrhythmias.
80-78	27.1-25.5	Victim becomes unconscious. He does not respond to the spoken word. Most reflexes cease to function. Heartbeat becomes erratic
Below 78	Below 25.5	Cardiac and respiratory centers of the brain fail. Ventricular fibrillation occurs; probably edema and hemorrhage in the lungs; death.

6. Treatment of hypothermia: Keep worker dry. Remove any wet clothing and replace with dry clothes, or wrap person in dry blankets. Keep person at rest. Do not allow him/her to move around. Transport the victim to a medical facility as soon as possible.

PWGC
CLIENT DRIVEN SOLUTIONS

COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS AN EQUIVALENT TEMPERATURE (UNDER CALM CONDITIONS)

Estimated wind Speed (in mph)	Actual Temperature Reading (^{0}F)P											
	50	40	30	20	10	0	10	20	30	40	50	60
	Equivalent Chill Temperature (^{0}F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	15	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-146
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER in < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute			GREAT DANGER Flesh may freeze within 30 seconds.				
	Trench foot and imersion foot may occur at any point on this chart											

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

(1) Reproduced from American Conference of Governmental Industrial Hygienists, Threshold Limit Values and Biological Exposure Indices for 1985-1986, p.01.

APPENDIX E
CHEMICAL HAZARDS

Benzene

Synonyms & Trade Names: Benzol, Phenyl hydride		
CAS No. 71-43-2	RTECS No. CY1400000 (/niosh-rtecs/CY155CCo.html)	DOT ID & Guide 1114 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula C_6H_6	Conversion 1 ppm = 3.19 mg/m3	IDLH Ca [500 ppm] See: 71432 (/niosh/idlh/71432.html)
Exposure Limits NIOSH REL : Ca TWA 0.1 ppm ST 1 ppm See Appendix A (nengapdxa.html) OSHA PEL : [1910.1028] TWA 1 ppm ST 5 ppm See Appendix F (nengapdxf.html)		Measurement Methods NIOSH 1500 (/niosh/docs/2003-154/pdfs/1500.pdf), 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3700 (/niosh/docs/2003-154/pdfs/3700.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf); OSHA 12 (http://www.osha.gov/dts/sltc/methods/organic/org012/org012.html) (http://www.cdc.gov/Other/disclaimer.html), 1005 (http://www.osha.gov/dts/sltc/methods/validated/1005/1005.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]

MW:	BP:	FRZ:	Sol:	VP:	IP:
78.1	176°F	42°F	0.07%	75 mmHg	9.24 eV
Sp.Gr:	**Fl.P:**	**UEL:**	**LEL:**		
0.88	12°F	7.8%	1.2%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities: Strong oxidizers, many fluorides & perchlorates, nitric acid

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

Target Organs: Eyes, skin, respiratory system, blood, central nervous system, bone marrow

Cancer Site [leukemia]

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html))
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations
(See Appendix E) (nengapdxe.html)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0015 (/niosh/ipcsneng/neng0015.html) See MEDICAL TESTS: 0022 (/niosh/docs/2005-110/nmed0022.html)

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Content source: National Institute for Occupational Safety and Health (NIOSH) Education and Information Division

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

Ethyl benzene

Synonyms & Trade Names: Ethylbenzol, Phenylethane		
CAS No. 100-41-4	RTECS No. DA0700000 (/niosh-rtecs/DAAAE60.html)	DOT ID & Guide 1175 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula $CH_3CH_2C_6H_5$	Conversion 1 ppm = 4.34 mg/m3	IDLH 800 ppm [10%LEL] See: 100414 (/niosh/idlh/100414.html)
Exposure Limits NIOSH REL : TWA 100 ppm (435 mg/m3) ST 125 ppm (545 mg/m3) OSHA PEL † (nengapdxg.html): TWA 100 ppm (435 mg/m3)		Measurement Methods NIOSH 1501 (/niosh/docs/2003-154/pdfs/1501.pdf); OSHA 7 (http://www.osha.gov/dts/sltc/methods/organic/org001/org001.html) (http://www.cdc.gov/Other/disclaimer.html), 1002 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1002/1002.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless liquid with an aromatic odor.

MW:	BP:	FRZ:	Sol:	VP:	IP:
106.2	277°F	-139°F	0.01%	7 mmHg	8.76 eV
Sp.Gr:	**Fl.P:**	**UEL:**	**LEL:**		
0.87	55°F	6.7%	0.8%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities: Strong oxidizers

Exposure Routes: inhalation, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma

Target Organs: Eyes, skin, respiratory system, central nervous system

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 800 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0268 (/niosh/ipcsneng/neng0268.html)
See MEDICAL TESTS: 0098 (/niosh/docs/2005-110/nmed0098.html)

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

Toluene

Synonyms & Trade Names: Methyl benzene, Methyl benzol, Phenyl methane, Toluol		
CAS No. 108-88-3	RTECS No. XS5250000 (/niosh-rtecs/XS501BDo.html)	DOT ID & Guide 1294 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_5CH_3$	Conversion 1 ppm = 3.77 mg/m3	IDLH 500 ppm See: 108883 (/niosh/idlh/108883.html)
Exposure Limits NIOSH REL : TWA 100 ppm (375 mg/m3) ST 150 ppm (560 mg/m3) OSHA PEL † (nengapdxg.html) : TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)		Measurement Methods NIOSH 1500 (/niosh/docs/2003-154/pdfs/1500.pdf), 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf), 4000 (/niosh/docs/2003-154/pdfs/4000.pdf); OSHA 111 (http://www.osha.gov/dts/sltc/methods/organic/org111/org111.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless liquid with a sweet, pungent, benzene-like odor.					
MW: 92.1	BP: 232°F	FRZ: -139°F	Sol(74°F): 0.07%	VP: 21 mmHg	IP: 8.82 eV
Sp.Gr: 0.87	Fl.P: 40°F	UEL: 7.1%	LEL: 1.1%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities: Strong oxidizers

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage

Target Organs: Eyes, skin, respiratory system, central nervous system, liver, kidneys

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash promptly

Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 500 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0078 (/niosh/ipcsneng/neng0078.html) See MEDICAL TESTS: 0232 (/niosh/docs/2005-110/nmed0232.html)

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p-Xylene

Synonyms & Trade Names 1,4-Dimethylbenzene; para-Xylene; p-Xylol

CAS No. 106-42-3	RTECS No. ZE2625000 (/niosh-rtecs/ZE280DE8.html)	DOT ID & Guide 1307 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_4(CH_3)_2$	Conversion 1 ppm = 4.41 mg/m3	IDLH 900 ppm See: 95476 (/niosh/idlh/95476.html)
Exposure Limits NIOSH REL : TWA 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3) OSHA PEL † (nengapdxg.html) : TWA 100 ppm (435 mg/m3)		Measurement Methods NIOSH 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf); OSHA 1002 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1002/1002.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless liquid with an aromatic odor. [Note: A solid below 56°F.]

MW:	BP:	FRZ:	Sol:	VP:	IP:
106.2	281°F	56°F	0.02%	9 mmHg	8.44 eV

Sp.Gr:	Fl.P:	UEL:	LEL:
0.86	81°F	7.0%	1.1%

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities Strong oxidizers, strong acids

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

Target Organs Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable)	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Change: No recommendation	

Respirator Recommendations

NIOSH/OSHA

Up to 900 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0086 (/niosh/ipcsneng/neng0086.html)

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800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

o-Xylene

Synonyms & Trade Names 1,2-Dimethylbenzene; ortho-Xylene; o-Xylol

CAS No. 95-47-6	RTECS No. ZE2450000 (/niosh-rtecs/ZE256250.html)	DOT ID & Guide 1307 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_4(CH_3)_2$	Conversion 1 ppm = 4.34 mg/m^3	IDLH 900 ppm See: 95476 (/niosh/idlh/95476.html)
Exposure Limits NIOSH REL : TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) OSHA PEL † (nengapdxg.html) : TWA 100 ppm (435 mg/m^3)		Measurement Methods NIOSH 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf); OSHA 1002 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1002/1002.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless liquid with an aromatic odor.

MW:	BP:	FRZ:	Sol:	VP:	IP:
106.2	292°F	-13°F	0.02%	7 mmHg	8.56 eV
Sp.Gr:	**Fl.P:**	**UEL:**	**LEL:**		
0.88	90°F	6.7%	0.9%		

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities Strong oxidizers, strong acids

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

Target Organs Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable)	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Remove: When wet (flammable)
Change: No recommendation

Respirator Recommendations

NIOSH/OSHA

Up to 900 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0084 (/niosh/ipcsneng/neng0084.html)

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m-Xylene

Synonyms & Trade Names 1,3-Dimethylbenzene; meta-Xylene; m-Xylol		
CAS No. 108-38-3	RTECS No. ZE2275000 (/niosh-rtecs/ZE22B6B8.html)	DOT ID & Guide 1307 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_4(CH_3)_2$	Conversion 1 ppm = 4.34 mg/m^3	IDLH 900 ppm See: 95476 (/niosh/idlh/95476.html)
Exposure Limits NIOSH REL : TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) OSHA PEL † (nengapdxg.html) : TWA 100 ppm (435 mg/m^3)		Measurement Methods NIOSH 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf); OSHA 1002 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1002/1002.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless liquid with an aromatic odor.

MW:	BP:	FRZ:	Sol:	VP:	IP:
106.2	282°F	-54°F	Slight	9 mmHg	8.56 eV
Sp.Gr:	**Fl.P:**	**UEL:**	**LEL:**		
0.86	82°F	7.0%	1.1%		

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities Strong oxidizers, strong acids

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

Target Organs Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable)	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Change: No recommendation

Respirator Recommendations

NIOSH/OSHA

Up to 900 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0085 (/niosh/ipcsneng/neng0085.html)

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Tetrachloroethylene

Synonyms & Trade Names	Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene	
CAS No. 127-18-4	RTECS No. KX3850000 (/niosh-rtecs/KX3ABF10.html)	DOT ID & Guide 1897 160 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=160) (http://www.cdc.gov/Other/disclaimer.html)
Formula $Cl_2C=CCl_2$	Conversion 1 ppm = 6.78 mg/m3	IDLH Ca [150 ppm] See: 127184 (/niosh/idlh/127184.html)
Exposure Limits NIOSH REL : Ca Minimize workplace exposure concentrations. See Appendix A (nengapdxa.html) OSHA PEL † (nengapdxg.html): TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm		Measurement Methods NIOSH 1003 (/niosh/docs/2003-154/pdfs/1003.pdf); OSHA 1001 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1001/1001.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description	Colorless liquid with a mild, chloroform-like odor.				
MW: 165.8	BP: 250°F	FRZ: -2°F	Sol: 0.02%	VP: 14 mmHg	IP: 9.32 eV
Sp.Gr: 1.62	Fl.P: NA	UEL: NA	LEL: NA		

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver tumors]

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html))
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0076 (/niosh/ipcsneng/neng0076.html) See MEDICAL TESTS: 0179 (/niosh/docs/2005-110/nmed0179.html)

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Trichloroethylene

Synonyms & Trade Names: Ethylene trichloride, TCE, Trichloroethene, Trilene

CAS No. 79-01-6	RTECS No. KX4550000 (/niosh-rtecs/KX456D70.html)	DOT ID & Guide 1710 160 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=160) (http://www.cdc.gov/Other/disclaimer.html)
Formula $ClCH=CCl_2$	Conversion 1 ppm = 5.37 mg/m3	IDLH Ca [1000 ppm] See: 79016 (/niosh/idlh/79016.html)
Exposure Limits NIOSH REL : Ca See Appendix A (nengapdxa.html) See Appendix C (nengapdxc.html) OSHA PEL † (nengapdxg.html): TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)		Measurement Methods NIOSH 1022 (/niosh/docs/2003-154/pdfs/1022.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf); OSHA 1001 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1001/1001.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless liquid (unless dyed blue) with a chloroform-like odor.

MW:	BP:	FRZ:	Sol:	VP:	IP:
131.4	189°F	-99°F	0.1%	58 mmHg	9.45 eV

Sp.Gr:	Fl.P:	UEL(77°F):	LEL(77°F):
1.46	?	10.5%	8%

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities: Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

Target Organs: Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system

Cancer Site: [in animals: liver & kidney cancer]

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately

codes (protective)	Eye: Irrigate immediately
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench	Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0081 (/niosh/ipcsneng/neng0081.html)
See MEDICAL TESTS: 0236 (/niosh/docs/2005-110/nmed0236.html)

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Vinylidene chloride

Synonyms & Trade Names 1,1-DCE; 1,1-Dichloroethene; 1,1-Dichloroethylene; VDC; Vinylidene chloride monomer; Vinylidene dichloride

CAS No. 75-35-4	RTECS No. KV9275000 (/niosh-rtecs/KV8D8678.html)	DOT ID & Guide 1303 130P (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130&poly=1) (http://www.cdc.gov/Other/disclaimer.html) (inhibited)
Formula $CH_2=CCl_2$	Conversion	IDLH Ca [N.D.] See: IDLH INDEX (/niosh/idlh/intridl4.html)
Exposure Limits NIOSH REL : Ca See Appendix A (nengapdxa.html) OSHA PEL † (nengapdxg.html): none		Measurement Methods NIOSH 1015 (/niosh/docs/2003-154/pdfs/1015.pdf); OSHA 19 (http://www.osha.gov/dts/sltc/methods/organic/org019/org019.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor.

MW:	BP:	FRZ:	Sol:	VP:	IP:
96.9	89°F	-189°F	0.04%	500 mmHg	10.00 eV
Sp.Gr:	**Fl.P:**	**UEL:**	**LEL:**		
1.21	-2°F	15.5%	6.5%		

Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.

Incompatibilities & Reactivities Aluminum, sunlight, air, copper, heat [Note: Polymerization may occur if exposed to oxidizers, chlorosulfonic acid, nitric acid, or oleum. Inhibitors such as the monomethyl ether of hydroquinone are added to prevent polymerization.]

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys

Cancer Site [in animals: liver & kidney tumors]

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html))
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0083 (/niosh/ipcsneng/neng0083.html)

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1,2-Dichloroethylene

Synonyms & Trade Names: Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene		
CAS No. 540-59-0	RTECS No. KV9360000 (/niosh-rtecs/KV8ED280.html)	DOT ID & Guide 1150 130P (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130&poly=1) (http://www.cdc.gov/Other/disclaimer.html)
Formula ClCH=CHCl	Conversion 1 ppm = 3.97 mg/m3	IDLH 1000 ppm See: 540590 (/niosh/idlh/540590.html)
Exposure Limits NIOSH REL : TWA 200 ppm (790 mg/m3) OSHA PEL : TWA 200 ppm (790 mg/m3)		Measurement Methods NIOSH 1003 (/niosh/docs/2003-154/pdfs/1003.pdf); OSHA 7 (http://www.osha.gov/dts/sltc/methods/organic/org001/org001.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.

MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%	VP: 180-265 mmHg	IP: 9.65 eV
Sp.Gr(77°F): 1.27	Fl.P: 36-39°F	UEL: 12.8%	LEL: 5.6%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities: Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]

Exposure Routes: inhalation, ingestion, skin and/or eye contact

Symptoms: irritation eyes, respiratory system; central nervous system depression

Target Organs: Eyes, respiratory system, central nervous system

Personal Protection/Sanitation (See protection codes (protect.html)) Skin: Prevent skin contact Eyes: Prevent eye contact	First Aid (See procedures (firstaid.html)) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support

Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	Swallow: Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 1000 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode£
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)£
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0436 (/niosh/ipcsneng/neng0436.html)

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
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Vinyl chloride

Synonyms & Trade Names Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)

CAS No. 75-01-4	RTECS No. KU9625000 (/niosh-rtecs/KU92DDA8.html)	DOT ID & Guide 1086 116P (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=116&poly=1) (http://www.cdc.gov/Other/disclaimer.html) (inhibited)
Formula CH_2=CHCl	Conversion 1 ppm = 2.56 mg/m3	IDLH Ca [N.D.] See: IDLH INDEX (/niosh/idlh/intridl4.html)
Exposure Limits NIOSH REL : Ca See Appendix A (nengapdxa.html) OSHA PEL : [1910.1017] TWA 1 ppm C 5 ppm [15-minute]		Measurement Methods NIOSH 1007 (/niosh/docs/2003-154/pdfs/1007.pdf); OSHA 4 (http://www.osha.gov/dts/sltc/methods/organic/org004/org004.html) (http://www.cdc.gov/Other/disclaimer.html), 75 (http://www.osha.gov/dts/sltc/methods/organic/org075/org075.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%	VP: 3.3 atm	IP: 9.99 eV
	Fl.P: NA (Gas)	UEL: 33.0%	LEL: 3.6%	RGasD: 2.21	

Flammable Gas

Incompatibilities & Reactivities Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

Exposure Routes inhalation, skin and/or eye contact (liquid)

Symptoms lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system

Cancer Site [liver cancer]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

First Aid (See procedures (firstaid.html))
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

Respirator Recommendations
(See Appendix E) (nengapdxe.html)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0082 (/niosh/ipcsneng/neng0082.html)
See MEDICAL TESTS: 0241 (/niosh/docs/2005-110/nmed0241.html)

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Methyl chloroform

Synonyms & Trade Names: Chlorothene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)		
CAS No. 71-55-6	RTECS No. KJ2975000 (/niosh-rtecs/KJ2D6518.html)	DOT ID & Guide 2831 160 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=160) (http://www.cdc.gov/Other/disclaimer.html)
Formula CH_3CCl_3	Conversion 1 ppm = 5.46 mg/m3	IDLH 700 ppm See: 71556 (/niosh/idlh/71556.html)
Exposure Limits NIOSH REL : C 350 ppm (1900 mg/m3) [15-minute] See Appendix C (nengapdxc.html) (Chloroethanes) OSHA PEL † (nengapdxg.html): TWA 350 ppm (1900 mg/m3)		Measurement Methods NIOSH 1003 (/niosh/docs/2003-154/pdfs/1003.pdf) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless liquid with a mild, chloroform-like odor.					
MW: 133.4	BP: 165°F	FRZ: -23°F	Sol: 0.4%	VP: 100 mmHg	IP: 11.00 eV
Sp.Gr: 1.34	Fl.P: ?	UEL: 12.5%	LEL: 7.5%		

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities: Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]

Exposure Routes: inhalation, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage

Target Organs: Eyes, skin, central nervous system, cardiovascular system, liver

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations
NIOSH/OSHA

Up to 700 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0079 (/niosh/ipcsneng/neng0079.html) See MEDICAL TESTS: 0141 (/niosh/docs/2005-110/nmed0141.html)

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Coal tar pitch volatiles

Synonyms & Trade Names Synonyms vary depending upon the specific compound (e.g., pyrene, phenanthrene, acridine, chrysene, anthracene & benzo(a)pyrene). [Note: NIOSH considers coal tar, coal tar pitch, and creosote to be coal tar products.]

CAS No.	RTECS No.	DOT ID & Guide
65996-93-2	GF8655000 (/niosh-rtecs/GF841098.html)	2713 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html) (acridine)
	Conversion	IDLH Ca [80 mg/m3] See: 65996932 (/niosh/idlh/65996932.html)

Exposure Limits

NIOSH REL : Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)
See Appendix A (nengapdxa.html)
See Appendix C (nengapdxc.html)
OSHA PEL : TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002] See Appendix C (nengapdxc.html)

Measurement Methods

OSHA 58 (http://www.osha.gov/dts/sltc/methods/organic/org058/org058.html) (http://www.cdc.gov/Other/disclaimer.html)
See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Black or dark-brown amorphous residue.

Properties vary depending upon the specific compound.					

Combustible Solids

Incompatibilities & Reactivities Strong oxidizers

Exposure Routes inhalation, skin and/or eye contact

Symptoms dermatitis, bronchitis, [potential occupational carcinogen]

Target Organs respiratory system, skin, bladder, kidneys

Cancer Site [lung, kidney & skin cancer]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: Daily
Remove: No recommendation
Change: Daily

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 1415 (/niosh/ipcsneng/neng1415.html) See MEDICAL TESTS: 0054 (/niosh/docs/2005-110/nmed0054.html)

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Phenol

Synonyms & Trade Names Carbolic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide

CAS No. 108-95-2	RTECS No. SJ3325000 (/niosh-rtecs/SJ32BC48.html)	DOT ID & Guide 1671 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html) (solid) 2312 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html) (molten) 2821 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html) (solution)
Formula C_6H_5OH	Conversion 1 ppm = 3.85 mg/m3	IDLH 250 ppm See: 108952 (/niosh/idlh/108952.html)
Exposure Limits NIOSH REL : TWA 5 ppm (19 mg/m3) C 15.6 ppm (60 mg/m3) [15-minute] [skin] OSHA PEL : TWA 5 ppm (19 mg/m3) [skin]		Measurement Methods NIOSH 2546 (/niosh/docs/2003-154/pdfs/2546.pdf); OSHA 32 See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Colorless to light-pink, crystalline solid with a sweet, acrid odor. [Note: Phenol liquefies by mixing with about 8% water.]

MW: 94.1	BP: 359°F	MLT: 109°F	Sol(77°F): 9%	VP: 0.4 mmHg	IP: 8.50 eV
Sp.Gr: 1.06	Fl.P: 175°F	UEL: 8.6%	LEL: 1.8%		

Combustible Solid

Incompatibilities & Reactivities Strong oxidizers, calcium hypochlorite, aluminum chloride, acids

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching

Target Organs Eyes, skin, respiratory system, liver, kidneys

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations
NIOSH/OSHA

Up to 50 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 125 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.

Up to 250 ppm:
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0070 (/niosh/ipcsneng/neng0070.html) See MEDICAL TESTS: 0182 (/niosh/docs/2005-110/nmed0182.html)

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Naphthalene

Synonyms & Trade Names: Naphthalin, Tar camphor, White tar		
CAS No. 91-20-3	RTECS No. QJ0525000 (/niosh-rtecs/QJ802C8.html)	DOT ID & Guide 1334 133 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=133) (http://www.cdc.gov/Other/disclaimer.html) (crude or refined) 2304 133 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=133) (http://www.cdc.gov/Other/disclaimer.html) (molten)
Formula $C_{10}H_8$	Conversion 1 ppm = 5.24 mg/m^3	IDLH 250 ppm See: 91203 (/niosh/idlh/91203.html)
Exposure Limits NIOSH REL : TWA 10 ppm (50 mg/m^3) ST 15 ppm (75 mg/m^3) OSHA PEL † (nengapdxg.html): TWA 10 ppm (50 mg/m^3)		Measurement Methods NIOSH 1501 (/niosh/docs/2003-154/pdfs/1501.pdf); OSHA 35 (http://www.osha.gov/dts/sltc/methods/organic/org035/org035.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.]

MW:	BP:	MLT:	Sol:	VP:	IP:
128.2	424°F	176°F	0.003%	0.08 mmHg	8.12 eV

Sp.Gr:	Fl.P:	UEL:	LEL:
1.15	174°F	5.9%	0.9%

Combustible Solid, but will take some effort to ignite.

Incompatibilities & Reactivities: Strong oxidizers, chromic anhydride

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage

Target Organs Eyes, skin, blood, liver, kidneys, central nervous system

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html))
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily	Eye: Irrigate immediately Skin: Molten flush immediately/solid-liquid soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 100 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.*
(APF = 10) Any supplied-air respirator*

Up to 250 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0667 (/niosh/ipcsneng/neng0667.html) See MEDICAL TESTS: 0152 (/niosh/docs/2005-110/nmed0152.html)

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p-Cresol

Synonyms & Trade Names: para-Cresol, 4-Cresol, p-Cresylic acid, 1-Hydroxy-4-methylbenzene, 4-Hydroxytoluene, 4-Methyl phenol

CAS No. 106-44-5	RTECS No. GO6475000 (/niosh-rtecs/GO62CCF8.html)	DOT ID & Guide 2076 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html)
Formula $CH_3C_6H_4OH$	Conversion 1 ppm = 4.43 mg/m^3	IDLH 250 ppm See: cresol (/niosh/idlh/cresol.html)
Exposure Limits NIOSH REL : TWA 2.3 ppm (10 mg/m^3) OSHA PEL : TWA 5 ppm (22 mg/m^3) [skin]		Measurement Methods NIOSH 2546 (/niosh/docs/2003-154/pdfs/2546.pdf); OSHA 32 See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Crystalline solid with a sweet, tarry odor. [Note: A liquid above 95°F.]

MW: 108.2	BP: 396°F	MLT: 95°F	Sol: 2%	VP(77°F): 0.11 mmHg	IP: 8.97 eV
Sp.Gr: 1.04	Fl.P: 187°F	UEL: ?	LEL(300°F): 1.1%		

Combustible Solid Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.

Incompatibilities & Reactivities: Strong oxidizers, acids

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irreg rapid resp, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys, pancreas, cardiovascular system

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 23 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 57.5 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.

Up to 115 ppm:
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter*
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 250 ppm:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is

operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0031 (/niosh/ipcsneng/neng0031.html) See MEDICAL TESTS: 0059 (/niosh/docs/2005-110/nmed0059.html)

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
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o-Cresol

Synonyms & Trade Names ortho-Cresol, 2-Cresol, o-Cresylic acid, 1-Hydroxy-2-methylbenzene, 2-Hydroxytoluene, 2-Methyl phenol

CAS No. 95-48-7	RTECS No. GO6300000 (/niosh-rtecs/GO602160.html)	DOT ID & Guide 2076 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html)
Formula $CH_3C_6H_4OH$	Conversion 1 ppm = 4.43 mg/m^3	IDLH 250 ppm See: cresol (/niosh/idlh/cresol.html)
Exposure Limits NIOSH REL : TWA 2.3 ppm (10 mg/m^3) OSHA PEL : TWA 5 ppm (22 mg/m^3) [skin]		Measurement Methods NIOSH 2546 (/niosh/docs/2003-154/pdfs/2546.pdf); OSHA 32 See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description White crystals with a sweet, tarry odor. [Note: A liquid above 88°F.]

MW: 108.2	BP: 376°F	MLT: 88°F	Sol: 2%	VP(77°F): 0.29 mmHg	IP: 8.93 eV
Sp.Gr: 1.05	Fl.P: 178°F	UEL: ?	LEL(300°F): 1.4%		

Combustible Solid Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.

Incompatibilities & Reactivities Strong oxidizers, acids

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irreg rapid resp, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys, pancreas, cardiovascular system

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 23 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 57.5 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.

Up to 115 ppm:
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter*
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 250 ppm:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is

operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0030 (/niosh/ipcsneng/neng0030.html)

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m-Cresol

Synonyms & Trade Names: meta-Cresol, 3-Cresol, m-Cresylic acid, 1-Hydroxy-3-methylbenzene, 3-Hydroxytoluene, 3-Methyl phenol

CAS No. 108-39-4	RTECS No. GO6125000 (/niosh-rtecs/GO5D75C8.html)	DOT ID & Guide 2076 153 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=153) (http://www.cdc.gov/Other/disclaimer.html)
Formula $CH_3C_6H_4OH$	Conversion 1 ppm = 4.43 mg/m^3	IDLH 250 ppm See: cresol (/niosh/idlh/cresol.html)
Exposure Limits NIOSH REL : TWA 2.3 ppm (10 mg/m^3) OSHA PEL : TWA 5 ppm (22 mg/m^3) [skin]		Measurement Methods NIOSH 2546 (/niosh/docs/2003-154/pdfs/2546.pdf); OSHA 32 See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless to yellowish liquid with a sweet, tarry odor. [Note: A solid below 54°F.]

MW:	BP:	FRZ:	Sol:	VP(77°F):	IP:
108.2	397°F	54°F	2%	0.14 mmHg	8.98 eV

Sp.Gr:	Fl.P:	UEL:	LEL(300°F):		
1.03	187°F	?	1.1%		

Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.

Incompatibilities & Reactivities: Strong oxidizers, acids

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irreg rapid resp, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys, pancreas, cardiovascular system

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 23 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 57.5 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.

Up to 115 ppm:
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter*
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 250 ppm:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0646 (/niosh/ipcsneng/neng0646.html)

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Arsenic (inorganic compounds, as As)

Synonyms & Trade Names Arsenic metal: Arsenia
Other synonyms vary depending upon the specific As compound. [Note: OSHA considers "Inorganic Arsenic" to mean copper acetoarsenite and all inorganic compounds containing arsenic except ARSINE.]

CAS No. 7440-38-2 (metal)	RTECS No. CG0525000 (metal) (/niosh-rtecs/CG802C8.html)	DOT ID & Guide 1558 152 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=152) (http://www.cdc.gov/Other/disclaimer.html) (metal) 1562 152 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=152) (http://www.cdc.gov/Other/disclaimer.html) (dust)
Formula As (metal)	Conversion	IDLH Ca [5 mg/m3 (as As)] See: 7440382 (/niosh/idlh/7440382.html)
Exposure Limits NIOSH REL : Ca C 0.002 mg/m3 [15-minute] See Appendix A (nengapdxa.html) OSHA PEL : [1910.1018] TWA 0.010 mg/m3		Measurement Methods NIOSH 7300 (/niosh/docs/2003-154/pdfs/7300.pdf), 7301 (/niosh/docs/2003-154/pdfs/7301.pdf), 7303 (/niosh/docs/2003-154/pdfs/7303.pdf), 7900 (/niosh/docs/2003-154/pdfs/7900.pdf), 9102 (/niosh/docs/2003-154/pdfs/9102.pdf); OSHA ID105 (http://www.osha.gov/dts/sltc/methods/inorganic/id105/id105.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Metal: Silver-gray or tin-white, brittle, odorless solid.

MW: 74.9	BP: Sublimes	MLT: 1135°F (Sublimes)	Sol: Insoluble	VP: 0 mmHg (approx)	IP: NA
Sp.Gr: 5.73 (metal)	Fl.P: NA	UEL: NA	LEL: NA		

Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame.

Incompatibilities & Reactivities Strong oxidizers, bromine azide [Note: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.]

Exposure Routes inhalation, skin absorption, skin and/or eye contact, ingestion

Symptoms Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]

Target Organs Liver, kidneys, skin, lungs, lymphatic system

Cancer Site [lung & lymphatic cancer]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated/Daily
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations
(See Appendix E) (nengapdxe.html)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted acid gas canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0013 (/niosh/ipcsneng/neng0013.html)
See MEDICAL TESTS: 0017 (/niosh/docs/2005-110/nmed0017.html)

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Lead

Synonyms & Trade Names: Lead metal, Plumbum		
CAS No. 7439-92-1	RTECS No. OF7525000 (/niosh-rtecs/OF72D288.html)	DOT ID & Guide
Formula: Pb	Conversion	IDLH: 100 mg/m3 (as Pb) See: 7439921 (/niosh/idlh/7439921.html)

Exposure Limits

NIOSH REL *: TWA (8-hour) 0.050 mg/m3 See Appendix C (nengapdxc.html) [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]

OSHA PEL *: [1910.1025] TWA 0.050 mg/m3 See Appendix C (nengapdxc.html) [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]

Measurement Methods

NIOSH 7082 (/niosh/docs/2003-154/pdfs/7082.pdf), 7105 (/niosh/docs/2003-154/pdfs/7105.pdf), 7300 (/niosh/docs/2003-154/pdfs/7300.pdf), 7301 (/niosh/docs/2003-154/pdfs/7301.pdf), 7303 (/niosh/docs/2003-154/pdfs/7303.pdf), 7700 (/niosh/docs/2003-154/pdfs/7700.pdf), 7701 (/niosh/docs/2003-154/pdfs/7701.pdf), 7702 (/niosh/docs/2003-154/pdfs/7702.pdf), 9100 (/niosh/docs/2003-154/pdfs/9100.pdf), 9102 (/niosh/docs/2003-154/pdfs/9102.pdf), 9105 (/niosh/docs/2003-154/pdfs/9105.pdf);
OSHA ID121 (http://www.osha.gov/dts/sltc/methods/inorganic/id121/id121.html) (http://www.cdc.gov/Other/disclaimer.html), ID125G (http://www.osha.gov/dts/sltc/methods/inorganic/id125g/id125g.html) (http://www.cdc.gov/Other/disclaimer.html), ID206 (http://www.osha.gov/dts/sltc/methods/inorganic/id206/id206.html) (http://www.cdc.gov/Other/disclaimer.html)
See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: A heavy, ductile, soft, gray solid.

MW:	BP:	MLT:	Sol:	VP:	IP:
207.2	3164°F	621°F	Insoluble	0 mmHg (approx)	NA

Sp.Gr:	Fl.P:	UEL:	LEL:
11.34	NA	NA	NA

Noncombustible Solid in bulk form.

Incompatibilities & Reactivities: Strong oxidizers, hydrogen peroxide, acids

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension

Target Organs Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: Daily
Remove: When wet or contaminated
Change: Daily

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap flush promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations
(See Appendix E) (nengapdxe.html)
NIOSH/OSHA

Up to 0.5 mg/m3:
(APF = 10) Any air-purifying respirator with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter.

Up to 2.5 mg/m3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 50 mg/m3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Up to 100 mg/m3:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0052 (/niosh/ipcsneng/neng0052.html) See MEDICAL TESTS: 0127 (/niosh/docs/2005-110/nmed0127.html)

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Mercury compounds [except (organo) alkyls] (as Hg)

Synonyms & Trade Names Mercury metal: Colloidal mercury, Metallic mercury, Quicksilver
Synonyms of "other" Hg compounds vary depending upon the specific compound.

CAS No. 7439-97-6 (metal)	RTECS No. OV4550000 (metal) (/niosh-rtecs/OV456D70.html)	DOT ID & Guide 2809 172 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=172) (http://www.cdc.gov/Other/disclaimer.html) (metal)
Formula Hg (metal)	Conversion	IDLH 10 mg/m3 (as Hg) See: 7439976 (/niosh/idlh/7439976.html)
Exposure Limits NIOSH REL : Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin] OSHA PEL † (nengapdxg.html): TWA 0.1 mg/m3		Measurement Methods NIOSH 6009 (/niosh/docs/2003-154/pdfs/6009.pdf); OSHA ID140 (http://www.osha.gov/dts/sltc/methods/inorganic/id140/id140.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.]

MW: 200.6	BP: 674°F	FRZ: -38°F	Sol: Insoluble	VP: 0.0012 mmHg	IP: ?
Sp.Gr: 13.6 (metal)	Fl.P: NA	UEL: NA	LEL: NA		

Metal: Noncombustible Liquid

Incompatibilities & Reactivities Acetylene, ammonia, chlorine dioxide, azides, calcium (amalgam formation), sodium carbide, lithium, rubidium, copper

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis;

tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria

Target Organs Eyes, skin, respiratory system, central nervous system, kidneys

Personal Protection/Sanitation (See protection codes (protect.html))	First Aid (See procedures (firstaid.html))
Skin: Prevent skin contact Eyes: No recommendation Wash skin: When contaminated Remove: When wet or contaminated Change: Daily	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Respirator Recommendations

Mercury vapor:

NIOSH

Up to 0.5 mg/m3:
(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern†
(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern†(canister)

Up to 2.5 mg/m3:
(APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern†
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern†
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and cartridge(s) providing protection against the compound of concern(canister)
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 10 mg/m3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Other mercury compounds: NIOSH/OSHA

Up to 1 mg/m3:
(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern†

(APF = 10) Any supplied-air respirator

Up to 2.5 mg/m3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern†(canister)

Up to 5 mg/m3:
(APF = 50) Any chemical cartridge respirator with a full facepiece and cartridge(s) providing protection against the compound of concern†
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern†
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and cartridge(s) providing protection against the compound of concern(canister)
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 10 mg/m3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0056 (/niosh/ipcsneng/neng0056.html) See MEDICAL TESTS: 0136 (/niosh/docs/2005-110/nmed0136.html)

Page last reviewed: April 4, 2011
Page last updated: November 18, 2010
Content source: National Institute for Occupational Safety and Health (NIOSH) Education and Information Division

Chlorodiphenyl (54% chlorine)

Synonyms & Trade Names: Aroclor® 1254, PCB, Polychlorinated biphenyl		
CAS No. 11097-69-1	RTECS No. TQ1360000 (/niosh-rtecs/TQ14C080.html)	DOT ID & Guide 2315 171 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=171) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_3Cl_2C_6H_2Cl_3$ (approx)	Conversion	IDLH Ca [5 mg/m3] See: IDLH INDEX (/idlh/intridl4.html)
Exposure Limits NIOSH REL *: Ca TWA 0.001 mg/m3 See Appendix A (nengapdxa.html) [*Note: The REL also applies to other PCBs.] OSHA PEL : TWA 0.5 mg/m3 [skin]		Measurement Methods NIOSH 5503 (/niosh/docs/2003-154/pdfs/5503.pdf); OSHA PV2088 (http://www.osha.gov/dts/sltc/methods/partial/t-pv2088-01-8812-ch/t-pv2088-01-8812-ch.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor.

MW: 326 (approx)	BP: 689-734°F	FRZ: 50°F	Sol: Insoluble	VP: 0.00006 mmHg	IP: ?
Sp.Gr(77°F): 1.38	Fl.P: NA	UEL: NA	LEL: NA		

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.

Incompatibilities & Reactivities: Strong oxidizers

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]

carcinogen]

Target Organs Skin, eyes, liver, reproductive system

Cancer Site [in animals: tumors of the pituitary gland & liver, leukemia]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0939 (/niosh/ipcsneng/neng0939.html) See MEDICAL TESTS: 0176 (/niosh/docs/2005-110/nmed0176.html)

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Content source: National Institute for Occupational Safety and Health (NIOSH) Education and Information Division

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

Chlorodiphenyl (42% chlorine)

Synonyms & Trade Names: Aroclor® 1242, PCB, Polychlorinated biphenyl		
CAS No. 53469-21-9	RTECS No. TQ1356000 (/niosh-rtecs/TQ14B0E0.html)	DOT ID & Guide 2315 171 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=171) (http://www.cdc.gov/Other/disclaimer.html)
Formula $C_6H_4ClC_6H_3Cl_2$ (approx)	Conversion	IDLH Ca [5 mg/m3] See: 53469219 (/niosh/idlh/53469219.html)
Exposure Limits NIOSH REL *: Ca TWA 0.001 mg/m3 See Appendix A (nengapdxa.html) [*Note: The REL also applies to other PCBs.] OSHA PEL : TWA 1 mg/m3 [skin]		Measurement Methods NIOSH 5503 (/niosh/docs/2003-154/pdfs/5503.pdf); OSHA PV2089 (http://www.osha.gov/dts/sltc/methods/partial/t-pv2089-01-8812-ch/t-pv2089-01-8812-ch.html) (http://www.cdc.gov/Other/disclaimer.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html) (http://www.cdc.gov/Other/disclaimer.html)

Physical Description: Colorless to light-colored, viscous liquid with a mild, hydrocarbon odor.

MW: 258 (approx)	BP: 617-691°F	FRZ: -2°F	Sol: Insoluble	VP: 0.001 mmHg	IP: ?
Sp.Gr(77°F): 1.39	Fl.P: NA	UEL: NA	LEL: NA		

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans & chlorinated dibenzo-p-dioxins.

Incompatibilities & Reactivities: Strong oxidizers

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms: irritation eyes; chloracne; liver damage; reproductive effects; [potential occupational carcinogen]

Target Organs Skin, eyes, liver, reproductive system

Cancer Site [in animals: tumors of the pituitary gland & liver, leukemia]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See MEDICAL TESTS: 0175 (/niosh/docs/2005-110/nmed0175.html)

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Content source: National Institute for Occupational Safety and Health (NIOSH) Education and Information Division

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

APPENDIX F
CONFINED SPACE ENTRY CHECKLIST/PERMIT

PWGC
CLIENT DRIVEN SOLUTIONS

CONFINED SPACE ENTRY PERMIT

Confined Space □	Hazardous Area □	Non Permit Required □

Notes:
No work will be performed unless the space meets non permit requirements
Permit valid 8 hours only. All copies of permit will remain at this job site until job is completed.
A single entry permit can be filled out prior to start of daily work.
SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK

Site Location and Description:_____
Purpose of Entry:_____
Supervisor(s) in charge of Crew:_____

Requirements	**Date**	**Time**	**Requirements**	**Date**	**Time**
Lock Out/De-energize/try-out			**Full Body Harness w/"D" Ring**		
Line(s) Broken-capped-blanked			**Emergency Escape Retrieval**		
Purged-Flush and Vent			**Lifelines**		
Ventilation			Fire Extinguishers		
Secure Area (Post and Flag)			Lighting (Explosive Proof)		
Breathing Apparatus			Protective Clothing		
Resuscitator-Inhalator			Respirator(s) (Air Purifying)		
Standby Safety Personnel			Burning and Welding Permit		

BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED & REVIEWED PRIOR TO ENTRY
Items that do not apply enter N/A in the blank

Monitoring Tests	Permissible Entry Levels	Results (record every 30 minutes beginning ½ hour prior to entry)							
Oxygen	19.5 to 23.5%								
LEL	Below 10%								
Hydrogen sulfide (H_2S)	10ppm† 15ppm‡								

†Short term exposure limit (STEL)
‡8 hour Time weighted average (TWA)

Monitoring Equipment

_____
Type Model # Serial #

_____
Type Model # Serial #

Safety standby person(s):_____

Supervisor authorizing entry:_____

APPENDIX G
EMERGENCY INFORMATION

EMERGENCY PHONE NUMBERS

General Emergencies - New York City Police/Fire Department/Ambulance	911
Non-Emergency Hotline - New York City Police/Fire Department/Ambulance	311
Local Emergency Medical Center (Bronx State Hospital)	1-718-882-3328
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYC Office of Environmental Remediation	1-212-788-8841
NYC Department of Health	1-212-788-4711
PWGC Project Director, James Rhodes	1-631-589-6353
PWGC Project Manager, Thomas Melia	1-631-589-6353
PWGC Site Safety Officer, Janelle Cooley (or assignee)	1-516-967-7752

HOSPITAL ROUTE

Montefiore Medical Center
Moses Division
111 E. 210th St., Bronx, NY 10467

0 ¼ ½ Miles

Project:	BBU1702
Date:	11/22/2017
Designed by:	TM
Drawn by:	TS
Approved by:	TM
Figure No:	1

PWGC
Strategic Environmental and Engineering Solutions
P.W. GROSSER CONSULTING, INC.
630 Johnson Avenue, • Suite 7
Bohemia • NY • 11716-2618
Phone: (631) 589-6353 • Fax: (631) 589-8705
E-mail: INFO@PWGROSSER.COM

Document Path: W:\Projects\A-D\BBU\1702\mapfiles\Fig01_HospitalRoute.mxd

PWGC
CLIENT DRIVEN SOLUTIONS

INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 1 OF 2
TYPE OF INCIDENT - CHECK ALL THAT APPLY
☐ INJURY/ILLNESS ☐ VEHICLE DAMAGE ☐ PROPERTY DAMAGE ☐ FIRE ☐ SPILL/RELEASE ☐ PERMIT EXCEEDENCE ☐ NEAR MISS ☐ OTHER
GENERAL INFORMATION
PROJECT NAME: DATE OF REPORT: REPORT NO.:
DATE OF INCIDENT: TIME: DAY OF WEEK:
LOCATION OF INCIDENT:
WEATHER CONDITIONS: ADEQUATE LIGHTING AT SCENE? ☐ YES ☐ NO ☐ N/A
DESCRIBE WHAT HAPPENED (STEP BY STEP - USE ADDITIONAL PAGES IF NECESSARY)
AFFECTED EMPLOYEE INFORMATION
NAME: EMPLOYEE: ☐ YES ☐ NO
HOME ADDRESS:
SOCIAL SECURITY NO.: HOME PHONE NO.:
JOB CLASSIFICATION: YEARS IN JOB CLASSIFICATION:
HOURS WORKED ON SHIFT PRIOR TO INCIDENT: AGE:
DID INCIDENT RELATE TO ROUTINE TASK FOR JOB CLASSIFICATION? ☐ YES ☐ NO
INJURY/ILLNESS INFORMATION
NATURE OF INJURY OR ILLNESS:
OBJECT/EQUIPMENT/SUBSTANCE CAUSING HARM:
FIRST AID PROVIDED? ☐ YES ☐ NO
IF YES, WHERE WAS IT GIVEN: ☐ ON-SITE ☐ OFF-SITE
IF YES, WHO PROVIDED FIRST AID:
WILL THE INJURY/ILLNESS RESULT IN: ☐ RESTRICTED DUTY ☐ LOST TIME ☐ UNKNOWN

INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 2 OF 2 REPORT NO.
MEDICAL TREATMENT INFORMATION
WAS MEDICAL TREATMENT PROVIDED? ☐ YES ☐ NO
IF YES, WAS MEDICAL TREATMENT PROVIDED: ☐ ON-SITE ☐ DR.'S OFFICE ☐ HOSPITAL
NAME OF PERSON(S) PROVIDING TREATMENT:
ADDRESS WHERE TREATMENT WAS PROVIDED:
TYPE OF TREATMENT:
VEHICLE AND PROPERTY DAMAGE INFORMATION
VEHICLE/PROPERTY DAMAGED:
DESCRIPTION OF DAMAGE:
SPILL AND AIR EMISSIONS INFORMATION:
SUBSTANCE SPILLED OR RELEASED: FROM WHERE: TO WHERE:
ESTIMATED QUANTITY/DURATION:
CERCLA HAZARDOUS SUBSTANCE? ☐ YES ☐ NO
REPORTABLE TO AGENCY? ☐ YES ☐ NO SPECIFY:
WRITTEN REPORT: ☐ YES ☐ NO TIME FRAME:
RESPONSE ACTION TAKEN:
PERMIT EXCEEDENCE
TYPE OF PERMIT: PERMIT #:
DATE OF EXCEEDENCE: DATE FIRST KNOWLEDGE OF EXCEEDENCE:
PERMITTED LEVEL OR CRITERIA:
EXCEEDENCE LEVEL OR CRITERIA:
REPORTABLE TO AGENCY? ☐ YES ☐ NO SPECIFY:
WRITTEN REPORT: ☐ YES ☐ NO TIME FRAME:
RESPONSE ACTION TAKEN:
NOTIFICATIONS
NAMES OF PERSONNEL NOTIFIED: DATE/TIME:
CLIENT NOTIFIED: DATE/TIME:
AGENCY NOTIFIED: DATE/TIME:
CONTACT NAME:
PERSONS PREPARING REPORT
EMPLOYEE'S NAME:(PRINT) SIGN:
SUPERVISOR'S NAME:(PRINT) SIGN:

INVESTIGATIVE REPORT			
DATE OF INCIDENT:	DATE OF REPORT:	REPORT NUMBER:	
INCIDENT COST: ESTIMATED: $_____		ACTUAL: $_____	
OSHA RECORDABLE(S): ☐ YES ☐ NO # RESTRICTED DAYS ____ # DAYS AWAY FROM WORK ____			
CAUSE ANALYSIS			
IMMEDIATE CAUSES - WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT?			
BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT?			
ACTION PLAN			
REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL EACH OF THE CAUSES LISTED?			
ACTION	PERSON RESPONSIBLE	TARGET DATE	COMPLETION DATE
PERSONS PERFORMING INVESTIGATION			
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:	
MANAGEMENT REVIEW			
PROJECT MANAGER: (PRINT)	SIGN:	DATE:	
COMMENTS:			
H&S MANAGER: (PRINT)	SIGN:	DATE:	
COMMENTS:			

EXAMPLES OF IMMEDIATE CAUSES

Substandard Actions

Substandard Conditions

1. Operating equipment without authority
2. Failure to warn
3. Failure to secure
4. Operating at improper speed
5. Making safety devices inoperable
6. Removing safety devices
7. Using defective equipment
8. Failure to use PPE properly
9. Improper loading
10. Improper placement
11. Improper lifting
12. Improper position for task
13. Servicing equipment in operation
14. Under influence of alcohol/drugs
15. Horseplay

1. Guards or barriers
2. Protective equipment
3. Tools, equipment, or materials
4. Congestion
5. Warning system
6. Fire and explosion hazards
7. Poor housekeeping
8. Noise exposure
9. Exposure to hazardous materials
10. Extreme temperature exposure
11. Illumination
12. Ventilation
13. Visibility

EXAMPLES OF BASIC CAUSES

Personal Factors

1. Capability
2. Knowledge
3. Skill
4. Stress
5. Motivation
6. Work Standards
7. Wear and tear
8. Abuse or misuse

Job Factors

1. Supervision
2. Engineering
3. Purchasing
4. Maintenance
5. Tools/equipment

MANAGEMENT PROGRAMS FOR CONTROL OF INCIDENTS

1. Leadership and administration
2. Management training
3. Planned inspections
4. Task analysis and procedures
5. Task observation
6. Emergency preparedness
7. Organizational rules
8. Accident/incident analysis
9. Personal protective equipment
10. Health control
11. Program audits
12. Engineering controls
13. Personal communications
14. Group meetings
15. General promotion
16. Hiring and placement
17. Purchasing controls

Appendix C

Quality Assurance Project Plan

WILLIAMSBRIDGE GARDENS
EAST 211TH – EAST 212TH STREET
BRONX, NEW YORK
NYSDEC BCP ID: C203113

QUALITY ASSURANCE PROJECT PLAN

SUBMITTED TO:

New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, New York 11101

PREPARED FOR:

B&B Urban LLC
419 Park Avenue South, 7th Floor
New York, New York 10019

PREPARED BY:

P.W. Grosser Consulting, Inc.
630 Johnson Avenue, Suite 7
Bohemia, New York 11716
Phone: 631-589-6353
Fax: 631-589-8705

James Rhodes, PG, COO — jimr@pwgrosser.com
Thomas Melia, PG, Sr. Project Manager — thomasm@pwgrosser.com

PWGC Project Number: BBU1801

FEBRUARY 2019

SOIL & MATERIALS MANAGEMENT PLAN
THE ENCLAVES, SOUTHOLD, NEW YORK

TABLE OF CONTENTS PAGE

1.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPP) presents the objectives, functional activities, methods, and QA/QC requirements associated with sample collection and laboratory analysis for characterization activities at the Williamsbridge Gardens Brownfield Cleanup Program Site (C203113). The QAPP follows requirements detailed in New York State Department of Environmental Conservation (NYSDEC) DER-10, Section 2.

2.0 PROJECT ORGANIZATION

The investigative efforts defined in this RIWP will be implemented by PWGC on behalf of B&B Urban LLC. The following identifies the responsibilities of various organizations supporting the RI:

- The NYSDEC Project Manager (Mandy Yau) will be responsible for reviewing and approving this work plan, coordinating approval of requested modifications, and providing guidance on regulatory requirements.
- The PWGC Program Manager (James Rhodes and/or Paul Boyce) will provide technical expertise for review of the project plans, reports and ongoing field activities.
- The PWGC Quality Assurance Manager (Andrew Lockwood) will confirm the quality of work associated with the project is in accordance with all project plans.
- PWGC Project Manager (Thomas Melia) will be responsible for the day-to-day project management, task leadership, and project engineering support and for the planning and implementation of RI activities. The Project Manager is responsible for ensuring that the requirements of this RI work plan are implemented. The project manager will also act as the Site Health and Safety Manager (HSM).
- PWGC Field Team Leader (Kaitlyn Crosby or designee) will be responsible for sample collection, oversight of subcontractor personnel, and coordination of daily field activities. The Field Team Leader will act as the Site Health and Safety Officer ensuring implementation of the Site Health and Safety Plan.
- A NYSDOH Environmental Laboratory Accreditation Program (ELAP) certified laboratory (Alpha Analytical Laboratories of Westborough, Massachusetts ELAP ID 11148 and 11627) will be contracted to perform required analyses and reporting, including Analytical Services Protocol (ASP) Category B Deliverables, which will allow for data validation.
- An independent third-party data validator (Laboratory Data Consultants of Carlsbad, California) will be contracted to perform data validation and prepare a Data Usability Summary Report (DUSR) in accordance with Section 3.7.
- Subcontractors will perform surveying, drilling, and/or sampling at the direction of the Field Team Leader in accordance with this work plan.

Qualifications for the project team are included in the RAWP.

3.0 LABORATORY ANALYSIS

Requirements for sample analysis are described below. All samples will be submitted to a NYSDOH ELAP certified laboratory (Alpha Analytical) for analysis. Analytical methods, preservation, container requirements, and holding times are summarized below:

ANALYTICAL METHODS (SOIL)

Analyte/ Analyte Group	Matrix	Method/ SOP	Container(s) (number, size & type per sample)	Preservation	Preparation Holding Time	Analytical Holding Time	Estimated Number of Samples to be Collected
TAL Metals	Soil	EPA 6010C	1 x 2 oz, glass	Metals ex	6 months	6 months	12 to 24
TCL VOCs	Soil	EPA 8260C	3 x 40 ml VOA, glass vial	1 x Methanol 2 x DI H_2O Cool $\leq$ 6 °C	48 hours	14 Days	12 to 24
TCL SVOCs	Soil	EPA 8270D	1 x 8 oz, glass	Cool $\leq$ 6 °C	14 days	40 days	12 to 24
PCBs	Soil	EPA 8082A	1 x 8 oz, glass	Cool $\leq$ 6 °C	14 days	40 Days	12 to 24
Cyanide	Soil	EPA 9010C/9012B	1 x 250 ml, plastic	Cool $\leq$ 6 °C	14 days	14 days	12 to 24
Pesticides	Soil	EPA 8081B	1 x 8 oz, glass	Cool $\leq$ 6 °C	14 days	40 days	12 to 24
PFAS	Soil	EPA 537 (modified)	1 x 8 oz, glass	None	14 days	28 days	12 to 24
1,4-dioxane*	Soil	EPA 8270 (SIM)	1 x 8oz, glass	Cool $\leq$ 6 °C	14 days	40 days	12 to 24
*SIM Mode only necessary if EPA 8260 analysis cannot meet a MDL of 0.1 mg/kg							

ANALYTICAL METHODS (GROUNDWATER)

Analyte/ Analyte Group	Matrix	Method/ SOP	Container(s) (number, size & type per sample)	Preservation	Preparation Holding Time	Analytical Holding Time	Estimated Number of Samples to be Collected
Metals	Water	EPA 6020A	1 x 500 ml plastic	HNO_3	6 months	6 months	3
VOCs	Water	EPA 8260C	3 x 40 ml VOA, glass vial	HCl Cool $\leq$ 6 °C	48 hours	14 Days	3
SVOCs	Water	EPA 8270D	2 x 1000 ml, amber glass	Cool $\leq$ 6 °C	7 days	40 days	3
PCBs	Water	EPA 8082A	1 x 1000 ml, amber glass	Cool $\leq$ 6 °C	7 days	40 Days	3
Cyanide	Water	EPA 9010C/9012B	1 x 250 ml, plastic	NaOH	14 days	14 days	3
Pesticides	Water	EPA 8081B	1 x 500 ml, amber glass	Cool $\leq$ 6 °C	7 days	40 days	3

Analyte/ Analyte Group	Matrix	Method/ SOP	Container(s) (number, size & type per sample)	Preservation	Preparation Holding Time	Analytical Holding Time	Estimated Number of Samples to be Collected
PFAS	Water	EPA 537 (modified)	3 x 250 ml HDPE, unlined cap	Trizma Cool < 6 °C	14 days	28 days	3
1,4-Dioxane*	Water	EPA 8270D SIM Mode	2 x 1000 ml, amber glass	Cool ≤ 6 °C	7 days	40 days	3
*SIM Mode to be used to meet required detection limit of 0.35 ug/L							

Laboratory Method Detection Limits (MDLs) and Reporting Limits (RLs) for PFAS analysis are detailed in the tables below:

PFAS MDLs & RLs (SOIL)

Analyte	CAS Number	RL (ng/g)	MDL (ng/g)
Perfluorobutanoic Acid (PFBA)	375-22-4	1	0.0213
Perfluoropentanoic Acid (PFPeA)	2706-90-3	1	0.01035
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	1	0.0635
Perfluorohexanoic Acid (PFHxA)	307-24-4	1	0.064
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1	0.064
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1	0.057
Perfluorooctanoic Acid (PFOA)	335-67-1	1	0.04105
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	1	0.198
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1	0.136
Perfluorononanoic Acid (PFNA)	375-95-1	1	0.083
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1	0.1205
Perfluorodecanoic Acid (PFDA)	335-76-2	1	0.072
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	1	0.275
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	1	0.103
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	1	0.056
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	1	0.097
Perfluorooctanesulfonamide (FOSA)	754-91-6	1	0.1025
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	1	0.09
Perfluorododecanoic Acid (PFDoA)	307-55-1	1	0.086
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	1	0.062
Perfluorotetradecanoic Acid (PFTA)	376-06-7	1	0.07
PFOA/PFOS, Total		1	0.04105

PFAS MDLs & RLs (GROUNDWATER)

Analyte	CAS Number	RL (ng/L)	MDL (ng/L)
Perfluorobutanoic Acid (PFBA)	375-22-4	2	0.3732
Perfluoropentanoic Acid (PFPeA)	2706-90-3	2	0.464
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	2	0.38
Perfluorohexanoic Acid (PFHxA)	307-24-4	2	0.492
Perfluoroheptanoic Acid (PFHpA)	375-85-9	2	0.372
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	2	0.436
Perfluorooctanoic Acid (PFOA)	335-67-1	2	0.46
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	2	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	2	0.52
Perfluorononanoic Acid (PFNA)	375-95-1	2	0.436
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	2	0.56
Perfluorodecanoic Acid (PFDA)	335-76-2	2	0.62
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	2	0.2908
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	2	0.2504
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	2	0.424
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	2	0.386
Perfluorooctanesulfonamide (FOSA)	754-91-6	2	0.556
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	2	0.3728
Perfluorododecanoic Acid (PFDoA)	307-55-1	2	0.592
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	2	0.314
Perfluorotetradecanoic Acid (PFTA)	376-06-7	2	0.988
PFOA/PFOS, Total		2	0.46

3.1 Soil Samples

Soil samples will be collected as described in the RAWP. Analysis will conform to NYSDEC Analytical Services Protocol (ASP) Category B data deliverables in accordance with NYSDEC DER-10, Appendix 2B, 1.0 (b), including calibration standards, surrogate recoveries, and chromatograms.

3.2 Groundwater Samples

Groundwater samples will be collected as described in the RAWP. Analysis will conform to NYSDEC Analytical Services Protocol (ASP) Category B data deliverables in accordance with NYSDEC DER-10, Appendix 2B, 1.0 (b), including calibration standards, surrogate recoveries, and chromatograms.

3.3 Field/Laboratory Data Control Requirements

Quality Control (QC) procedures will be followed in the field and at the laboratory to facilitate that reliable data are obtained. When performing field sampling, care shall be taken to prevent the cross-contamination of sampling equipment, sample bottles, and other equipment that could compromise sample integrity. QC samples will include the following:

- Blind Duplicates – one per 20 environmental samples for each matrix sampled.
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) - one per 20 environmental samples for each matrix sampled.
- Equipment Blank – one per day for each matrix sampled.
- Field Blank – one per day when PFAS samples are collected.
- Trip Blank – one per day.

QA/QC Sample Type	Est. Total Endpoint Soil Samples	Est. Days of Soil Sampling	Est. Total Soil QA/QC Samples	Est. Total Groundwater Samples	Est. Days of Groundwater Sampling	Est. Total Groundwater QA/QC Samples
Blind Duplicate	90	20	5	0	0	0
MS/MSD	90	20	5	0	0	0
Equipment Blank	90	20	5	0	0	0
Field Blank	90	20	0	0	0	0
Trip Blank	90	20	0	0	0	0

QA/QC Sample analysis will conform to NYSDEC ASP Category B data deliverables in accordance with NYSDEC DER-10, Appendix 2B, 1.0 (b), including calibration standards, surrogate recoveries, and chromatograms.

3.4 Special Sampling Considerations for PFAS Sampling

In the event that PFAS samples are collected, special consideration must be made to avoid cross contamination. There are several potential sources of PFAS that could contribute to the cross-contamination of environmental samples collected during the RI. Weatherproof clothing, pens, logbooks, cosmetics, personal hygiene products, insect repellents, and sampling equipment could contain PFAS that could lead to false positive sampling results.

To ensure that the analytical results obtained are representative of the actual site conditions several measures should be taken:

- Collection of appropriate field QA/QC samples (blanks, duplicates, equipment rinseate samples, etc.) as

detailed in Section 5.3.

- Analysis by the analytical laboratory using established laboratory QA/QC procedures and methods as detailed in Section 5.3.
- During decon, non-dedicated equipment to be used for PFAS sampling will be rinsed with PFAS free water supplied by the laboratory. Equipment will be allowed to fully air dry before use.
- New high-density polyethylene (HDPE) tubing shall be used at each sample location.
- Groundwater samples will be collected in laboratory supplied HDPE containers.
- New nitrile gloves shall be worn between each sample interval.
- Only clean cotton or synthetic clothes shall be worn – preferably washed more than six times, and without the use of fabric softeners. No waterproof or insecticide treated clothing, boots or rain jackets made or treated with Teflon products shall be used at the collection site. This includes all Gore-Tex® and Tyvek® products.
- Do not apply moisturizers or hand creams to hands or face on the day of sampling. No sunblock or insect repellants. Do not bring packaged food to the work site or use aluminum foil.
- Field notes shall be taken using a computer tablet or by using ink pens on non-water proof plain paper attached to a metal clipboard. Do not use Sharpies or markers. Transcribe field notes to Chain-of-Custody forms and official field books when back in the office after the collection process.
- For groundwater samples use only laboratory supplied 250 ml polypropylene sample bottles. Sample bottles should be pre-preserved by the laboratory, if dictated by the analysis method.
- Print labels before going into the field and apply to the sample containers.
- Use only laboratory supplied PFAS-free water for trip, field and equipment blanks.
- Place each sample container in a separate polypropylene zip-lock bag.
- For the shipping coolers, use only regular crushed ice packaged in polypropylene zip-lock plastic bags.
- Use only laboratory supplied shipping coolers that were used to ship sample containers for this project. Tape the cooler shut before shipping samples to the laboratory.

3.5 Sample Identification

Each sample will be identified with a set of information relating individual sample characteristics. Required information consists of Sample Designation, Depth, Date, Time, and Matrix. Examples of sample IDs are shown below.

- EP001 (endpoint soil sample 001)

- SB001(0-2') (soil sample, boring 001 from 0 to 2 feet)
- GW001(6-8') (groundwater sample, soil boring 001 from 6 to 8 feet)
- MW004 (groundwater sample, permanent monitoring well 004)
- CW001 (10-15') (groundwater sample, cluster well 001, 10 to 15 foot interval)
- SV001 (permanent soil vapor point 001
- SS001 (temporary sub-slab vapor point 001)
- IA001 (indoor air sample 001)
- AA001 (ambient air quality sample 001)

Sample frequency, locations, depths, and nomenclature may change subject to field decisions and professional judgment.

3.6 Chain-of-Custody, Sample Packaging and Shipment

Each day that samples are collected, a chain-of-custody/request for analysis form will be completed and submitted to the laboratory with samples to be analyzed. A copy of the chain-of-custody will be retained by the Project Manager. The chain-of-custody will include the project name, sampler's signature, sample IDs, date and time of sample collection, and analysis requested.

Samples will be packaged and shipped in a manner that maintains sample preservation requirements during transport (i.e., ice to keep samples cool until receipt at the laboratory), ensures that sample holding times can be achieved by the laboratory, and prevents samples from being tampered with.

If a commercial carrier ships samples, a bill of lading (waybill) will be used as documentation of sample custody. Receipts for bills of lading and other documentation of shipment shall be maintained as part of the permanent custody documentation. Commercial carriers are not required to sign the chain-of-custody as long as it is enclosed in the shipping container and evidence tape (custody seal) remains in place on the shipping container.

3.7 Data Usability and Validation

The main purpose of the data is for use in defining the extent of contamination at the site, to aid in evaluation of potential human health and ecological exposure assessments, and to support remedial action decisions. Based upon this, data usability and validation will be performed as described below. Complete data packages will be

archived in the project files, and if deemed necessary additional validation can be performed using procedures in the following sections.

3.7.1 Data Usability and Validation Requirements

Data usability and validation are performed on analytical data sets, primarily to confirm that sampling and chain-of-custody documentation are complete, sample IDs can be tied to specific sampling locations, samples were analyzed within the required holding times, and analyses are reported in conformance with NYSDEC ASP, Category B data deliverable requirements as applicable to the method utilized.

3.7.2 Data Usability and Validation Methods

A designee of the PWGC Project Manager will complete a data usability evaluation for the data collected during the RI and a data usability summary report (DUSR) will be prepared. The DUSR will be prepared in accordance with NYSDEC DER-10, Appendix 2B.

Independent third-party data validation will be performed on 5% of the sample data, or on one sample from each sample delivery group (SDG), whichever is greater. Data validation will be performed by a qualified subcontractor independent of the project.

4.0 FIELD EQUIPMENT CALIBRATION

Equipment will be inspected and approved by the Field Team Leader before being used. Equipment will be calibrated to factory specifications, if required. Monitoring equipment will be calibrated following manufacturers recommended schedules. Daily field response checks and calibrations will be performed as necessary (i.e. PID calibrations) following manufacturers standard operating procedures. Equipment calibrations will be documented in a designated field logbook.

5.0 EQUIPMENT DECONTAMINATION

In order to minimize the potential for cross-contamination, non-dedicated drilling and sampling equipment shall be properly decontaminated prior to and between sampling/drilling locations.

5.1 General Procedures

Drilling equipment will be decontaminated in a designated area. Sampling equipment and probes will be decontaminated in an area covered with plastic sheeting near the sampling location. Waste material generated during decontamination activities will be containerized, stored and disposed of in accordance with the procedures detailed in Section 5.9. Decontamination of sampling equipment shall be kept to a minimum, and wherever possible, dedicated sampling equipment shall be used. Personnel directly involved in equipment decontamination shall wear appropriate personal protective equipment (PPE).

5.2 Drilling Equipment

Drilling equipment shall be decontaminated prior to performance of the first boring/excavation and between all subsequent borings/excavations. This shall include hand tools, casing, augers, drill rods, temporary well material and other related tools and equipment. Water used during drilling and/or steam cleaning operations shall be from a potable source.

5.3 Sampling Equipment

Sampling equipment (i.e., trowels, knives, split-spoons, bowls, hand augers, etc...) will be decontaminated prior to each use as follows:

- Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
- Generous tap water rinse
- Distilled water rinse

5.4 Meters and Probes

All meters and probes that are used in the field (other than those used solely for air monitoring purposes, e.g., PID meters) will be decontaminated between uses as follows:

- Laboratory-grade detergent and tap water solution wash
- Tap water rinse
- Distilled water rinse (triple rinse)

6.0 FIELD DOCUMENTATION

Documentation will take place on either appropriate forms or in a dedicated site logbook. Permanent black or blue ink will be used to record information in the logbook. Errors in field documentation will be lined through, initialed, dated, and corrected. Forms will be kept by the PWGC Field Team Leader during the field activities. Field activities will be documented in the field logbook. The logbook will contain waterproof pages that are consecutively numbered and be permanently bound with a hard cover. Upon completion of daily activities, unused portions of pages will be lined-through and initialed.

The primary purpose of the field logbook is to document the daily field activities and to provide descriptions of each activity. All entries in the field logbook will be recorded and dated by person making the entry.

Appendix D

Community Air Monitoring Plan

WILLIAMSBRIDGE GARDENS
EAST 211TH – EAST 212TH STREET
BRONX, NEW YORK
NYSDEC BCP ID: C203113

COMMUNITY AIR MONITORING PLAN

SUBMITTED TO:

New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, New York 11101

PREPARED FOR:

B&B Urban, LLC
419 Park Avenue South, 7th Floor
New York, New York 10016

PREPARED BY:

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PWGC Project Number: BBU1702

MARCH 2019

HEALTH & SAFETY PLAN
WILLIAMSBRIDGE GARDENS
NYSDEC BCP ID: C203113

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P.W. GROSSER CONSULTING, INC.
PROJECT No. BBU1801
New York State Department of Environmental Conservation
Brownfield Site No. C203113

COMMUNITY AIR MONITORING PLAN

Williamsbridge Gardens
East 211th – East 212th Street
Bronx, New York

SUBMITTED:

March 2019

PREPARED FOR:

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

ON BEHALF OF:

B&B Urban LLC
419 Park Avenue South, 7th Floor
New York, New York 10019

PREPARED BY:

P.W. Grosser Consulting, Inc.
630 Johnson Avenue, Suite 7
Bohemia, New York 11716

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved) from potential airborne contaminant releases resulting from investigation and/or remedial action at the Williamsbridge Gardens site, Bronx, New York.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the investigation and/or remedial work did not spread contamination off-site through the air. The CAMP will be implemented as follows:

- 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.

The primary concerns for this site are SVOCs, metals and dust particulates.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan: This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air.

2.0 AIR MONITORING

The following sections contain information describing the types, frequency and location of real-time monitoring.

2.1 Real-Time Monitoring

This section addresses the real-time monitoring that will be conducted within the work area, and along the site perimeter, during intrusive activities such as excavation, product recovery, manipulation of soil piles, extraction of sheet piling, etc.

Air monitoring data will be documented in a site log book by the designated site safety officer. PWGC's site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan.

2.1.1 Air Monitoring Equipment

Air will be monitored for VOCs with a MiniRAE 2000 PID (or equivalent). This instrument is appropriate to measure the types of contaminants known or suspected to be present, and is capable of calculating 15-minute running average concentrations, which will be compared to the levels specified in Section 2.1.2

Fugitive respirable dust will be monitored using a MiniRAM Model PDM-3 aerosol monitor (or equivalent). This instrument is capable of measuring particulate matter less than 10 micrometers in size (PM-10), is capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level, and is equipped with an audible alarm to indicate exceedance of the action level specified in Section 2.1.3.

2.1.2 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. VOC monitoring Action Levels are as described below:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities 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.
- 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.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings will be recorded and be available for NYSDEC and/or NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

2.1.3 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. In addition, fugitive dust migration should be visually assessed during all work activities. Particulate monitoring Action Levels are as described below:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) 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/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 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/m3 of the upwind level and in preventing visible dust migration.

All 15-minute readings will be recorded and be available for NYSDEC and/or NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

3.0 SPECIAL REQUIREMENTS

3.1 Requirements for Work within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

3.2 Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under “Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures” except that in this instance “nearby/occupied structures” would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

4.0 VAPOR SUPPRESSION TECHNIQUES

Vapor suppression techniques must be employed when action levels warrant the use of these techniques.

The techniques to be implemented for control of VOCs from stockpiled soil or from the open excavation will include one or more of the following:

- cover with plastic
- cover with “clean soil”
- application of hydro-mulch material*
- limit working hours to favorable wind and temperature conditions

*This material is a seedless version of the hydro-seed product commonly used by commercial landscaping contractors to provide stabilization and rapid grow-in of grasses or wild flowers along highways, embankments and other large areas. Hydro-mulch can be sprayed over open excavation areas, temporary stockpile areas and loaded trucks, as necessary. This is a highly effective method for controlling odors, because the release of odors is sealed immediately at the source.

5.0 DUST SUPPRESSION TECHNIQUES

Reasonable dust-suppression techniques must be employed during all work that may generate dust, such as excavation, grading, and placement of clean fill. The following techniques were shown to be effective for controlling the generation and migration of dust during remedial activities:

- Wetting equipment and excavation faces;
- Spraying water on buckets during excavation and dumping;
- Hauling materials in properly covered containers; and,
- Restricting vehicle speeds to 10 mph.

Using atomizing sprays will prevent overly wet conditions, conserve water, and offer an effective means of suppressing fugitive dust. It is imperative that utilizing water for suppressing dust will not create surface runoff.

6.0 DATA QUALITY ASSURANCE

6.1 Calibration

Instrument calibration shall be documented in the designated field logbook. All instruments shall be calibrated before each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

6.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the FTL/HSO for reference.

6.3 Data Review

The Field Team Leader FTL/HSO will interpret all monitoring data based on the action levels specified in Sections 2.1.2 and 2.1.3 and his/her professional judgment. The FTL/HSO shall review the data with the HSM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the HSM.

7.0 RECORDS AND REPORTING

All readings must be recorded and available for review by personnel from NYSDEC and NYSDOH. Should any of the action levels be exceeded, the NYSDEC Division of Air Resources must be notified in writing within five (5) working days.

The notification shall include a description of the control measures implemented to prevent further exceedances.

Appendix E

Citizen Participation Plan

NEW YORK
STATE OF
OPPORTUNITY.

Department of
Environmental
Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
Williamsbridge Gardens

October 2018

Revised May 2019

C203113
718 to 728 East 212th Street
Bronx County, New York 10467

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.

Revision Notes

Original Version October 2018
Revision 1 May 2019

- Added Bronx Community Board 12 as a Document Repository

Applicant: **B&B Urban LLC and 211 Residential Associates LLC**
Site Name: **Williamsbridge Gardens**
Site Address: **718 to 728 East 212th Street, Bronx, New York 10467**
Site County: **Bronx County**
Site Number: **C203113**

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 who 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 interested 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
- 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 website. 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;
- 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.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See:

http://www.dec.ny.gov/chemical/61092.html

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

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.

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.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in **Appendix A**.

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 Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	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 (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
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 draft 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 NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when 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 a Potential 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 Hispanic-American and Black American neighborhood. Therefore, all future fact sheets will be translated into Spanish.

Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process. If issues are identified, the public will be kept informed and mitigation measures will be implemented. Some of those issues may include truck-related traffic, odor and noise issues.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The site is located at 718 to 728 East 212th Street, Bronx, New York. The site is located in a highly urbanized area; usage of surrounding properties predominantly consists of a mix of residential and commercial/retail. The subject property measures approximately 0.80 acres (35,000 square feet), and is currently vacant, with the exception of a small storage building located on the north-central portion of the site.

A Site Location Map, and Site Plan are included in **Appendix C**.

History of Site Use, Investigation, and Cleanup

The prior and current usage of the site is summarized as follows:

- The majority of the site (western and southern portions) has been vacant since at least 1897. From the early 1980s through early 2018, this portion of the property has been used for the storage and maintenance of carnival rides and equipment.
- The north-central portion of the site contained three residential apartment buildings from approximately 1918 until the 1970s when there were demolished. This portion of the site has been vacant since that time, with the exception of a small storage building currently present. From the early 1980s through early 2018, this portion of the property has been used for the storage and maintenance of carnival rides and equipment.
- The northeastern portion of the site was first developed in approximately 1918 as an auto repair shop. Between 1918 and 1935 it was redeveloped as a contractor storage garage/warehouse, and residential dwelling. These buildings were demolished in the early 2000s. This portion of the site has been vacant since that time.

A Phase II Environmental Site Assessment (ESA) was prepared for the site in January 2018. The Phase II ESA included the collection and analysis of soil and soil vapor samples from the site. Findings of the Phase II ESA included petroleum and metals impact to soils likely related to the current/historical usage of the site for equipment storage and auto repair/contractor storage, as well as the likely presence of historic urban fill material.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted 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 onsite, 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 unrestricted 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 has completed a partial site investigation before it entered into the BCP. For the partial investigation, NYSDEC will determine if the data are useable.

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 must develop a remedial investigation workplan, which is subject to public comment.

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.

The Applicant submits a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

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.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a “Certificate of Completion” (described below) to the Applicant.

or

2. The Applicant may recommend 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 draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft 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 selected remedy is formalized in the site Decision Document.

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 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.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the Final Engineering Report. 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

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. 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 site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup 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. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Ms. Mandy Yau
Project Manager
NYSDEC Region 2
Division of Environmental Remediation
47-40 21st Street
Long Island City, New York 11101
718-482-4897

Mr. Thomas V. Panzone
Public Participation Specialist
NYSDEC Region 2
47-40 21st Street
Long Island City, New York 11101
718-482-4853

Ms. Sara Bogardus
Project Manager
New York State Department of Health (NYSDOH):
Empire State Plaza
Corning Tower, Room 1787
Albany, New York 12237
518-402-7860
beei@health.ny.gov

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Wakefield Library
4100 Lowerre Place
Bronx, NY 10466
Phone: 718-652-4663
Hours: Mon.-Thurs.:10AM to 7PM
Fri.-Sat.: 10AM to 5PM
Sun: Closed
https://www.nypl.org/about/locations/wakefield

NYSDEC Region 2
47-40 21st Street
Long Island City, NY 11101
Attn: Ms. Mandy Yau
Phone: 718-482-4897
Hours: (call for appointment)

Bronx Community Board 12
4101 White Plains Road
The Bronx, NY 10466
Phone: 718-944-3300

Appendix B - Site Contact List

1. Government Officials

New York City Mayor
William DeBlasio
City Hall, New York, NY 10007
http://www1.nyc.gov/office-of-the-mayor/mayor-contact.page

New York City Department of City Planning
Marisa Lago, Commissioner
120 Broadway, 31st Floor, New York, NY 10271
http://www1.nyc.gov/site/planning/about/email-the-director.page

Bronx Borough President
Reuben Diaz, Jr.
Office of the Bronx Borough President
851 Grand Concourse, 3rd Floor, Bronx, New York 10451
http://bronxboropres.nyc.gov/contact/

Hon. Scott Stringer
NYC Comptroller
1 Centre Street
New York, NY 10007

Hon. Letitia James
1 Centre Street, 15th Floor
New York, NY 10007

Hon. Andy King
NYC Councilmanen
940 Eeast Gun Hill Road
Bronx, NY 10467

Hon. Jamaal T. Bailey
NYS Senator
959 East 233rd Street
Bronx, NY 10466

Hon. Carl Heastie

NYS Assemblyman
1446 East Gun Hill Road
Bronx, NY 10469

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

Luis M. Diaz, Bronx County Clerk
851 Grand Concourse, Room 118
Bronx, NY 10451

Hon. Eliot Engel
U.S. House of Representatives
3655 Johnson Avenue
Bronx, NY 10463

Julie Stein
Office of Environmental Planning & Assessment
NYC Department of Environmental Protection
96-05 Horace Harding Expressway
Flushing, NY 11373

Mark McIntyre, Director
NYC Office of Environmental Remediation
100 Gold Street - 2nd Floor
New York, NY 10038

2. Adjacent Properties
North:
709 East 212th Street
Owner Name: 3560 WPR LLC
Owner Address: 121 Tweed Blvd, Grandview On Hudson, NY 10960

713 East 212th Street
Owner Name: 3560 WPR LLC
Owner Address: 713 E 212 St, Bronx, NY 10467

715 East 212th Street
Owner Name: Ramona Perez
Owner Address: 715 E 212 St, Bronx, NY 10467

719 East 212th Street
Owner Name: East 212th Corp
Owner Address: 719 E 212 St, Bronx, NY 10467

721 East 212th Street
Owner Name: East 212th Corp
Owner Address: 719 E 212 St, Bronx, NY 10467

723 East 212th Street
Owner Name: East 212th Corp
Owner Address: 719 E 212 St, Bronx, NY 10467

729 East 212th Street
Owner Name: J&D Estates, LLC
Owner Address: 199 Lee Ave #201, Brooklyn, NY 11211

South:
702 East 211th Street
Owner Name: United States Postal Service
Owner Address: 702 E 211 St, Bronx, NY 10467

710 East 211th Street
Owner Name: Howard White
Owner Address: 710 E 211 St, Bronx, NY 10467

712 East 211th Street
Owner Name: Loida Arias
Owner Address: 712 E 211 St, Bronx, NY 10467

711 East Gun Hill Road
Owner Name: United States Postal Service
Owner Address: 711 E Gun Hill Rd #3, Bronx, NY 10467

725 East Gun Hill Road
Owner Name: East End Gun Hill
Owner Address: 725 E Gun Hill Rd, Bronx, NY 10467

East:
721 East 211th Street
Owner Name: Wenford Simpson
Owner Address: 721 E 211 St, Bronx, NY 10467

3535 Holland Avenue
Owner Name: Nison Badalov & Benzakunim Badalov
Owner Address: 8245 Beverly Rd, Queens, NY 11415

3537 Holland Avenue
Owner Name: Arthur Santiago
Owner Address: 3537 Holland Ave, Bronx, NY 10467

730 East 212th Street
Owner Name: Phillip Gohagan
Owner Address: 730 E 212 St, Bronx, NY 10467

West:
3558 White Plains Road
Owner Name: 3530 WPR Sub LLC
Owner Address: 121 Tweed Blvd, Grandview On Hudson, NY 10960

707 East 211th Street
Owner Name: 707 East 211th St LLC
Owner Address: 121 Tweed Blvd, Grandview On Hudson, NY 10960

3. Local News Media
Bronx Times
Address: 3602 East Tremont Avenue, Suite 205, Bronx, NY 10465
https://www.bxtimes.com

Spectrum NY 1 News
75 Ninth Avenue
New York, NY 10011

New York Daily News
4 New York Plaza
New York, NY 10004

New York Post
1211 Avenue of the Americas
New York, NY 10036

Bronx Times Reporter
900 East 132nd Street

Bronx, NY 10454

Bronx Free Press
5030 Broadway, Suite 801
Bronx, NY 10034

The Bronx Chronicle
25 Westchester Square, Suite 1
Bronx, NY 10462

4. Public Water Supplier
Attn: Vincent Sapienza, Commissioner
New York City Department of Environmental Protection
Address: 59-17 Junction Boulevard Flushing, New York
http://www.nyc.gov/html/dep/html/drinking_water/index.shtml

5. Requested
None to date

6. School or Day Care Facilities
(Within Approx. 0.25 miles of Site)

Immaculate Conception School
Principal: Ms. Amy Rodriguez
760 East Gun Hill Road
Bronx, NY 10467

Susan Wagner Victory Day Care
3440 White Plains Road
Bronx, NY 10467

Regent School
Principal: Howard Sterling
719 East 216 Street
Bronx, NY 10467

Mind-Builders Creative Arts Center
Principal: Madaha Kinsey-Lamb
415 Olinville Avenue
Bronx, NY 10467

Bronx High School for Writing and Communication Arts
Principal: Terri Grey
800 East Gun Hill Road
Bronx, NY 10467

Bronx Lab School
Principal: Sarah Marcy
800 East Gun Hill Road
Bronx, NY 10467

High School of Computers and Technology
Principal: David Wills
800 East Gun Hill Road
Bronx, NY 10467

Bronx Academy of Health Careers
Principal: Dawn Santiago
800 East Gun Hill Road
Bronx, NY 10467

PS 041 Gun Hill Road
Principal: Michelle Moore
3352 Olinville Avenue
Bronx, NY 10467

High School for Contemporary Arts
Attn: Pedro Cubero, Principal
800 East Gun Hill Road
Bronx, NY10467

Evander Childs High School
Attn: Principal
800 East Gun Hill Road
Bronx, NY10467

Bronx Aerospace H.S.
Attn: Erika Hurtado, Principal
800 East Gun Hill Road
Bronx, NY10467

Comm. HS For Social Justice
800 East Gun Hill Road
Bronx, NY10467

City of Faith Church of God, Inc. – Daycare Center
3453 White Plains Rd
Bronx, NY10467

City of Faith Community Development Corp.
3445 White Plains Rd
Bronx, NY10467

Northeast Bronx Day Care Center, Inc.
3440 White Plains Rd
Bronx, NY10467

Gunhill Child Care, LLC
934 E Gun Hill Rd
Bronx, NY10469

7. Document Repository
Wakefield Library
4100 Lowerre Place, Bronx, NY, 10466
(718) 652-4663
Library Manager: Ms. Maribel Lugo

Bronx Community Board 12
Chairman William A. Hall
4101 White Plains Road, Bronx, NY 10466
http://www1.nyc.gov/site/bronxcb12/index.page

8. Community Board
Bronx Community Board 12
Chairman William A. Hall
4101 White Plains Road, Bronx, NY 10466
http://www1.nyc.gov/site/bronxcb12/index.page

9. Community, Civic, Religious and Other Environmental Organizations
Eric Soto – Director
Consolidated Edison Corporate Affairs
511 Theodore Fremd Avenue
Rye, NY 10580

Battalion 27 Engine 79 Ladder 37
2928 Briggs Avenue
Bronx, NY10458

Elizabeth Gill – President
47th Police Precinct Council
4111 Laconia Avenue
Bronx, NY 10466

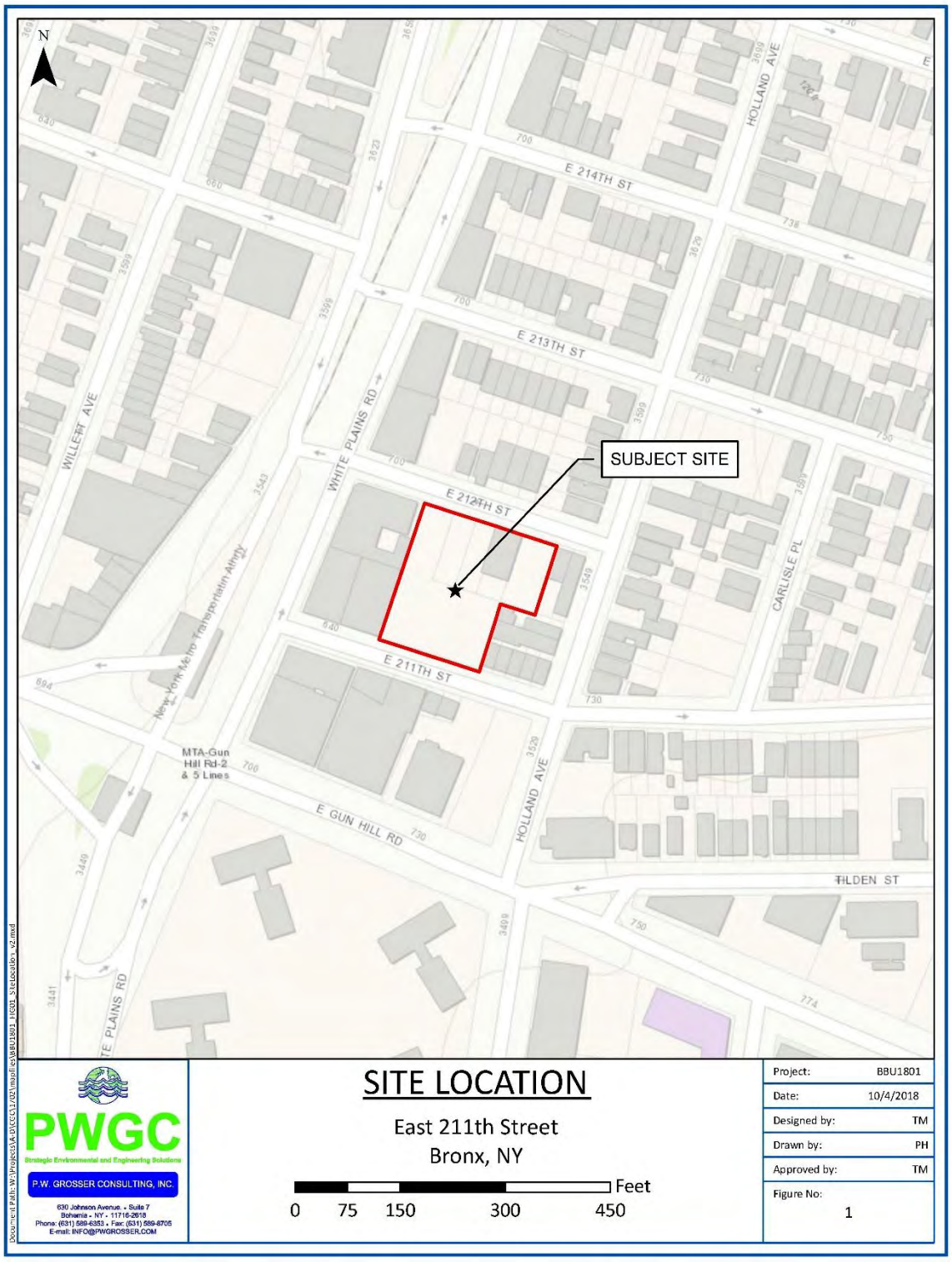
Gun Hill Houses – NYCHA
Attn: Management Development Office

731 Magenta Street
Bronx, NY 10467

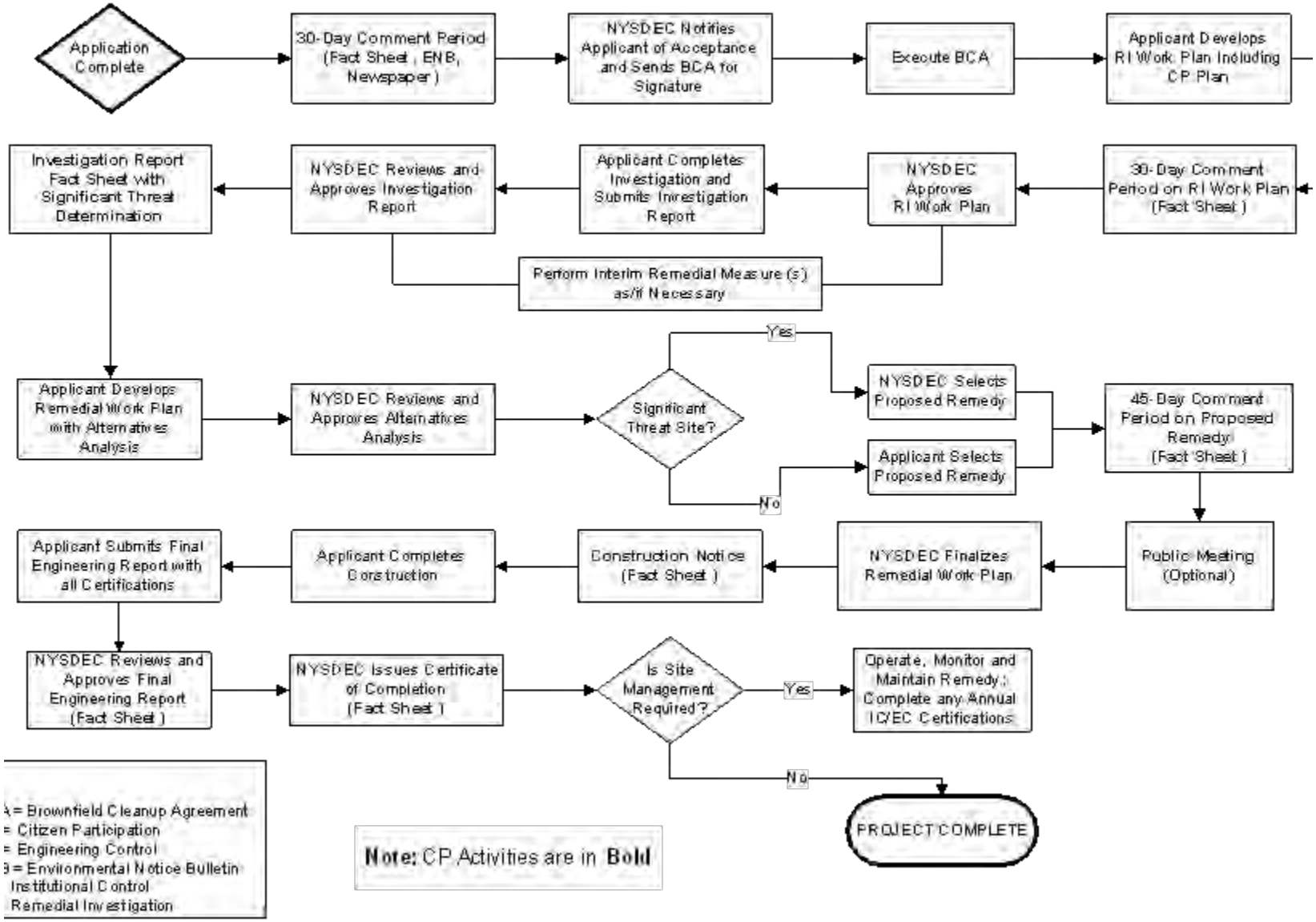
Gun Hill Houses – NYCHA
Attn: President – Resident Association
731 Magenta Street
Bronx, NY 10467

Immaculate Conception Church
Attn: Pastor
754 E Gun Hill Rd
Bronx, NY 10467

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Appendix F

Resumes of Key Personnel

James Rhodes, PG • COO

PROFESSIONAL EXPERIENCE

PWGC: 25 years

PRIOR: 5 years

AREAS OF EXPERTISE

Brownfields/Redevelopment Management
Environmental Compliance Management
Property/Real Estate Due Diligence Expert – Transaction & Environmental
Site Assessment & Reuse Analysis
Environmental & Remedial Investigations - Soil/Groundwater and Air Quality

EDUCATION & TRAINING/CERTIFICATION

MS, Earth Science/Hydrogeology, Adelphi University, NY
BS, Geology, SUNY Oneonta, NY
Executive Education (ACEC)
Leading Professional Service Firms - Harvard Business School
Licensed Professional Geologist - NYS
Phase I Environmental Inspector - Environmental Assessment Association
Professional Geologist - American Institute of Professional Geologists
Licensed Real Estate Salesperson - NY
OSHA HAZWOPER 40-hr.

PROFILE

In 2017, James Rhodes was named PWGC's Chief Operating Officer. In this role Mr. Rhodes is responsible for the operations of the business, working in tandem with the CEO and President. Roles will vary by industry but they will typically be involved in day every-day management, particularly business strategy, business planning and monitoring business performance. The COO provides leadership, management and vision necessary to ensure that the firm has the proper operational controls, administrate and reporting procedures and people systems in place to effectively grow the organization and ensure financial strength and operating efficiency. The position accomplishes this through respectful, constructive and energetic communications styles guided by the objectives of the company.

Prior to his promotion, Mr. Rhodes led PWGC's Environmental Unit. There he utilized his 30 years' experience as an expert in managing environmental concerns unique to the real estate market, serving public and private sectors. Through his tenure he has provided guidance to associates and clients, maintains established working relationships with regulators at multiple levels of government. His expertise enables clear communication on project requirements and speeds the approval process.

Mr. Rhodes' expertise in environmental remediation and redevelopment fields includes environmental site assessments (ESA), such as Phase I/II ESAs, RI/FS, NYS Brownfield studies, NYC "E" Designation Program, and cost to cure estimates for real estate tax purposes. His experience with soil and groundwater investigations, air quality studies and remedial measures has benefitted clients that include attorneys and developers, insurance companies and municipal agencies. His resourcefulness to pinpoint key environmental concerns quickly helps avoid unexpected delays and cost overruns, benefitting the client.

NOTABLE PROJECTS

PWGC Environmental Real Estate Sector Services

Phase I & Phase II Environmental Site Assessment (ESA) Management – As Program Director for Property Transactions & Real Estate Environmental Management Services & Support for PWGC, Rhodes oversees Phase I & II ESA planning, implementation and completion. He ensures that each ESA is tailored to client needs and long-term goals. For each project, a targeted scope of work and relevant documentation is prepared for clients to allow them to make cost-effective business decisions. PWGC typically performs more than 60 Phase I & Phase II ESA's annually with clients that include attorneys, lending institutions and municipalities. Given his experience, Rhodes provides clients workable environmental solutions for real estate issues. Under his management, PWGC Phase I/II reports are recognized by peers and clients for effectively utilizing escrow agreements, environmental insurance and cost-to-cure estimates. Mr. Rhodes acts as the Project Director for these projects and is the main liaison with the SCDHS. As part of his duties, Mr. Rhodes participated in meetings with the New York State Department of Environmental Conservation and collaborated with SCDHS to streamline the brownfield restoration process.

Garvies' Point Redevelopment Project

RXR-Glen-Isle Partners, LLC – Mr. Rhodes has been acting as project director overseeing numerous environmental consulting programs for this major waterfront redevelopment project in the City of Glen Cove. PWGC was brought into the project to perform full spectrum environmental due diligence services for the waterfront area when RXR Realty, LLC entered into the project. The waterfront area includes sites in both the New York State and Federal Superfund programs - including the Li Tungsten and Captain's Cove sites - and the initial due diligence services, which focused on current remedial status and what needed to be completed in order for the redevelopment to proceed. Over the last several years, PWGC has been working closely with the development team including RXR-Glen-Isle Partners, LLC, the City of Glen Cove, regulatory agencies including the NYSDEC, NYSDOH, NCDH, and USEPA to move the project toward redevelopment. Towards this goal, PWGC continues to work with and coordinate services of other consultants to obtain the necessary information to allow the project to proceed. To accomplish this goal, PWGC has prepared numerous plans and reports including a work plan to address data gaps throughout the multiple parcels along the waterfront. The subsurface investigation performed under this plan included more than 200 soil borings to fully characterize the site to eliminate data gaps, which will allow the project to obtain environmental insurance. PWGC has been involved in all aspects of environmental consulting on this project as it readies for redevelopment including evaluation of site specific soil cleanup objectives, SWPPP preparation and oversight, petroleum remediation oversight, radiological monitoring plan preparation, MARSSIM survey support services, building demolition support services, geotechnical support services, TOGS sampling support services, waste characterization and disposal oversight, and dredge spoil characterization and handling. Project related documents prepared by PWGC include the Data Gap Workplan and Report, Visual Stained Petroleum Soil Remediation Report, Synthetic Precipitation Leachate Procedure (SPLP)/Red Flag Area Characterization Plan and Report. Li Tungsten Existing Condition Report and Captains Cove Existing Condition Report. PWGC continues to provide field oversight services for all aspect of the project, including health and safety and community air monitoring services.

Bellport Gas Station-Bellport, NY

Brownfield's Consulting Support Services – This Suffolk County Brownfields site is currently in the New York State Department of Environmental Conservation (NYSDEC) Environmental Restoration Program. Mr. Rhodes oversaw the preparation of a remedial investigation work plan and the Remedial Investigation/Alternative Analysis report. In addition, an Interim Remedial Measure was performed and a final Remedial Action Plan with NYSDEC was negotiated. He submitted a final site management plan with an environmental easement. The site has been remediated and PWGC continues to monitor the site as required.

Avalon Bay Communities - Rockville Center, NY

Brownfields Project Management -& Planning – As project director, Mr. Rhodes provided technical support and acted as a liaison between the New York State Department of Environmental Conservation (NYSDEC), the Village of Rockville Centre, the site's previous owner and new owner, Avalon Bay Communities. He was an advocate for Avalon Bay's needs and goals to redevelop the former industrial site as residential in meetings with NYSDEC and collaborated with the client and project team to develop the most effective strategy to streamline the project's representation with the state under the BCP program. Mr. Rhodes provided invaluable guidance in regard to the project's scope of work and documentation preparation, which included work plans, sampling and RI reporting. He was instrumental in obtaining all permits to complete the IRM work plan as well as throughout the performance of the IRM. The site then went to final remedial action work plan, design and oversight of final remediation, completion of site management plan and easement, which was first project of its type on Long Island to obtain COC and was a winner of ACEC Diamond Award for engineering excellence.

Expeditors c/o Cargo Ventures LLC - Inwood, NY

Environmental Site Assessment, Remediation, & Redevelopment – Mr. Rhodes supervised the investigation, remediation and redevelopment of a New York State Department of Environmental Conservation (NYSDEC) designated spill site on 4.25 acres at a former Shell Oil terminal located along Negro Bar Channel in Inwood, NY. As part of this multifaceted project,

Suffolk County Department of Health Services (SCDHS)

Brownfield Program Engineering Consulting Services Agreement – Through a competitive bidding process, PWGC was chosen by SCDHS as its engineering consultant related to County-owned Brownfield sites. Currently, PWGC is working on five sites for SCDHS in various stages of the Brownfield Cleanup Program (BCP). These sites are in both the municipal Environmental Restoration Program (ERP) and BCP in situations where the county assumed responsibility for the site. PWGC prepared a Phase I Environmental Site Assessment and documented historic environmental work performed at the site to satisfy requirements from associated lending institutions. Rhodes oversaw the completion of a subsurface investigation to determine site conditions to prepare appropriate NYSDEC-approved Corrective and Remedial Action Plans. Further, he oversaw the removal of petroleum-impacted soils, which resulted in an excavation measuring 60,000 square feet and more than 40,000 tons of impacted soils processed.

Benjamin Beechwood, LLC, Arverne Urban Renewal Area (URA) - Far Rockaway, NY

Consulting Services, Multi-Site Phase II Planning & Management – As project director, Mr. Rhodes collaborated with representatives from Benjamin Beechwood, LLC and served as liaison to the New York City Departments of Environmental Protection (NYCDEP) and Housing Preservation and Development (HPD) effectively advocating for their project goals. He supervised environmental due diligence for the development of the site – measuring 25 city blocks wide – and prepared the scope of work for a multi-site Phase II investigation. The result was incorporated into project documents along with work plans, health and safety plans, special area management, and submitted to NYCDEP and HPD. Once approved, Rhodes coordinated with NYCDEP on extensive geophysical and geo-probe investigations, test pits and soil pile characterizations. He directed the multi-faceted project, with tank removals and NYSDEC spill closures, successfully clearing the way for the area's redevelopment and revitalization.

Town of Babylon - Wyandanch, NY

Phase II Site Investigation & Redevelopment – Mr. Rhodes worked with the Town of Babylon's Community Development Agency and private interests, which resulted in the first new supermarket built in the hamlet of Wyandanch in more than 20 years. Rhodes developed a soil and groundwater investigation scope that revealed low tetrachloroethane (PCE) levels in the soil and higher levels in the groundwater generated by a dry cleaner formerly located at the site. Rhodes documented the PCE was degrading naturally and only low-impact levels were migrating off-site. To determine the off-site plumes' real and potential effect, PWGC conducted an extensive well survey down-gradient of the property to identify potential receptors of the off-site groundwater contamination. The results prompted the Town of Babylon to connect potentially affected residences to public water, safeguarding the contaminant pathway and clearing the site for redevelopment.

Groundwater Specialists, Inc. - Ronkonkoma, NY

QA/QC for Phase I & II Engineering Oversight Services – To assure quality of the remedial investigation, Mr. Rhodes reviewed the proposed work plan, analyses; progress and activities monitoring for the soil-boring program; monitoring well installation; groundwater sampling; and spot-checking of field records. He further reviewed the third party's data evaluation, risk assessment, draft report, and results' documentation to assure completeness and rationality; and assisted the client with the sealing of the final report upon approval.

Village of Lindenhurst – Lindenhurst, NY

Environmental Site Assessment for Property Redevelopment – Mr. Rhodes acted as liaison between Village of Lindenhurst officials and the Suffolk County Department of Health Services (SCDHS) representatives during the environmental assessment facet of a condemnation proceeding ordered by the Village as part of the site's proposed redevelopment into a court complex. Faced with access issues during the initial Phase I and II, PWGC collected enough evidence for SCDHS to obtain a court order for gaining entry to the property. Working in conjunction with the SCDHS, Mr. Rhodes finalized a scope of work and tasks, divided between PWGC and SCDHS personnel. Information collected in the joint venture documented the site's environmental integrity allowing for formulating the proper remedial action plan.

Krumenacker Florist and Nursery - Amityville, NY

Phase II Investigation & Site Remediation – After reviewing an existing Phase I report, Mr. Rhodes performed a Phase II investigation and site remediation to bring the facility into regulatory compliance and clear the path for future development. The Phase II strategy focused on specific areas of concern that could negatively affect the client in the form of greater expense and unexpected delays. The environmental concerns focused on an existing Class V Underground Injection Control Well, underground gasoline storage tanks, potential environmental assessment format issues and impacted soils beneath the former greenhouse. During the greenhouse demolition, Rhodes met with regulatory agencies to ensure that on-going soil sampling and health and safety measures met regulatory requirements.

New York City "E" Designation and Voluntary Cleanup Program (VCP)

In response to the rezoning activities in New York City, its Office of Environmental Remediation (NYCOER) oversees environmental investigation and remediation at suspect sites prior to redevelopment. Rhodes develops scopes of work for environmental investigation required to redevelop the "E" designated property. He oversees Phase I & II work plans, Health and Safety Plan and Construction Health and Safety Plan, which NYCOER must approve prior to the start of work. To assess the soil quality he coordinates and oversees subsurface investigations, including geophysical surveys and soil and groundwater sampling programs. Based on the findings, Rhodes develops and implements remedial strategies and prepares Remedial Action Plans for NYCOER approval. Rhodes provides technical oversight and support on vapor intrusion mitigation, such as vapor barriers and sub–slab depressurization systems, and is experienced with New York State Department of Health requirements on evaluating soil vapor intrusions.

Current NYCOER VCP projects Mr. Rhodes is overseeing include a nine-story affordable housing development for Phipps Houses and a 12-story residential complex in Harlem, NY for HAP Investment Developers, which also includes an affordable housing component.

Mr. Rhodes is also currently overseeing sites within the NYCOER "E" Program. He is working with Bizzi & Partners Development, LLC, in NYC's SoHo location, which will be redeveloped into a 25-story, mixed-use, high-end residential building. And in Long Island City, Mr. Rhodes is working with the Lightstone Group on the redevelopment of a former taxi site, which is being developed into a 10-story mixed-use facility.

Sive, Paget & Riesel, PC (SPR) - New York, NY

Expert Evaluation & Analysis, Carnegie Hill, New York, NY – The law firm of Sive, Paget & Riesel, PC contracted Rhodes to provide an environmental engineering evaluation to determine the source of petroleum contamination in a commercial corridor. A previous investigation conducted by the New York State Department of Environmental Conservation (NYSDEC) contractor identified SPR's client as the responsible party for an oil spill negatively affecting an adjacent building. He used the evaluation of previous reports, proper closure of a 10,000 gallon underground storage tank (UST), and cross match analysis of fuel oil to compare chemical fingerprints of several sources. PWGC prepared a comprehensive project document to illustrate hydrogeologic cross sections, a study of the bedrock, UST construction details, hydrographs and photos. The comprehensive document ultimately proved favorable for the client.

Baumann Bus site, Francis S. Gabreski Airport – Westhampton Beach, NY

UIC Investigation/Remediation – Through New York State's "Rebuild Now" Program, Mr. Rhodes oversaw the investigation/remediation for Underground Injection Control (UIC) sites on 58 acres at Suffolk County's Francis S. Grabreski Airport, a 1,500 acre former US Air Force base in Westhampton. A 2004 site investigation revealed elevated levels of semi-volatile organic compounds. Through analysis of historical maps and geophysical methods, a remedial work plan was prepared for the site to properly locate, characterize and close more than 100 UIC sites. Mr. Rhodes provided technical support to verify protocols

on local, state and federal levels, corresponded with the County to negotiate the scope of work, provided quality assurance and verified that all work was done in accordance associated guidelines permitting site redevelopment. PWGC's efforts included a supplemental remedial investigation, final remedial design and preparation of a site management plan and post remedial monitoring, which is allowing for the development of the Hampton Business District business park by Plainview, NY-based Rechler Equities.

In addition to be UIC work, Mr. Rhodes oversaw remediation efforts at Gabreski associated with the Suffolk County Department of Health Services Brownfield Program, which is administered by PWGC. Other projects successfully completed by Mr. Rhodes and PWGC, or nearing completion, under the Brownfield Program include the Blue Point Laundry site in Blue Point, the Canine Kennel at Gabreski Airport and the Ronkonkoma Wallpaper site in Ronkonkoma.

Jain Center of America - Lake Success, NY
Sub-Surface Investigation Review - Mr. Rhodes reviewed a subsurface investigation of a former gasoline station. While adhering to Village of Lake Success requirements to address past environmental problems at the site, he supported client efforts to obtain construction approval for the property. As part of the SEQRA review process, the Village required the client perform a subsurface investigation. After a review of Nassau County records, Mr. Rhodes discovered an open UIC file resulting from an acceptable endpoint result having not been obtained. He designed a subsurface investigation to address the UIC issue, the former gasoline spill, a sanitary system at the site, and other environmental concerns resulting in an expedited review process.

Penetrex Processing, Glenwood Landing - New York
Subsurface Investigation, NYS Class II Inactive Hazardous Waste Site – As project principal, Mr. Rhodes lead the investigation of an inactive hazardous waste site in accordance with a New York State Department of Environmental Conservation (NYSDEC)-approved work plan, which included sub-slab vapor and indoor air sampling and a sub-slab depressurization system. In addition, he oversaw the preparation of a feasibility study for the site that NYSDEC used to prepare a proposed remedial action plan, which lead to a Record of Decision.

Allstate Insurance Services - Hauppauge, NY
Spill Site Project Management – Mr. Rhodes oversees multiple residential fuel oil spills a year in New York City, Westchester, Nassau, and Suffolk Counties and Upstate New York on behalf of Allstate Insurance Services. He directs PWGC's Allstate team in providing technical oversight to document that spill remediation performed by the homeowner's contractor sufficiently addresses the contamination present and to achieve closure by the New York State Department of Environmental Conservation (NYSDEC). He ensures professional representation at all levels, and coordination with the NYSDEC and the environmental contractor. PWGC addresses all spills in a timely fashion, effectively reducing or eliminating Allstate's liability in such cases.

Sub-Surface Investigation Management & Client Representation Texaco Station, NY – Mr. Rhodes reviewed and supervised a sub-surface investigation to determine whether two underground storage tanks at a Texaco gas station were the potential source of soil and groundwater contamination under remediation at the time. He reviewed existing site data and supervised a subsurface investigation to determine the responsible party. The investigation showed the two storage tanks were not the source of contamination and that the current remediation system appeared ineffective.

Water Authority of Great Neck North - Great Neck NY
Groundwater Study – As project manager, Mr. Rhodes directed multiple studies using groundwater models in conjunction with the Nassau County Department of Public Works, to evaluate the pumpage of Great Neck's public water supply wells for potential for saltwater intrusion to determine the most favorable locations for a proposed well field. Rhodes used the results to prepare an aquifer management plan (AMP) for the authority that described short-term and long-term pumping scenarios. By following the AMP, the Authority has indicated the advancement of multiple saltwater wedges has slowed and/or ceased. He also prepared the water supply application and engineering report for the installation of new wells located off of the Great Neck Peninsula, which was part of the Authority's long term plans contained in the AMP.

John deCuevas, et al. v. East Hampton Golf Club, LLC, et al – East Hampton, NY
Expert Evaluation – Mr. Rhodes conducted an investigation to assess the potential environmental impact of a golf course development on the groundwater resource and to provide testimony on behalf of John DeCuevas. He researched and evaluated the hydrogeologic characteristic beneath the site, local groundwater quality concerns and potential chemical usage of the future golf course. The evaluation identified the potential for groundwater impact and the threat to nearby private drinking water wells from the proposed development. The findings prompted the two parties to agree on the development of a groundwater monitoring program to protect the private wells. Further, the golf course implemented an Integrated Pest Management program to control chemical use at the site. After developing the monitoring program that includes two wells required by Suffolk County Department of Health Services (SCDHS), Rhodes reviewed the data to determine if impacts had occurred and submitted his findings with SCDHS for incorporation in the county's database.

Fong and Wong, PC - New York, NY
New Best Cleaners & Tailors, Inc., Centereach, NY, Environmental Investigation & Remediation – He provided professional consulting services and expert testimony for the attorney who represented the site lessee in litigation with the property owner over the environmental condition and a lease buy-out agreement. He oversaw the soil and groundwater study to evaluate potential impacts and determine multiple sources of contamination, and remediation of sources associated with the dry cleaners, and participated in an on-site meeting with the presiding judge to demonstrate the conditions at the site first hand.

Minmilt Realty - East Farmingdale, NY

Remedial Project Management - As field manager, Mr. Rhodes coordinated a full remedial investigation and provided technical direction during the installation of a deep monitoring well - 180 feet - and defined the vertical extent of contamination and hydrophobic dyes to determine the movement of dense non-aqueous phase liquids (DNAPL) using groundwater quality screening. He prepared the RI/FS report and oversaw the operation and maintenance of the system.

Computer Circuits - Hauppauge, NY

Remedial Investigation and Feasibility Study (RI/FS) – Mr. Rhodes was a project director for a characterization of a contamination's nature and extent at the former Computer Circuits industrial site, a US Environmental Protection Agency Superfund Site. He coordinated the use of multiple geophysical techniques to determine if unknown buried objects such as drums, tanks, or leaching structures existed. Techniques employed during the course of the project were interior/exterior soil borings, multiple drilling/probe methods, EnCore™ sampler, to preserve VOC sample integrity, and off-site groundwater vertical profile sampling to depths in excess of 200 feet below grade. PWGC utilized an on-site laboratory grade gas chromatograph to screen both soil and groundwater samples and followed New York State Department of Environmental Conservation procedures during the investigation.

Brookhaven National Laboratory - Upton, NY

Major Cesspools Closure – Mr. Rhodes coordinated sampling efforts to comply with the EPA and States regulated UIC program for the closure. He monitored closely the full ASP-B protocol and, after analysis of laboratory data, submitted reports to the client.

Village of Sands Point, NY

Hydrogeologic Investigation – To assess the impact of proposed irrigation wells on the surrounding area, Mr. Rhodes determined the potential screen zones of the wells, considered potentially vulnerable to salt water intrusion. In addition, he assessed the impact on nearby public supply wells operated by the Village.

Appendix G

Remedial Cost Estimate

		Alternative 1 Track 1 Soil Excavation of All Material Exceeding Unrestricted Use SCOs	Alternative 1 Track 2 Soil Excavation of All Material Exceeding Restricted Residential SCOs (20 Years)
1	Capital Costs		
A	Direct Capital Costs	$ 1,480,112	$ 1,123,454
B	Indirect Capital Costs	$ 30,000	$ 40,000
	Capital Costs Subtotal	$ 1,510,112	$ 1,163,454
	Captial Future Worth Cost	$ 1,927,330	$ 1,484,900
2	Post-Removal Site Control (PSRC) Costs		
A	Operation & Maintenance	$ -	$ 100,000
B	Energy Consumption	$ -	$ -
	PSRC Costs Subtotal	$ -	$ 100,000
	PSRC Future Worth Cost	$ -	$ 127,630
3	TOTAL	$ 1,510,112	$ 1,263,454

Appendix H

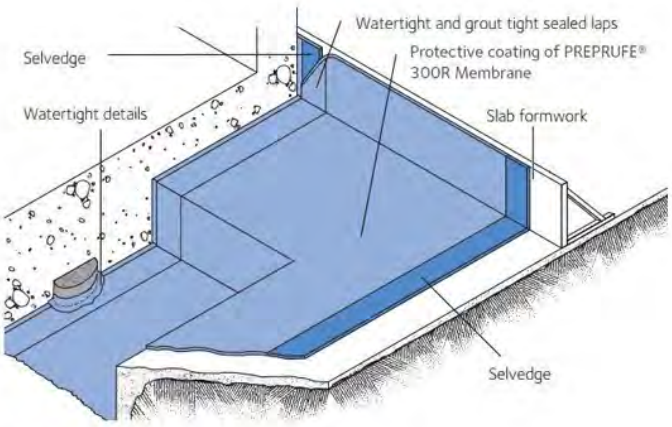
Vapor Barrier Specifications

PREPRUFE® 300R & 160R Membranes Data Sheet (US Version)

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Product Description

GCP Applied Technologies ("GCP") PREPRUFE® 300R & 160R membranes are proprietary composite sheets comprised of a thick HDPE film, pressure sensitive adhesive and weather resistant protective coating. Designed with Advanced Bond Technology™, PREPRUFE® 300R & 160R membranes form a proprietary, integral bond to poured concrete, designed to prevent lateral migration of water while providing a robust barrier to water, moisture and gas penetration.



Drawings are for illustration purposes only.
Please refer to gcpat.com for specific application details.

Product Advantages

- Forms a continuous adhesive bond to concrete poured against it specifically designed to prevent water migration
- Continuous bond to poured concrete means PREPRUFE® 300R & 160R membranes are unaffected by ground settlement
- Can be placed directly over properly prepared compacted soil
- Does not activate prematurely during construction
- Fully adhered watertight laps and detailing
- Provides a barrier to water, moisture and gas - physically isolates the structure from the surrounding ground
- BBA Certified for all basement grades (BS 8102:2009)
- Impermeable- Perm rating less than 0.1 Perms
- Solar reflective - reduced temperature gain during construction
- Simple and quick to install – requires no priming on surfaces properly prepared following GCP surface preparation requirements

- Can be applied to permanent formwork - maximizes use of confined sites
- Allows for foot traffic immediately after application
- Ready for immediate placing of reinforcing steel
- Inherently waterproof--does not require water activation
- Waterproofing is not reliant on confining pressures or hydration
- Installed membrane is not affected by exposure to water during construction
- Waterproofing performance unaffected by wet/dry cycling
- Chemical resistance – protects structure from salt and sulfate attack, effective in most types of soils and waters

System Components:

Membrane

- PREPRUFE® 300R membrane- heavy-duty 46 mil grade can be used in horizontal applications below slabs and on rafts (i.e. mud slabs) and can be applied to vertical (blind side) substrates.
- PREPRUFE® 300R membrane is designed to accept the placing of heavy reinforcement using conventional concrete spacers
- PREPRUFE® 160R membrane 32 mil grade for blindside, zero property line applications against soil retention systems.
- PREPRUFE® 160R membrane is for vertical use only.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.com)

- PREPRUFE® Tape LT – Low temperature tape for covering cut edges, roll ends, penetrations and detailing in cold weather
- PREPRUFE® Tape HC - High temperature tape for covering cut edges, roll ends, penetrations at elevated temperatures
- PREPRUFE® CJ Tape LT – Low temperature joint tape for construction joints and detailing in cold weather conditions
- PREPRUFE® CJ Tape HC – High temperature joint tape for construction joints and detailing at elevated temperatures
- BITUTHENE® Liquid Membrane - for sealing around penetrations, etc.
- ADCOR® - waterstop for joints in concrete walls and floors
- PREPRUFE® Tieback Covers - preformed cover for soil retention wall tieback heads
- PREPRUFE® 300LT and 160LT membranes are an equal alternate for application at low temperatures. See GCPAT.com

Limitations of Use

- Approved uses only include those uses specifically detailed in this Product Data Sheet and other current Product Data Sheets that can be found at gcpat.com
- PREPRUFE® 300R & 160R membranes are not intended for any other use. Contact GCP Technical Services where any other use is anticipated or intended.
- PREPRUFE® 300R membranes are designed for in-service temperatures below 120°F (49°C)
- PREPRUFE® 160R membrane is not for use in horizontal applications
- PREPRUFE® 300R & 160R membranes should not be used with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)
- Special Note: When this information is printed from the gcpat.com global website, a footer appearing on this document will restrict its applicability to the United States. Note that the information and references in this document are hereby expanded and apply to North, Central and South America.

Safety and Handling

Users must read and understand the product label and Safety Data Sheets (SDS's) for each system component before use. All users must acquaint themselves with this information prior to working with the material. Carefully read detailed precaution statements on the product labels and SDS's before use. The most current SDS's can be obtained from the GCP web site at gcpat.com or by contacting GCP toll free at 1-866-333-3SBM (3726).

Storage

- Observe 1 year shelf life and use on a first in first out basis
- Store in dry conditions at 40°F (4.5°C)-90°F (32°C)
- Store off ground under tarps or otherwise protected from rain and ground moisture
- See PREPRUFE® Technical Letter #30 Shelf Life/Storage and Handling of GCP Waterproofing

Installation

Technical Support, Details and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including without limitation Product Data Sheets and Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of PREPRUFE® 300R & 160R membranes.

Support is also available by full-time technically trained GCP Applied Technologies field sales representatives and technical service personnel, backed by a central research and development technical services staff. For technical assistance with detailing and problem solving please call toll-free at (866) 333-3SBM (3726).

Temperature Requirements

- PREPRUFE® membranes can be applied at temperatures of 25°F (-4°C) or above. When installing PREPRUFE® products in cold or marginal weather conditions <55°F (<13°C) the use of PREPRUFE® Tape LT is required at all laps and detailing. All surfaces to receive PREPRUFE® Tape LT must be clean and dry.
- As an alternate, where temperatures are between between 25°F (-4°C) and 60°F(15.5°C) PREPRUFE® Low Temperature (LT) Membrane is can be used without taping of laps. Refer to PREPRUFE® LT Membrane data sheet and Technical Letter #16 PREPRUFE® Waterproofing membranes: Cold Weather installation for more information.

Substrate Preparation

All surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5" (12mm) out of alignment.

Membrane Application

PREPRUFE® 300R & 160R membranes are supplied in rolls 4 ft. (1.2m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of PREPRUFE®Membrane and PREPRUFE® Tape are manufactured with a disposable plastic release liner which must be removed before placing reinforcement and concrete. NOTE that the release liner must also be removed before application of any required tapes and at all surfaces where a bond between layers is to be formed.

Horizontal substrates –

PREPRUFE® 300R membrane can be applied horizontally to smooth prepared concrete or well rolled and compacted earth or crushed stone substrate. Place the PREPRUFE® 300R membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a buildup of layers. Leave plastic release liner in position until overlap procedure is completed. When completed remove release liner. When installing over carton forms, contact your local GCP representative.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps allowing the two overlapped layers to bond together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the white protective coating. Any initial tack will quickly disappear. Notes:

- PREPRUFE® 300R membrane can be returned up the inside face of slab formwork. To attain a fully bonded system and to allow a tie in with BITUTHENE® self-adhered membrane or PROCOR® fluid-applied membrane to all vertical structural surfaces after removal of formwork.
- Rebar Chairs: See PREPRUFE® Technical Letter #15 Rebar Chairs on PREPRUFE® Membranes.

Vertical substrates –

PREPRUFE® 300R & 160R membranes can be applied vertically to permanent formwork or adjoining structures. Concrete should then be cast directly against the adhesive side of the membrane. The membrane may be installed in any convenient length. The clear plastic release liner must be facing towards the concrete pour. Membrane must be shingle overlapped a minimum of 3" (75mm) All laps over cut edges must be taped using PREPRUFE® Tape.

Vertically placed sheets can be held in place using fasteners appropriate to the substrate. Fastening can also be made through the selvedge overlap area using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Fasteners should be placed in the selvedge approximately 0.5"(12.5mm) from the edge of the membrane. The adhesive selvedge of successive membrane sheets must completely cover any fasteners by a minimum if 1 in. (25mm). After rolling immediately remove the plastic release liner. When placing successive sheets insure the underside of each succeeding sheet is clean, dry and free from contamination before attempting to overlap. After placement roll the membrane firmly to ensure a watertight seal.

Note that PREPRUFE® 300R & 160R membranes are not recommended for use with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)

Roll ends and cut edges –

Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow the membrane to dry and apply PREPRUFE® Tape LT (or HC in hot climates) centered over the lap edges and roll firmly. Immediately remove plastic release liner from the tape.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and other contaminants and allow the membrane to dry. Repair small punctures and slices (0.5 in. (12 mm) or less by applying PREPRUFE® Tape centered over the damaged area. Repair punctures and holes larger than 0.5 in. (12mm) by applying a patch of PREPRUFE® membrane. Extend the patch 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with PREPRUFE® Tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh PREPRUFE® Tape. Any areas of damaged adhesive should be covered with PREPRUFE® Tape. All PREPRUFE® Tape must be rolled firmly and the tinted release liner removed.

Slices or relief cuts can be butted or overlapped and repaired by applying PREPRUFE® Tape centered over the edge of the overlap or center of the butt joint. Where it is not possible to create a butt joint or overlap, repair with fresh membrane and PREPRUFE® Tape as detailed above.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of PREPRUFE® 300R & 160R Membrane and Tape.

Under most climatic conditions concrete should be poured within 56 days of membrane installation. Where ambient temperatures will exceed 38°C (100ºF) for more than a total of 7 days, concrete should be placed within 42 days of installation of the membrane. Concrete must be placed and compacted carefully to avoid damage to the Membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

A minimum concrete compressive strength of 3000 psi (20 N/mm^2) is recommended prior to stripping formwork supporting PREPRUFE® membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete. (see PREPRUFE® Technical Letter #17 Removal of Formwork Placed against PREPRUFE® membranes)

After removal of the formwork and prior to backfilling, all exposed PREPRUFE® Membrane must be protected from damage with an approved protective course.

Supply

DIMENSIONS (NOMINAL)	PREPRUFE® 300R MEMBRANE	PREPRUFE® 160R MEMBRANE
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)
Minimum side and end laps	3 in. (75 mm)	3 in. (75 mm)

Physical Properties

PROPERTY	TYPICAL VALUE 300R	TYPICAL VALUE 160R	TEST METHOD
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385[1]
Low Temperature Flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to Hydrostatic Head	231 ft (71 m)	231 ft (71 m)	ASTM D5385[2]
Elongation	400%	400%	ASTM D412[3]
Tensile Strength, Film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack Cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836[6]
Puncture Resistance	200 lbs (890 N)	100 lbs (445 N)	ASTM E154
Peel Adhesion to Concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903[4]
Lap Peel Adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876[5]
Permeance to Water Vapor Transmission (HDPE side exposed)	<0.1 perms (5.74 ng/(Pa x s x m^2))	<0.1 perms (5.74 ng/(Pa x s x m^2))	ASTM E96, method B
Water Absorption	0.5%	0.5%	ASTM D570

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of PREPRUFE Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block (cured min. 7 days) is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature
5. The test is conducted 15 minutes after the lap is formed and run at a rate of 2 in. (50 mm) per minute.
6. Test conducted at – 9.4°F (-23°C)

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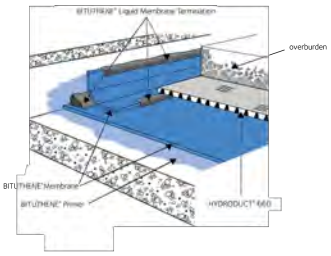
gcpat.com/solutions/products/preprufe-pre-applied-waterproofing-solutions/preprufe-300r-160r

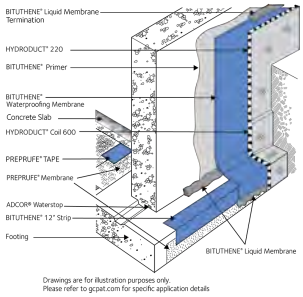
BITUTHENE® 4000 Membrane (US Version)

Membrane and Surface Conditioner System

Product Description

GCP Applied Technologies' ("GCP") BITUTHENE®4000 Waterproofing Membrane System combines a 60 mil (1.5 mm) flexible, pre-formed Membrane of a high performance, cross laminated, HDPE carrier film with a unique, tacky, self-adhesive rubberized asphalt compound and BITUTHENE®4000 Surface Conditioner. BITUTHENE®4000 Membrane Surface Conditioner is water based primer and is specifically formulated to promote adhesion by binding dust and concrete efflorescence, to help provide a suitable surface for the BITUTHENE®4000 Waterproofing Membrane. For convenience BITUTHENE®4000 Surface Conditioner is packaged inside each roll of BITUTHENE®4000 Membrane.





Product Advantages

- Waterproofing combined with high hydrostatic head resistance
- Excellent adhesion—special adhesive compound engineered to work with BITUTHENE® 4000 Surface Conditioner
- Cross laminated, high density polyethylene carrier film— provides high tear strength, puncture and impact resistance
- Cold applied—simple application to substrates, including low temperature applications
- Reduced inventory and handling costs— BITUTHENE® 4000 Surface Conditioner is included with each roll of Membrane
- Wide application temperature range—excellent bond at temperatures as low as 25°F (-4°C) --and above
- Flexible—elongation in excess of 300% and designed to accommodate a wide range of building configuration details
- RIPCORD® integrated filament —split release on demand feature allows the splitting of the release paper into two (2) pieces for ease of installation in detailed areas

System Components

Membrane

BITUTHENE®4000 Membrane – Self-adhered, rubberized asphalt waterproofing Membrane.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.com)

- BITUTHENE® 4000 Surface Conditioner – Water-based latex primer adhesive with added alcohol to allow application at low temperatures
- BITUTHENE® Adhesive Primer B2 LVC - Low VOC, solvent based primer to increase adhesion of BITUTHENE® 4000 Membrane to concrete surfaces
- BITUTHENE® Liquid Membrane – Two component, elastomeric, liquid applied detailing compound BITUTHENE® Mastic – Rubberized asphalt based mastic
- PREPRUFE® Detail Tape - Double sided self-adhesive tape
- HYDRODUCT® Drainage Composite- High impact and creep resistant geo-composite and protection layer
- BITUTHENE® Deck Prep- Surface leveler for application to uneven or rough concrete surfaces

Limitations of Use

- BITUTHENE® 4000 Membrane and BITUTHENE® Surface Conditioner are specifically designed for use as detailed in this Product Data Sheet and are not intended for any other use. Contact GCPAT Technical Support if any other use is anticipated or intended.
- BITUTHENE® 4000 Membrane is designed for waterproofing surfaces where in service temperatures will not exceed 130°F (54°C).
- Special Note: When this information is printed from the gcpat.com global website, a footer appearing on this document may contain wording restricting it's applicability to the United States. Note that the information and references in this document also apply to North, Central and South America.

Safety and Handling Information

Read and understand the product label and Safety Data Sheet (SDS) for each system component. All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office,by calling GCP toll free at 1-866-333-3SBM (3726) and in some cases from our web site at gcpat.com.

Storage

BITUTHENE®4000 Membrane should be stored upright. Storage temperatures should not be below 25°F (-4°C) and should not exceed 90°F (32°C).

Installation

Technical Support, Details, and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including without limitation Product Data Sheets and Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of BITUTHENE®4000 Membrane. For technical assistance with detailing and problem solving please call toll-free at (866) 333-3SBM (3726).

Temperature

- Apply BITUTHENE® 4000 Membrane and Conditioner only in dry weather and when air and surface temperatures are 25°F (-4°C) or above.
- BITUTHENE® Adhesive Primer B2 LVC and BITUTHENE® Surface Conditioner should only be applied in dry weather when the temperature is above 25°F (-4°C). (See separate product information sheets and applicable application instructions.)

Surface Preparation

Surfaces must be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Concrete must be properly cured (minimum 7-days for normal weight structural concrete and 14-days for lightweight structural concrete).

Dry weather application of BITUTHENE®4000 Membrane and BITUTHENE®Surface Conditioner is preferred. If time is critical and damp conditions are unavoidable, BITUTHENE®Adhesive Primer B2 LVC may be used in place of BITUTHENE®Surface Conditioner. The use of BITUTHENE®Adhesive Primer B2 LVC may allow priming and installation of BITUTHENE®4000 Membrane on damp surfaces or green concrete. Using BITUTHENE®Adhesive Primer B2 LVC priming may begin as soon as the concrete will maintain structural integrity. Only use form release agents that will not transfer to the concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the Membrane. Cure concrete with clear, resin-based curing compounds which do not contain oil, wax or pigment. Except with BITUTHENE®Primer B2 LVC as noted above, before application of BITUTHENE®Surface Conditioner and BITUTHENE®4000 Membrane allow concrete to thoroughly dry following any rain. Do not apply any products to frozen concrete.

Repair substrate defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. For rough or uneven deck surfaces use BITUTHENE®Deck Prep as a repair and leveling agent. See BITUTHENE®Deck Prep product information sheet for details. On masonry surfaces such as rough concrete block and brick walls, apply a parge and trowel cut mortar joints flush to the face of the concrete blocks and bricks.

Surface Conditioning

BITUTHENE®4000 Surface Conditioner is ready to use and can be applied by spray or roller. For best results, use a pump-type air sprayer with fan tip nozzle. Apply BITUTHENE®4000 Surface Conditioner to clean, dry, frost- free surfaces at a coverage rate of 300 ft^2/gal (7.4 m^2/L). Coverage should be uniform. Surface conditioner should not be applied so heavily that it puddles or runs. Do not apply conditioner directly to BITUTHENE®4000 Membrane. Allow BITUTHENE®4000 Surface Conditioner to dry until the substrate returns to its original (dry) color. At low temperatures or in high humidity conditions, dry time may be extended to greater than one hour.

BITUTHENE®4000 Surface Conditioner is clear when dry and may remain slightly tacky. In general, conditioning should be limited to what can be covered within 24-hours. In situations where long dry times may prevail, substrates may be conditioned up to 24-hours in advance. Substrates must be reconditioned if dirt or dust accumulates on the conditioned surface. Tools should be cleaned with water before surface conditioner dries.

Application on Horizontal Surfaces

Note: GCP PREPRUFE®300R and 300R Plus pre-applied Membranes are strongly recommended and are the preferred products for below slab applications or for any application where the Membrane is applied before concrete is poured. See PREPRUFE®Membrane waterproofing product information sheets at gcpat.com.

All horizontal surfaces to receive BITUTHENE®4000 Membrane should be sloped to drain at least 1/8 in./ft. (11 mm/m). When a minimum slope of 1/8 in. /ft. (11 mm/m) cannot be achieved, 2 layers of BITUTHENE®4000 Membrane or 8-mils of BITUTHENE®Deck Prep and 1-layer of BITUTHENE®4000 Membrane may be an option. Under these conditions and prior to initiating application contact your local GCP representative.

Apply Membrane from the low point to the high point so that laps shed water. Overlap all seams at least 2 in. (50 mm). Stagger all end laps. Roll the entire Membrane firmly and completely as soon as possible. Use a linoleum roller or standard water-filled garden roller less than 30 in. (760 mm) wide, weighing a minimum of 75 lbs (34 kg) when filled. Cover the face of the roller with a “conforming” material such as 1/2 in. (13 mm) plastic foam sheeting or two wraps of indoor-outdoor carpet to allow the Membrane to fully contact the primed substrate. Seal all T-joints and Membrane terminations with BITUTHENE®Liquid Membrane by the end of the day of Membrane application.

Application on Vertical Surfaces

Apply BITUTHENE®4000 Membrane in lengths up to 8 ft (2.5 m). Overlap all seams at least 2 in. (50 mm). On walls higher than 8 feet apply Membrane in two or more “shingled” lifts with the upper sheet overlapping the lower by at least 2 in. (50 mm). Roll all Membrane with a hand roller.

Terminate the Membrane at grade level. Press the Membrane firmly to the wall with the butt end of a hardwood tool such as a hammer handle or secure into a reglet. Failure to use heavy pressure at terminations can result in a poor seal. A termination bar may be used to ensure a tight seal. Terminate the Membrane at the base of the wall if the bottom of the interior floor slab is at least 6 in. (150 mm) above the footing. Otherwise, use appropriate inside corner detail where the wall and footing meet. A 1/8 in. (3 mm) x 1 in. (25 mm) aluminum termination bar aligned with the top of the membrane is recommended for terminations on CMU, in earth covered decks, and in earth bermed applications where soil cannot be fully compacted. See Technical Letter 26 BITUTHENE®Membrane Terminations for additional information.

Membrane Repairs

Patch tears and inadequately lapped seams with additional Membrane. Clean damaged Membrane with a damp cloth and dry. Slit fish-mouths and repair with a patch extending 6 in. (150 mm) in all directions from the slit and seal edges of the patch with BITUTHENE®Liquid Membrane. Inspect all Membrane thoroughly before covering and repair all damaged areas.

Drainage

HYDRODUCT®Drainage composites are recommended for both active drainage and protection of the Membrane. See HYDRODUCT®Drainage composite Product Data Sheets at gcpat.com.

Insulation

Always apply BITUTHENE®4000 Membrane directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the Membrane. Do not apply BITUTHENE®Membranes over insulation or lightweight insulating concrete.

Flood Testing (Horizontal Surfaces Only)

Flood test all horizontal applications with a minimum 2 in. (51 mm) head of water for 24-hours. Mark any leaks and repair when the Membrane is dry. Before flood testing, be sure the structure will withstand the dead load of the water. For highly sloped decks, segment the flood test to avoid excessively deep water near drains. Conduct the flood test 24-hours after completing the application of BITUTHENE®4000 Membrane Waterproofing System. Immediately after flood testing is completed, and all necessary repairs have been made, install HYDRODUCT®Drainage Composite to protect the BITUTHENE®and damage by other trades.

As an alternate to flood testing, appropriate, electronic leak detection may be used to check the integrity of the system.

Protection of Membrane

To prevent damage from other trades, construction materials or backfill protect BITUTHENE®4000 Membrane immediately after application,. To avoid potential blisters place protection immediately where temperatures above 77°F (25°C).

- On vertical applications, use HYDRODUCT® 220 Drainage Composite. Adhere HYDRODUCT® 220 Drainage Composite to Membrane with PREPRUFE® Detail Tape. Alternative methods of protection are to use nominal 1.0 lb/ft3 (16kg/m3), min. 1 in. (25 mm) expanded polystyrene or min.1/4 in. (6 mm) extruded polystyrene that has a minimum compressive strength of 8 lbs/in2 (55 kN/m 2). Such alternatives do not provide positive drainage to the system. If 1/4 in. (6 mm) extruded polystyrene protection board is used, backfill must not contain sharp rock or aggregate over 2 in. (50 mm) in diameter. Or any debris that might puncture the protection board and/or the Membrane. See Technical 27 Letter Protection Courses Used with GCP Waterproofing Systems for additional information.
- In mud slab waterproofing, or other applications where positive drainage is not specified and/or where reinforced concrete slabs are placed over the Membrane, the use of 1/4 in. (6 mm) hardboard or 2 layers of 1/8 in. (3 mm) hardboard is required to protect the Membrane.

Placing Steel

On horizontal applications when placing steel over properly protected Membrane, use concrete bar supports (dobies) or chairs with plastic tips or rolled feet to prevent damage from sharp edges. Use special care when using wire mesh, especially if the mesh is curled.

Backfill

Place backfill as soon as possible. (see Protection of Membrane above) Use care during backfill operation to avoid damage to the waterproofing system. Follow generally accepted practices for backfilling and compaction. Backfill should be added and compacted in 6 in. (150 mm) to 12 in. (300 mm) lifts.

Approvals

- City of Los Angeles Research Report RR 24386
- Miami-Dade County Code Report NOA 15.0728.10
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628
- BITUTHENE® 4000 Membranes carry a Underwriters' Laboratory Class A Fire Rating (Building Materials Directory, File TFGU.R7910) when used in either of the following constructions:
  - Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® Waterproofing Membrane, followed by one layer of 1/8 in. (3 mm) protection board, encased in 2 in. (50 mm) minimum concrete monolithic pour.
  - Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® Waterproofing Membrane, followed by one layer of DOW Styrofoam PD Insulation Board [2 in. (50 mm) thick]. This is covered with one layer of 2 ft x 2 ft x 2 in. (0.6 m x 0.6 m x 50 mm) of concrete paver topping.

Physical Properties for BITUTHENE® 4000 Membrane

PROPERTY	TYPICAL VALUE	TEST METHOD
Color	Dark gray-black	
Dimensions	3 ft x 66.7 ft roll (200 ft²)	
Thickness	60 mils (1.5 mm) nominal	ASTM D3767—method A
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970
Tensile strength, Membrane, die C	325 psi (2240 kPa) minimum	ASTM D412[1]
Tensile strength, film	5,000 psi (34.5 MPa) minimum	ASTM D882[1]
Elongation, ultimate failure of rubberized asphalt	300% minimum	ASTM D412[1]
Crack cycling at -25°F (-32°C), 100 cycles	Unaffected	ASTM C836
Lap shear	20 lbs (89 N)	ASTM D1002[2]
Peel strength	11 lbs/in. (1926 N/m)	ASTM D903[4]
Puncture resistance, Membrane	50 lbs (222 N) minimum	ASTM E154
Resistance to hydrostatic head	>230 ft (>70m) of water	ASTM D5385
Permeance	<0.1 perms	ASTM E96, section 12—water method
Water absorption	<0.1%	ASTM D570

Footnotes:

1. The test is run at a rate of 2 in. (50 mm) per minute.
2. The test is conducted at a speed of 4 in. (102 mm) per minute.
3. Individual Roll Length may vary +/- 1%
4. Test conducted with Bituthene Surface Conditioner at minimum application temperature

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