FORMER SUNBELT EQUIPMENT
BCP No. C224207

25 KENT AVENUE
BROOKLYN, NEW YORK
Block 2312 Lot 1

REMEDIAL ACTION WORK PLAN

DECEMBER 2014
Revised July 2015

Prepared for:
19 Kent Development LLC
199 Lee Avenue # 693
Brooklyn, NY 11211

AMC Engineering
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Jericho, NY 11753
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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
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July 16, 2015

Ms Toby Moskovits
19 Kent Development
199 Lee Avenue #693
Brooklyn, NY 11211

July 15, 2015
Re: Former Sunbelt Equipment
Site Number C224207
25 Kent Avenue
Brooklyn, Kings County

Dear Ms Moskovits:

The New York State Department of Environmental Conservation (the Department) and the New York State Department of Health (NYSDOH) have reviewed the revised Remedial Action Work Plan for the Former Sunbelt Equipment site, dated July 2015 and received electronically on July 13. The Work Plan is hereby approved with the following modifications:

1) Section 5.5.7 Delete the next to last sentence, reading "If loads contain wet material capable of producing free liquid, truck liners will be used." Replace with: "No loads of material capable of generating free liquid will be allowed to leave the site".

2) The introduction to Section 6.0 contains an inaccurate statement of the Institutional Control required for this site. If a Track 1 cleanup for the site cannot be achieved, the IC for this site will be in the form of an environmental easement, and not a deed restriction. This requirement is correctly noted in Section 8.0, but Section 6.0 contradicts this and must be removed.

3) The third comment in our June 30 request for modifications letter, requiring a minimum 10-day period between issuance of the DEC fact sheet and field mobilization to the site, is hereby waived. The provision for a pre-construction meeting with DEC staff at the Department's Region 2 office in Long Island City prior to site mobilization, as discussed in section 4.2.3 of the Work Plan, remains in effect.

In accordance with the Brownfield Cleanup Agreement and 6NYCRR 375-1.6(d), please indicate within 15 days whether you accept the Department's modified Work Plan. Please ensure that all copies of the final plan include this approval letter, and place copies of the final plan in the document repositories.

Sincerely,

Gardiner Cross
Section Chief, Section C, Remedial Bureau C
Division of Environmental Remediation

ec:

H. Willems, NYSDEC
G. Heitzman, NYSDEC
J. O'Connell, NYSDEC
R. Cozzy, NYSDEC
B. Boyd, NYSDOH
C. Sosik, EBC
J. S. Brooks, Phillips Nizer

CERTIFICATIONS

I Ariel Czemerinski 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).

076508	7/12/2015	
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.

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ATTACHMENTS

LIST OF ACRONYMS

Acronym	Definition
AMC	AMC Engineering
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CQMP	Construction Quality Management Plan
DUSR	Data Usability Statement Report
EBC	Environmental Business Consultants
FER	Final Engineering Report
HDPE	High Density Polyethylene
IRM	Interim Remedial Measure
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PS	Public School
PVC	Polyvinyl Chloride
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
RSCOs	Recommended Site Cleanup Objectives
SCG	Standards, Criteria, and Guidelines
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SSDS	Sub-slab Depressurization System
SWPPP	Stormwater Pollution Prevention Plan
SVOCs	Semi-Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Site Description/Physical Setting/Site History

This Remedial Action Work Plan has been prepared on behalf of 19 Kent Development LLC to remediate a 1.83-acre property located at 25 Kent Avenue in Brooklyn, Kings County, New York (**Figure 1**). 19 Kent Development LLC has applied has applied to the New York State Brownfield Cleanup Program (BCP) as a Volunteer. An unrestricted use is proposed for the property. When completed, the Site will be redeveloped with a new 10-Story commercial (medical center, offices) building. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

The Site is comprised of a single tax parcel covering 80,000 square feet (1.83 acres). The subject property is located in the City of New York and Borough of Brooklyn (Kings County) and is identified as Block 2282 Lot 1 on the NY City tax map.. The lot encompasses the entire block with approximately 200 ft of street frontage on Kent and Wythe Avenues and 400 feet of street frontage on N. 12th and N. 13th Streets (See **Figure 2** - Site Plan). Currently the property is vacant but was most recently occupied by Sunbelt Equipment, a construction equipment rental company.

The Site had been improved with two groups of interconnected structures, identified as the East and West Buildings. The West Building was situated at the south-central portion of the Site and is comprised of one (1) one-story structure and two (2) one and partial two-story structures, each of which fronts along North 12th Street. These structures have an approximate footprint of 10,500 s.f. The Eastern Building is an "L"-shaped structure comprised of two (2) interconnected two-story buildings, with a partial basement (boiler room). The buildings have an approximate footprint of 11,375 s.f., and run west along North 12th Street from Wythe Avenue, before turning north, and continuing to the northern property boundary along North 13th Street. The buildings are vacant/unoccupied and undergoing demolition. As of the date of this report only a single building remains intact.

Remaining portions of the Site consist of asphalt and concrete paved yard areas, except for a small unpaved area at the northeastern portion of the Site. The perimeter of the Site, not bounded

by buildings, is enclosed with chain-link, corrugated metal and/or plywood fencing approximately 10 feet tall, with a sidewalk shed located along portions of North 12th Street and roll-up access gates located on the north, south and east sides of the property.

Historically the site has been used as a petroleum works, a cooperage, a varnish works, a manufacturing facility, lumber storage and equipment maintenance and storage facility.

Summary of the Remedial Investigation

A Remedial Investigation was completed at the Site in November 2014 through December 2014 and documented in a Remedial Investigation Report dated December 2014. The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development of a Remedial Work Plan to address the contamination.

Activities completed under the RI:

- Sampling for non-petroleum contaminants such as pesticides, PCBs and metals in soil and groundwater including the analysis of soil and groundwater samples
- Soil sampling and analysis for petroleum compounds in soil samples from test pit locations;
- The installation of groundwater monitoring wells
- The collection and analysis of groundwater samples for petroleum compounds;
- The collection of analysis of soil gas and indoor air samples for VOCs from soil gas sampling locations.

The results of sampling performed during the RI, identified petroleum VOC and SVOC contamination throughout much of the property. The historic use of the Site as a petroleum works, equipment storage / maintenance yard facility has resulted in discharges of gasoline and diesel fuel / fuel oil contaminating large areas of the site with elevated levels of VOC and SVOCs. Releases have likely occurred from multiple sources including subsurface releases from underground storage tanks (USTs) and piping, and from surface spills related to fueling

operations, equipment maintenance, fuel transfer and damaged and leaking heavy equipment. In this way the source areas compromise multiple areas of the site including the southwest corner, the north-central area, the south central area and the northeast corner of the Site.

Elevated levels of metals including arsenic, barium, copper, mercury, selenium, zinc and lead classified as hazardous, are present in the historic fill materials throughout the Site.

Groundwater is impacted with petroleum VOCs in the western third of the site with the greatest impact occurring in MW1 located in the south west corner or the site. Total VOCs in this area of the site ranged from 82 ug/L in MW2 to 3,472 ug/L in MW1. SVOCs in groundwater were generally limited to napthalene which was present at a concentration of 20 ug/L in MW1. There were other reported exceedances for SVOCs in groundwater however these were in the parts per trillion range and more a function of the precision of the laboratory than actual contamination.

Soil gas sampling identified generally low levels of petroleum related volatile organic compounds (BTEX) though elevated levels of light end petroleum compounds including heptane, hexane and cyclo hexane were reported in several locations. Chlorinated VOCs (CVOCs) were reported in almost all of the soil gas samples and in some cases were present at levels above that which monitoring and possibly mitigation would be required to prevent vapor intrusion. There is no evidence that the CVOCs are Site related and are unlikely to be related to off-gassing from impacted groundwater. They appear to be migrating onto the property in vapor form from an off-site source.

Qualitative Human Health Exposure Assessment

The qualitative exposure assessment identified potential completed routes of exposure to construction workers and remediation workers through inhalation, ingestion and dermal contact of petroleum compounds and heavy metals during excavation activities. The Health and Safety Plan prepared for the site identifies such exposures and provides instructions for on-site workers to minimize potential exposure. Occupants in the proposed on-site commercial buildings may be exposed to CVOCs through the vapor intrusion pathway, if preventative measures are not incorporated into the design of the new building.

The exposure assessment also identified potential exposure to commercial workers in adjacent buildings through vapors which appear to present in the area and migrating onto the Site.

Potential environmental impacts through the groundwater to surface water discharge are unlikely based upon the concentrations of VOCs in groundwater and the groundwater flow direction which is away from Bushwick inlet.

Summary of the Remedy

The remedy recommended for the site is a Track 1 alternative (Alternative 1) which consists of the removal of all on-site soils which exceed the UUSCOs and the remediation of petroleum impacted groundwater. It is expected that a Track 1 alternative will require excavation to a minimum depth of 12-15 feet across the Site with additional excavation to 20 feet below grade for construction of the new building. In addition all fill material with parameters above unrestricted SCOs will be removed from the Site and properly disposed of at an off-site facility. The remedy will include the following items:

1. Excavation of soil/fill exceeding Track 1 unrestricted use SCOs as listed in **Table 1** to depths as great as 15 feet below grade;
2. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
3. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs;
4. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
5. Dewatering and treatment of petroleum impacted groundwater before discharging to the NYC sewer system under a NYCDEP sewer discharge permit.
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material.
7. If Track 1 SCOs are not achieved, a composite cover system consisting of the concrete building slab will be constructed.

8. .If Track 1 cleanup is not achieved, implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
9. If Track 1 cleanup is not achieved, an Environmental Easement will be filed against the Site to ensure implementation of the SMP.

Although the goal of the remedy will be to remove all soil exceeding the Track 1 SCOs, if Track 1 SCOs cannot be achieved then a Track 2 remedy will result.

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

19 Kent Development LLC has applied to the New York State Brownfield Cleanup Program (BCP) to remediate a 1.83-acre property located at 25 Kent Avenue in Brooklyn, Kings County, New York. 19 Kent Development LLC has applied to the program as a Volunteer. An unrestricted use is proposed for the property. When completed, the Site will be redeveloped with a new 10-Story commercial (medical center, offices) building. 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 between November 2014 and December 2014. It provides an evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and 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 subject property is located at 25 Kent Avenue, in the Williamsburg neighborhood of Brooklyn NY (**Figure 1**). The Site is comprised of a single tax parcel covering 80,000 square feet (1.83 acres). The subject property is located in the City of New York and Borough of Brooklyn (Kings County) and is identified as Block 2282 Lot 1 on the NY City tax map. The lot encompasses the entire block with approximately 200 ft of street frontage on Kent and Wythe Avenues and 400 feet of street frontage on N. 12th and N. 13th Streets (See **Figure 2** - Site

Plan). Currently the property is vacant but was most recently occupied by Sunbelt Equipment, a construction equipment rental company.

The Site had been improved with two groups of interconnected structures, identified as the East and West Buildings. The West Building was situated at the south-central portion of the Site and is comprised of one (1) one-story structure and two (2) one and partial two-story structures, each of which fronts along North 12th Street. These structures have an approximate footprint of 10,500 s.f. The Eastern Building is an "L"-shaped structure comprised of two (2) interconnected two-story buildings, with a partial basement (boiler room). The buildings have an approximate footprint of 11,375 s.f., and run west along North 12th Street from Wythe Avenue, before turning north, and continuing to the northern property boundary along North 13th Street. The buildings are vacant/unoccupied and undergoing demolition. As of the date of this report only a single building remains intact.

Remaining portions of the Site consist of asphalt and concrete paved yard areas, except for a small unpaved area at the northeastern portion of the Site. The perimeter of the Site, not bounded by buildings, is enclosed with chain-link, corrugated metal and/or plywood fencing approximately 10 feet tall, with a sidewalk shed located along portions of North 12th Street and roll-up access gates located on the north, south and east sides of the property.

The elevation of the Site is ranges from 11 to 15 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the west. The depth to groundwater beneath the Site is approximately 5-12 feet below grade. According to investigations performed on the property in 2006, the groundwater flows to the southeast. This flow direction was confirmed during the RI.

A boundary map will be attached to the BCA as required by Environmental Conservation Law (ECL) Title 14 Section 27-1419. The 1.83-acre property is fully described in **Attachment A – Metes and Bounds.**

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.

The site is to be redeveloped through the new construction of a 10-story commercial building which will cover the entire Site. Plans include a 2-level cellar parking garage requiring excavation of the entire Site to a depth of 15-20 ft below grade. With groundwater present at 5-12 feet below grade, dewatering will be required during construction of the building's foundation.

The project includes retail space on the first floor, a health care facility on floors 2 through 9 and office space on the 10th floor. The basement levels will be used for parking and meter rooms.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The land use in the immediate vicinity of the Site (**Figure 3**) includes fuel oil terminal, tank truck repair facility and public park to the west, a metal stamping factory to the north, a construction site to the east and industrial / commercial buildings to the south. The new construction to the east includes a 22-story hotel building, a 2-story banquet hall / restaurant building and a 2-story commercial building with retail, office and community space. The area surrounding the property is highly urbanized and predominantly consists of older heavy industry properties along the waterfront east to Kent and Wythe Avenues. Many of these properties are being renovated and repurposed, such as the City park to the west or redeveloped with new commercial buildings such as hotels, office and retail space. The areas east of Wythe Avenue have been undergoing a transformation as former industrial properties are being redeveloped for residential use. This transformation was related to the upzoning of many commercial industrial properties to residential as part of the Greenpoint-Willamsburg Rezoning Action. The proposed project is compatible with the surrounding land use and will be in compliance with current zoning.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The field work portion of the Remedial Investigation was conducted by EBC in November and December 2014. The investigation is summarized in the sections below. Further details are provided in the Remedial Investigation Report (EBC December 2014).

2.1 SUMMARY OF REMEDIAL INVESTIGATIONS PERFORMED

2.1.1 Test Pits

A total of nine test pits were advanced on the Site on November 21, 24 and 25, 2014 to characterize soil conditions, assess residual petroleum contamination, and collect samples for laboratory analysis. The test pits were advanced using a track excavator to the planned excavation depth of 12 to 18 feet at each location. Soil excavated at each test pit were segregated into 5 to 6 piles with each representing a 3-foot interval, (i.e. 0-3 ft, 3-6 ft, 6-9 ft, etc.). One composite and one grab sample were then collected from each pile and placed in laboratory provided glassware. A qualified environmental profession (QEP) was on-site to supervise the test pit installation and to collect the samples.

Following sample collection the test pits were backfilled by returning the soil piles to the pits in the reverse sequence from that in which they were excavated.

Soil samples retained from the test pits were submitted to York Analytical laboratories for analysis. Test pit sampling locations are identified in **Figure 5**.

2.1.2 Monitoring Wells

Ten groundwater monitoring wells, MW1 through MW10, were installed at the Site on December 17 and 21, 2014. The wells were installed with a track mounted probe drilling machine to a depth of 20 feet below grade with 15 feet of 0.010 PVC well screen and 5 feet of PVC riser. Monitoring well locations are identified in **Figure 6**.

A No.00 morie filter sand was placed in the borehole to within 2 feet above the top of the screen. A 1-foot hydrated bentonite seal was then placed on top of the filter sand and the remainder of

the borehole was backfilled to grade. Following installation, each of the wells were surveyed to determine relative casing elevation to the nearest 0.01 ft and horizontal position to the nearest 0.1 ft.

Prior to sampling, a synoptic round of depth-to-groundwater (DTW) measurements was obtained from the wells on December 29, 2014 to determine the water table elevation and to calculate the volume of standing water in the well. The depth to groundwater ranged from approximately 5.10 to 11.46 feet below surface grade.

2.1.3 Samples Collected

A summary of the sampling performed during the RI is provided in **Table 2**.

2.1.3.1 Soil Samples

A total of forty-six soil samples were collected from each of the nine test pits for laboratory analysis of VOCs (EPA Method 8260), SVOCs (EPA Method 8270), TAL metals, TCLP metals, Pesticides/PCBs (EPA Method 8081/8082), Herbicides (EPA Method 5151, corrosivity, reactivity, ignitability and flashpoint.

2.1.3.2 Groundwater Samples

Groundwater samples were obtained from the ten water table monitoring wells following installation during the December 2014 mobilization. All groundwater samples from the monitoring wells were analyzed for VOCs / SVOCs by EPA method 8260 / 8270, pesticides / PCBs by EPA method 8081 / 8082 and target analyte list (TAL) metals.

2.1.3.3 Soil Gas Samples

To assess the presence of VOCs in soil gas beneath the site, fourteen sub-slab soil vapor implants were installed during the initial mobilization in February 2013. All soil gas samples were collected over a 2 hr sampling period.

Soil vapor samples were collected in accordance with the procedures as described in section 2.4 of the approved RIR and the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 10/06).*

2.1.4 Chemical Analytical Work Performed

Each soil and groundwater sample was placed in pre-cleaned laboratory supplied glassware, and placed in a cooler packed with ice for transport to the laboratory. Laboratory services for soil and groundwater sample analysis were provided by Acutest Laboratories of Dayton, NJ (NY Cert No. 10983) and by York Environmental Laboratories of Stratford CT (NY Cert No. 10854) for soil samples obtained from test pits. Analysis of soil vapor samples was provided by Eurofins Lancaster Laboratory of Folsom CA.

All test pit samples were analyzed for VOCs (EPA Method 8260), SVOCs (EPA Method 8270), TAL metals, TCLP metals, Pesticides/PCBs (EPA Method 8081/8082), Herbicides (EPA Method 5151, corrosivity, reactivity, ignitability and flashpoint. All groundwater samples from the monitoring wells were analyzed for VOCs / SVOCs by EPA method 8260 / 8270, pesticides / PCBs by EPA method 8081 / 8082 and target analyte list (TAL) metals. Soil gas samples analyzed for VOCs by EPA method TO-15.

2.1.5 Documentation

A map showing the locations of the test pits are provided in **Figure 4.** The locations of the monitoring wells and soil gas sample collection points are provided in **Figure 5**. The results of sample soil, groundwater and soil gas samples collected during the RI are summarized in **Tables 3** through **16**. Below is a summary of RI findings.

The results of sampling performed during the RI, identified petroleum VOC and SVOC contamination throughout much of the property. The historic use of the Site as a petroleum works, equipment storage / maintenance yard facility has resulted in discharges of gasoline and diesel fuel / fuel oil contaminating the site with VOC and SVOCs. Releases have likely occurred from multiple sources including subsurface releases from underground storage tanks (USTs) and piping, and from surface spills related to fueling operations, equipment maintenance, fuel

transfer and damaged and leaking heavy equipment. In this way the source areas compromise multiple areas of the site including the southwest corner, the north-central area, the south central area and the northeast corner of the Site.

Elevated levels of metals including arsenic, barium, copper, mercury, selenium, zinc and lead classified as hazardous, are present in the historic fill materials throughout the Site.

Groundwater is impacted with petroleum VOCs in the western third of the site with the greatest impact occurring in MW 1 located in the south west corner or the site. Total VOCs in this area of the site ranged from 82 ug/L in MW2 to 3,472 ug/L in MW1. SVOCs in groundwater were generally limited to napthalene which was present at a concentration of 20 ug/L in MW1. There were other reported exceedances for SVOCs in groundwater however these were in the parts per trillion range and more a function of the precision of the laboratory than actual contamination.

Soil gas sampling identified generally low levels of petroleum related volatile organic compounds (BTEX) though elevated levels of light end petroleum compounds including heptane, hexane and cyclo hexane were reported in several locations. Chlorinated VOCs (CVOCs) were reported in almost all of the soil gas samples and in some cases were present at levels above that which monitoring and possibly mitigation would be required to prevent vapor intrusion. There is no evidence that the CVOCs are Site related and are unlikely to be related to off-gassing from impacted groundwater. They appear to be migrating onto the property in vapor form from an off-site source.

2.2 SIGNIFICANT THREAT

The NYSDEC and NYSDOH will review the RI Report and will determine whether the Site does or does not pose a significant threat to human health and the environment. Notice of that determination will be provided during the public comment period, through fact sheet No. 2 and the Proposed Decision Document.

2.3 SITE HISTORY

2.3.1 Past Uses and Ownership

Previous owners and operators of the property are shown below. Information regarding ownership of the property was obtained from online property records maintained by the NYC Department of Finance Office of the City Register under its Automated City Register Information System (ACRIS) and from hard copy records at the agencies regional office. Information regarding past operators was obtained from Sanborn Fire Insurance maps, from telephone directory listings and from an internet search of the property address.

The Site is currently owned by the Requestor, 19 Kent Development LLC. The Requestor purchased the property in December 2012. The property has been vacant since April 2014 but was most recently occupied by a construction equipment rental company.

A review of Sanborn maps shows that in 1887 the Site was comprised of seven separate tax parcels, each occupied by various commercial/retail and industrial uses, including the Pratt Manufacturing Co., a cooperage, a varnish manufacturing facility, two lime manufacturing facilities and several retail stores by at least 1888. By 1905, the Pratt Manufacturing facility was identified as the Standard Oil Co., with multiple aboveground petroleum tanks present. The two lime facilities were replaced with an iron works storage yard by 1916. By 1941, the Standard Oil facility was demolished, with the northwestern and eastern portions of the Site shown as undeveloped. Central portions of the Site remain developed with a varnish works. By the early 1950s, the Site was occupied by metal and lumber storage yards and a paint manufacturer. Between the mid-1960s and late-1970s, the paint manufacturing building was converted to a warehouse and several of the other structures at the central portion of the Site were demolished. By the mid-1980s, the Site was occupied by an equipment rental facility and storage yard. The westernmost structure was demolished in 2012 and the Site was vacated sometime after April 2014. A listing of previous owners and operators for the property is as follows:

Former Lot 1 Previous Owners

Dates	Name	Comments	Contact Info
Prior to 3/8/1967	Kent Avenue Realty Corp	Deed	2 Willowmere Circle, Riverside , CT 06878
From 3/8/1967 to 6/30/1970	215 North 9th Realty Corp	Deed	215 N. 9th Street, Brooklyn, NY 11211
From 6/30/1970 to 7/3/1974	Samuel Cohen	Deed	56-40 175th Street, Flushing, NY 11365
From 7/3/1974 to 7/3/1974	Sybudel Realty Corp	Deed	91 N. 12th Street, Brooklyn, NY 11211
From 7/3/1974 to 1/14/1988	Syluan Greenbaum Manual Wolman Elliot Prigozen	Deed	184-23 Cambridge Road, Jamaica Estates, NY 11432 34 Newport Drive, Hewlett, NY 11557 66 Country Village Lane, New Hyde Park, NY 11040
From 1/14/1988 to 12/11/2007	Elliot Prigozen Lynn Prigozen	Deed	3109 Grand Ave., PMB298, Coconut Grove, FL 33133
From 12/11/2007 to 6/28/2012	Sylvan Holdings LLC	Deed	C/o Bobcat, 58-64A Maurice Avenue, Maspeth, NY 11378-2333
From 6/28/2012 to 12/31/2012	EVP LLC Nanalou LLC Lisa Breheney Lesly Erenfeld Lauren Erenfeld LLETS LLC	Deed	3109 Grand Avenue, PMB 298, Miami FL 33133 3370 Hidden Bay Drive, Adventura, FL 33180 2114 Feliz Drive, Novato CA 94945 746 Mays Boulevard, Incline Village, NV 89451 625 Santa Clara Avenue, Venice, CA 90291 3109 Grand Avenue, PMB 298, Miami, FL 33133
12/31/2012 to Present	19 Kent Development LLC		199 Lee Ave #693, Brooklyn, New York, 11211

Former Lot 15 Previous Owners

Dates	Name	Comments	Contact Info
Prior to 1/26/1998	Joan Greenbaum	Deed	676 Riviera Circle, Larkspur CA, 94939
From 1/26/1998 to 11/30/1998	Joan Greenbaum Elizabeth Beyer As Trustees	Deed	C/O PO Box 1941 Novato, CA 94948 C/O 676 Riviera Circle, Larkspur CA, 94939
From 11/30/1998 to 12/18/2009	Carol Greenbaum Lynn Prigozen	Deed	10 Pinebrook Drive, White Plains, NY 10605 3109 Grand Ave., PMB298, Coconut Grove, FL 33133
From12/18/2009 to 6/28/2012	Sylvan Holdings LLC	Deed	C/o Bobcat, 58-64A Maurice Avenue, Maspeth, NY 11378-2333
From 6/28/2012 to 12/31/2012	EVP LLC Nanalou LLC Lisa Breheney Lesly Erenfeld Lauren Erenfeld LLETS LLC	Deed	3109 Grand Avenue, PMB 298, Miami FL 33133 3370 Hidden Bay Drive, Adventura, FL 33180 2114 Feliz Drive, Novato CA 94945 746 Mays Boulevard, Incline Village, NV 89451 625 Santa Clara Avenue, Venice, CA 90291 3109 Grand Avenue, PMB 298, Miami, FL 33133
12/31/2012 to Present	19 Kent Development LLC		199 Lee Ave #693, Brooklyn, New York, 11211

Former Lot 28 Previous Owners

Dates	Name	Comments	Contact Info
Prior to 12/8/1969	Charles Greenbaum	Deed	225 E. 57th Street, New York, NY 10022
From 12/8/1969 to 1/26/1998	Bertha Greenbaum	Deed	184-23 Cambridge, Road, Jamaica, NY 11432
From 1/26/1998 to 8/19/1998	Joan Greenbaum Elizabeth Beyer As Trustees	Deed	C/O PO Box 1941 Novato, CA 94948 C/O 676 Riviera Circle, Larkspur CA, 94939
From 8/19/1998 to 12/18/2009	Carol Greenbaum Lynn Prigozen	Deed	10 Pinebrook Drive, White Plains, NY 10605 3109 Grand Ave., PMB298, Coconut Grove, FL 33133
From 12/18/2009 to 6/28/2012	Sylvan Holdings LLC	Deed	C/o Bobcat, 58-64A Maurice Avenue, Maspeth, NY 11378-2333
From 6/28/2012 to 12/31/2012	EVP LLC Nanalou LLC Lisa Breheney Lesly Erenfeld Lauren Erenfeld LLETS LLC	Deed	3109 Grand Avenue, PMB 298, Miami FL 33133 3370 Hidden Bay Drive, Adventura, FL 33180 2114 Feliz Drive, Novato CA 94945 746 Mays Boulevard, Incline Village, NV 89451 625 Santa Clara Avenue, Venice, CA 90291 3109 Grand Avenue, PMB 298, Miami, FL 33133
12/31/2012 to Present	19 Kent Development LLC		199 Lee Ave #693, Brooklyn, New York, 11211

Former Lot 34 Previous Owners

Dates	Name	Comments	Contact Info
Prior to 8/25/1970	North 12th Street Realty Corp.	Deed	C/O Isaac E. Okun, Room 2414, 250 W. 57th Street, New York, NY 100107
From 8/25/1970 to 4/4/1977	George A. Douglass Jr.	Deed	2 Willowmere Circle, Riverside , CT 06878
From 4/4/1977 to 4/27/1981	Malcolm W. Douglass	Deed	651 Steamboat Road, Greewich CT 06830
From 4/27/1981 to 12/18/2009	Lets Leasing Company	Deed	91 N. 12th Street, Brooklyn, NY 11211
From 12/18/2009 to 6/28/2012	Sylvan Holdings LLC	Deed	C/o Bobcat, 58-64A Maurice Avenue, Maspeth, NY 11378-2333
From 6/28/2012 to 12/31/2012	EVP LLC Nanalou LLC Lisa Breheney Lesly Erenfeld Lauren Erenfeld LLETS LLC	Deed	3109 Grand Avenue, PMB 298, Miami FL 33133 3370 Hidden Bay Drive, Adventura, FL 33180 2114 Feliz Drive, Novato CA 94945 746 Mays Boulevard, Incline Village, NV 89451 625 Santa Clara Avenue, Venice, CA 90291 3109 Grand Avenue, PMB 298, Miami, FL 33133
12/31/2012 to Present	19 Kent Development LLC		199 Lee Ave #693, Brooklyn, New York, 11211

Former Lot 1 Previous Operators

Dates	Name	Comments	Contact Info
Sometime prior to 1887 to sometime between 1887 and 1904	Pratt Manufacturing Co.	Sanborn Maps	Unknown
Sometime between 1887 and 1904 to sometime between 1942 and 1951	Standard Oil Co. of NY Pratt Works	Sanborn Maps	Unknown
Sometime between 1942 and 1951 to *2014	Contractor's Storage Yard *Sunbelt equipment was the last occupant. Duration of occupancy unknown	Sanborn Maps Internet Search	Earlier Contractor Tenants Unknown Sunbelt: 5875 Maurice Avenue Maspeth, NY (718) 387-4872

Former Lot 15 Previous Operators

Dates	Name	Comments	Contact Info
Sometime prior to 1887 to sometime between 1905 and 1916	C.H Reynolds Keely's (Lime Works) 1905 - Dermerty Cooperage (NE portion of lot)	Sanborn Maps	Unknown 58-72 Wythe Avenue, Brooklyn, NY 11211
Sometime between 1905 and 1916 to sometime between 1916 and 1942	Hecla Iron Works	Sanborn Maps	Unknown 58-72 Wythe Avenue, Brooklyn, NY 11211
Sometime between 1942 and 1951 to *2014	Contractor's Machinery Storage Yard *Sunbelt equipment was the last occupant. Duration of occupancy unknown	Sanborn Maps Internet Search	Earlier Contractor Tenants Unknown Sunbelt: 5875 Maurice Avenue Maspeth, NY (718) 387-4872

Former Lot 28 Previous Operators

Dates	Name	Comments	Contact Info
Sometime prior to 1887 to sometime between 1887 and 1905	CC. Reed & Co. Varnish Works	Sanborn Maps	Unknown 77-93 N. 12th Street, Brooklyn, NY 11211
Sometime between 1887 and 1905 to sometime between 1942 and 1951	Hildreth Varnish Works	Sanborn Maps Internet Search	Unknown 77-93 N. 12th Street, Brooklyn, NY 11211
Sometime between 1942 and 1951 to sometime between 1965 and *1978	Paint Manufacturing *Lumber Storage noted in 1951 only	Sanborn Maps Internet Search	Unknown 81-93 N. 12th Street, Brooklyn, NY 11211
Sometime between 1965 and 1978 to 2014	Warehouse Storage	Sanborn Maps	Unknown 81-93 N. 12th Street, Brooklyn, NY 11211

Former Lot 34 Previous Operators

Dates	Name	Comments	Contact Info
Sometime prior to 1887 to sometime between 1887 and 1905	CC. Reed & Co. Varnish Works	Sanborn Maps	Unknown 77-93 N. 12th Street, Brooklyn, NY 11211
Sometime between 1887 and 1905 to sometime between 1942 and 1951	Hildreth Varnish Works	Sanborn Maps	Unknown 77-93 N. 12th Street, Brooklyn, NY 11211
Sometime between 1942 and 1951 to sometime between 1951 and 1965	Scrap metal	Sanborn Maps	Unknown 77-79 N. 12th Street, Brooklyn, NY 11211
Sometime between 1951 and 1965 to 2014	Warehouse Storage	Sanborn Maps	Unknown 77-79 N. 12th Street, Brooklyn, NY 11211

2.3.2 Summary of Previous Reports

Environmental investigations performed at the Site include the following:

- Phase I Environmental Site Assessment Report - EBC (November 2014)
- Spill File 9906462 Documents

November 2014 – Phase I Environmental Site Assessment (EBC)
EBC concluded that "Based upon reconnaissance of the Site and surrounding properties, interviews and review of historical records and regulatory agency databases, *this assessment has revealed the following recognized environmental conditions in connection with the Site:*"

- Various historical records/documents indicate that the Site as well as the surrounding properties, were historically operated as petroleum manufacturing and storage facility, paint and varnish manufacturing facility, manufactured gas plants, manufactured gas storage facilities and various other manufacturing operations. As such, there is a potential for historic site operations and/or operations at adjacent sites to have impacted soil, groundwater and/or soil vapor quality beneath the Site. Further, residual soil and groundwater impacts associated with the closed NYSDEC spill incidents remain onsite and impacts related to petroleum and MGP have been confirmed at adjacent properties.

As the Site has been extensively investigated, with some soil removal and long-term groundwater monitoring activities related to the closed New York State Department of

Environmental Conservation (NYSDEC) spill incidents, EBC does not believe additional investigation of the Site is warranted at this time.

However, since residual on-Site soil and groundwater impacts are known to exist and the potential for additional contamination associated with the historic use of the surrounding properties (oil terminal and MGPs), EBC recommends a Soil/Materials Management Plan (SMMP) be prepared to address soil excavated as part of Site redevelopment. The SMMP should include procedures for (a) characterization of fill/soil to be excavated for the proposed redevelopment in accordance with the proposed soil/fill disposal facility, (b) soil screening, (c) community air monitoring, (d) soil/fill excavation, loading and disposal, (e) soil reuse and/or soil import, (f) odor control, and (g) underground storage tank contingency plan.

In addition to the RECs, EBC identified several environmental concerns. The environmental concerns and EBC's recommendations are summarized as follows:

- EBC recommends the four identified aboveground storage tanks (ASTs) and the various drums and other containers of waste oil and automotive fluids be removed and properly disposed in accordance with applicable regulations. In the event that soil impacts (e.g., visible staining) are noted during the removals, then soil sampling should be conducted to determine the nature and extent of the impacts and determine if additional investigation and/or remediation is warranted.

- Although abatement of confirmed asbestos-containing roofing and other materials was recently completed, no documentation regarding the asbestos survey and/or the reported abatement project was provided for review. Suspect asbestos-containing vinyl floor tiles, acoustic ceiling tiles and pipe and boiler insulation were observed in some of the inspected portions of Site buildings. The suspect asbestos-containing materials (ACM) was in fair to poor condition at the time of the site inspection. In addition, due to the ages of the buildings, it is possible that roofing, roof flashing and other (inaccessible) building materials may contain asbestos.

If activities in the building (i.e., renovation or demolition) will disturb any suspect asbestos material, then EBC recommends that an asbestos survey be performed to determine if ACM are present prior to the proposed work. If ACM are present, then a New York City-licensed contractor must be retained to remove the asbestos in accordance with federal, New York State (NYS) and New York City (NYC) regulations.

- Interior and exterior paints were in fair to poor condition with evidence of widespread chipping and/or peeling. The lead contents of the paints are unknown, but due to the age of the buildings, the presence of lead-based paint (LBP) is possible. Therefore, EBC recommends that a lead paint survey be conducted prior to any renovation/demolition activities. The disposal of lead paint waste resulting from renovation or demolition activities may be subject to federal and NYS regulations.

Spill File 9906462 Documents

EBC was provided a copy of previous Phase II ESAs, spill investigation reports and other documents prepared for the property. These reports are summarized as follows:

- Limited Phase II Environmental Site Assessment, prepared by Malcolm Pirnie, Inc., and dated August 6, 1999;
- Additional Limited Phase II Environmental Site Assessment, prepared by Malcolm Pirnie, Inc., and dated November 12, 1999;
- Limited Phase II Environmental Site Assessment, prepared by Hart & Hickman, PC, and dated November 12, 2007;
- Limited Phase II Environmental Site Assessment Addendum Letter, prepared by Hart & Hickman, PC, and dated December 11, 2007;
- Spill No. 99-06462 Review Letter, prepared by the NYSDEC, and dated April 25, 2008;
- Revised Supplemental Investigation Work Plan, prepared by Ecosystems Strategies, Inc., and dated March 2009 (Revised April 2009);
- Supplemental Investigation Work Plan Approval Letter, prepared by the NYSDEC, and dated April 7, 2009;

- Investigation Summary Report, prepared by Ecosystems Strategies, Inc., and dated June 16,2009;
- Remedial Action Work Plan, prepared by Ecosystems Strategies, Inc., and dated July 2009;
- Tank Closure Site Assessment and Site Remediation Report, prepared by Ecosystems Strategies, Inc., and dated October 2009
- Report of Additional Phase II Assessment Activities, prepared by Hart & Hickman, PC, and dated February 11, 2009;
- Response Letter to NYSDEC Comments to the Tank Closure Site Assessment and Site Remediation Report, prepared by Ecosystems Strategies, Inc., and dated December 21, 2009;
- Quarterly Groundwater Sampling Report, prepared by Ecosystems Strategies, Inc., and dated March 4, 2010;
- Quarterly Groundwater Sampling Report, prepared by Ecosystems Strategies, Inc., and dated June 18, 2010;
- Supplementary Remediation Report, prepared by Ecosystems Strategies, Inc., and dated October 2010 and Revised November 2010;
- Supplemental Remediation Report Review Letter, prepared by the NYSDEC, and dated December 7, 2010;
- Supplementary Groundwater Investigation Report, prepared by Ecosystems Strategies, Inc., and dated February 2011;
- Supplemental Groundwater Investigation Review Letter, prepared by the NYSDEC, and dated March 17, 2011;
- Quarterly Groundwater Sampling Report, prepared by Ecosystems Strategies, Inc., and dated July 20, 2011;
- Quarterly Groundwater Sampling Report, prepared by Ecosystems Strategies, Inc., and dated February 20, 2012;
- Spill Closure Documentation, NYSDEC, dated April 2, 2012; and
- NYSDEC Letter Related to De-watering Permit, prepared by NYSDEC, and dated August 29, 2014.

These reports document the various site investigation, sampling, remediation and monitoring activities conducted as required by the NYSDEC to satisfactorily close the four listed LTANKS and NYSPILLS incidents identified for the site, however, significant residual soil and groundwater impacts remain onsite.

2.4 GEOLOGICAL CONDITIONS

The geologic setting of Long Island is well documented and consists of crystalline bedrock overlain by layers of unconsolidated deposits. According to geologic maps of the area created by the United States Geologic Survey (USGS), the bedrock in this area of Brooklyn is an igneous intrusive classified as the Ravenswood grano-diorite of middle Ordovician to middle Cambrian age. Unconsolidated sediments overlie the bedrock and consist of Pleistocene aged sand, gravel and silty clays, deposited by glacial-fluvial activity. Non-native fill materials consisting of dredge spoils, rubble and / or other materials have historically been used to reinforce and extend shoreline areas and to raise and improve the drainage of low lying areas.

The Site is located adjacent to, or slightly within, a moderate risk flood zone to the west and to the north, and adjacent to a high risk flood zone (subject to 1%, 100-year annual flood) in the east, northwest and northeast areas of the property.

Subsurface soils at the site include a silty non-native fill with bricks, coal ash and other rubble to a depth of approximately 12 feet below grade. A peat layer is present at some locations beneath the fill followed by fine brown silty-sands and clays to a depth of approximately 15 feet below grade. The fill material contains elevated levels of SVOCs and metals. Groundwater at the Site is present at a depth of approximately 5 to 12 feet below surface grade within the fill materials and silty-sand, and flows in an east to southeasterly direction (**Figure 6**).

2.5 CONTAMINATION CONDITIONS

2.5.1 Conceptual Model of Site Contamination

Contaminants of concern at the Site include petroleum VOCs and SVOCs in soil and groundwater and CVOC contamination in soil gas.

The sources of contamination at the Site are widespread as a result of its historic use as a petroleum works, and equipment storage and maintenance yard. Source areas include several underground storage tank (UST) areas including the south central area, east central area and west central area. In addition to these areas surface spills likely occurred throughout the yard area and maintenance buildings. Leaks at the USTs would directly enter the subsurface and encounter the shallow groundwater. Surface spills would enter the subsurface through cracks and gaps in the concrete and overtime migrate down impacting soil and groundwater.

Groundwater impacts are generally low outside of the southwest corner of the property, however, and no significant off-gassing is occurring on site from the source area(s). This is evident by the general lack of petroleum vapors across the Site and the low concentrations of BTEX and other key parameters such as trimethylbenzene, which were reported in high concentrations in soil.

2.5.2 Description of Areas of Concern

The historic use of the Site as a petroleum works, equipment storage / maintenance yard facility has resulted in discharges of gasoline and diesel fuel / fuel oil contaminating most of the site with high levels of VOC and SVOCs. Releases have likely occurred from multiple sources including subsurface releases from underground storage tanks (USTs) and piping, and from surface spills related to fueling operations, equipment maintenance, fuel transfer and damaged and leaking heavy equipment. In this way the source areas compromise the majority of the Site.

2.5.3 Soil/Fill Contamination

Petroleum impacted soil has been documented throughout several areas of the Site including grid sections A3, B1, B2, C3 and D1 to depths of up to 15 feet below grade.

Historic fill material has been identified across the Site to depths as great as 12 feet below grade. The historic fill material contains metals above unrestricted and restricted use SCOs including high levels of arsenic, lead, copper and mercury. Lead hazardous soil, has been documented within the A2 grid (approx. 6,650 sf area) in the west central portion of the property. The vertical extent of the lead hazardous soil is limited to 3 feet below grade.

2.5.3.1 Summary of Soil/Fill Data

Soil sample results from the RI are summarized in **Tables 3-11**. Further information on soil sample collection, handling and analysis can be found in the RI Report (EBC 12/14).

2.5.3.2 Comparison of Soil/Fill with SCGs

Table 12 shows sample results above Track 1 Unrestricted SCOs for all overburden soil at the Site. **Figure 7a and 7b** are spider maps which show soil sampling locations and summarize shallow and deep sample results above Track 1 Unrestricted SCOs for all overburden soil.

2.5.4 On-Site and Off-Site Groundwater Contamination

Groundwater is impacted with petroleum VOCs in the western third of the site with the greatest impact occurring in MW 1 located in the south west corner or the site. Total VOCs in this area of the site ranged from 82 ug/L in MW2 to 3,472 ug/L in MW1. SVOCs in groundwater were generally limited to napthalene which was present at a concentration of 20 ug/L in MW1. There were other reported exceedances for SVOCs in groundwater however these were in the parts per trillion range and more a function of the precision of the laboratory than actual contamination. SVOC detections in the part per trillion range are commonly encountered throughout the area and are representative of background conditions.

Only minor detections or chlorinated compounds were reported in groundwater and, with the exception of 1,1,2-trichloroethane in MW5, all were below groundwater standards. Based on the groundwater flow direction and concentrations in on-site monitoring wells, off-site VOC plume migration is minimal.

2.5.4.1 Summary of Groundwater Data

The results of groundwater samples collected during the RI are summarized in **Tables 13-16**. Further information on groundwater sample collection, handling and analysis can be found in the RI Report (EBC 12/14).

2.5.4.2 Comparison of Groundwater with SCGs

Sample results above GA groundwater standards in monitor wells prior to the remedy are shown in **Table 17**. Spider maps which show groundwater sampling locations and summarize results above GA groundwater standards prior to the remedy are shown in **Figure 8**.

2.5.5 On-Site and Off-Site Soil Vapor Contamination

Total petroleum related volatile organic compounds (BTEX) were generally low around the perimeter of the Site ranging from 0 µg/m3 in SG11 located near the northwest property line to 346 µg/m3 in SG12 located along the north property line approximately 80 ft east of SG11. Elevated levels of light end petroleum compounds including heptane, hexane and cyclo hexane were reported in several locations including SG3, SG9 and SG11. Heptane at these locations ranged from 378 µg/m3 in SG9 to 3,150 µg/m3 in SG3. Hexane ranged from 986 µg/m3 in SG9 to 5,600 µg/m3 in SG11. Cyclohexane ranged from 332 µg/m3 in SG3 to 36,500 µg/m3 in SG11.

Chlorinated VOCs (CVOCs) were reported in all soil gas samples with the exception of SG11 and ranged in concentrations from 0.75 µg/m3 in SG6 located near the west central property line to 388 µg/m3 in SG5 located in the southeast corner of the property.

2.5.5.1 Summary of Soil Vapor Data

A table of soil vapor data collected prior to the remedy is shown in **Table 18**. Further information on soil gas sample collection, handling and analysis can be found in the RI Report (EBC 12/14). Soil vapor results are posted on **Figure 9**.

2.6 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.6.1 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment under the BCP is to identify potential receptors to the contaminants of concern (COC) that are present at, or migrating from, the site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it

does not imply that exposures actually occur. An exposure pathway has five elements; a contaminant source, release and transport mechanisms, point of exposure, route of exposure and a receptor population.

The potential exposure pathways identified below, represent both current and future exposure scenarios.

Contaminant Source

The source of petroleum VOCs and SVOCs reported in soil at the site is wide spread and related to releases in multiple areas from USTs, ASTs and surface spills.

Elevated levels of metals are also present in fill materials throughout the Site. CVOCs reported in soil gas appear to be related to an off-site source

Contaminant Release and Transport Mechanism

Petroleum contamination is present in subsurface soil throughout the Site as well as at the groundwater interface. There appears to be very little transfer of VOC contaminants in soil to the groundwater despite the fact that impacted soil is in contact with the groundwater.

Groundwater impacts are relatively low and limited to the southwest corner of the property. Wells downgradient of this location show little contamination indicating that there is limited migration of impacted water across the Site and off of the Site.

There does not appear to be any migration of petroleum or chlorinated VOCs in soil vapor either on the property or migrating from the property. Chlorinated VOCs in soil vapor do appear to be migrating on to the property however.

Point of Exposure, Route of Exposure and Potentially Exposed Populations

Potential On-Site Exposures: Remediation workers and construction workers engaged in the excavation of impacted and non-impacted soil at the site may be exposed to petroleum VOCs,

SVOCs, CVOCs and heavy metals through several routes. Workers excavating impacted soil may be exposed to VOCs, SVOCs, and heavy metals through inhalation, ingestion and dermal contact. Workers excavating non-impacted soil may be exposed to CVOCs in soil gas through inhalation. A site specific Health and Safety Plan has been developed to identify and minimize the potential hazards to on-site workers.

Under a future scenario, residents within the proposed buildings may be exposed to vapor intrusion if remediation of the source area is not completed, and if preventive measures are not incorporated into the new building design to protect against contaminated soil vapor intrusion. This potential route of exposure will be reduced in response to the degree and success of source area remediation and the nature and construction of the new building's foundation.

Potential Off-Site Exposures: The entire area is serviced by the New York City Water System which distributes water from the Croton Reservoir system. Since there are no public or private potable supply wells in the area, exposure from contact with tap water is not a concern. Off-site exposure is therefore limited to vapor intrusion from CVOCs originating off-site. The potentially exposed population in this case would include commercial workers in adjacent buildings.

2.6.2 Fish & Wildlife Remedial Impact Analysis

Since VOCs in groundwater may be migrating beneath the Site at low concentrations in an east to southeasterly direction, the groundwater to surface water discharge pathway was evaluated. Bushwick inlet is located approximately 380 feet northwest. Based upon the concentrations of contaminants currently in groundwater beneath the Site and the historically documented flow direction to the east and southeast, there are no expected impacts to surface water environments from contaminants migrating from 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 Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions.
- Prevent the discharge of contaminants to surface water.

2.7.2 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.

2.7.3 Soil Vapor

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

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

The goal of the remedy selection process under the BCP is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of NYSDEC standards, criteria and guidance values (SCGs). A remedy is then developed based on the following nine criteria:

- Protection of human health and the environment;
- Compliance with 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 first two criteria are threshold criteria and must be satisfied in order for an alternative to be considered for selection. The remaining seven criteria are balancing criteria which are used to compare the positive and negative aspects of each of the remedial alternatives, provided the alternative satisfies the threshold criteria.

3.2 STANDARDS, CRITERIA AND GUIDANCE (SCG)

A criterion for remedy selection is evaluation for conformance with SCGs that are applicable, relevant and appropriate. Principal SCGs that are applicable, relevant and appropriate for evaluating the alternatives for remediation of this BCP site include the following:

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response

- 10 NYCRR Part 67 – Lead
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998)
- 6 NYCRR Part 375 - 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1, 375-3 and 375-6 (December 2006)
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 6 NYCRR Part 750 through 758 - Implementation of NPDES Program in NYS ("SPDES Regulations")
- 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 DER-10 Technical Guidance for Site Investigation and Remediation - May 2010;
- 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.
- TAGM 4059 - Making Changes To Selected Remedies (May 1998)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-10, Technical Guidance for Site Investigation and Remediation, May 2010
- DER-23 / Citizen Participation Handbook for Remedial Programs, January 2010

- OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)

Additional regulations and guidance are applicable, relevant, and appropriate to the remedial alternatives and will be complied in connection with implementation of the remedial program; however, the list above is intended to represent the principal SCGs which should be considered in evaluating the remedial alternatives for the BCP site.

Conformance with the appropriate standards for remediation of contaminated soil is an important criterion in evaluating the remedial alternatives for the BCP site. Presently, in New York State 6 NYCRR Part 375 establishes the primary SCGs associated with remediation of contaminated soil at sites which are in the BCP. If proposing remediation pursuant to a Track other than Track 1 (Unrestricted Use), 6 NYCRR Part 375 requires evaluation of at least one remedial alternative pursuant to Track I (Unrestricted Use) and one other alternative developed by the applicant for the proposed use of the BCP site. The remedial alternatives presented in Section 3.3 of this work plan have been prepared in conformance with this requirement.

3.3 ALTERNATIVES ANALYSIS

The goal of the remedy selection process under the BCP is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of NYSDEC standards, criteria and guidance values (SCGs). A remedy is then developed based on the following nine criteria:

- Protection of human health and the environment;
- Compliance with 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 is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. This analysis was prepared in accordance with 6 NYCRR Part 375-1.8(f) and Part 375-3.8(f) and Section 4.3(c) of NYSDEC DER-10. As required, a minimum of two remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

- Alternative 1 - Track 1, remediation of all soils above bedrock to unrestricted use criteria. Excavation to a minimum depth of 12 feet across the Site with the excavation of isolated areas to a depth of 15 feet. The Alternative includes full dewatering / treatment of groundwater beneath the entire Site as part of installation of the new buildings foundation. This alternative does not allow the use of long-term institutional /engineering controls to address impacted media or prevent exposures which may be required beneath the new building. An SSD system is not required for this alternative since the building foundation will be well below the water table and since the cellar levels will consist of a parking garage with mechanical ventilation.

- Alternative 2 - Track 2, remediation of all soils to restricted residential criteria to a depth of 15 feet if soils below 15 feet do not represent a source of contamination. This alternative would require a slightly lesser degree of excavation than Alternative 1 to meet SCOs, however, the excavation depth planned for the new building will likely exceed the excavation depth needed to meet this alternative. This alternative does not allow the use of long-term institutional /engineering controls to meet soil cleanup objectives. Long-term institutional /engineering controls are allowed to address or prevent exposures from other impacted media. This alternative is provided as a contingency in the event that Track 1 SCOs cannot be met or if operation of the SSD systems is required. Since the planned excavation depth for the new building is expected to satisfy SCOs for both Alternative 1 and Alternative 2, Alterative 2 has been added as a contingency in the event that Alternative 1 cannot be achieved.

3.4 REMEDIAL ALTERNATIVE 1

The following sections provide an evaluation of Alternative 1 based on the nine evaluation criteria as previously discussed.

3.4.1 Overall Protection of Human Health and the Environment

Alternative 1 will be protective of human health and the environment by eliminating constituents in soil related to petroleum and historic fill and remediating groundwater. The potential for human and environmental exposure to these constituents on-site will be eliminated by excavation of all petroleum contaminated and historic fill soils with parameters in excess of unrestricted criteria, disposing of excavated materials off-site, full dewatering and treatment of groundwater beneath the Site and backfilling as needed with certified clean fill, virgin mined materials or recycled concrete materials from a NYSDEC permitted recycling facility.

Potential post-remediation exposures to on-site residents from soil vapors are not expected to require the operation of SSD systems, though groundwater use will be restricted at the Site until groundwater quality recovers.

During remedial and construction activity workers and area residents may be exposed to impacted soil and vapors. Worker exposure to soil and vapors will be minimized through implementation of a Health and Safety Plan. Exposures to area residents from dust and/or vapors will be minimized through the use of engineering controls and through implementation of a Community Air Monitoring Plan (CAMP).

3.4.2 Compliance with Remedial Goals, SCGs and RAOs

Alternative 1 will achieve compliance with the remedial goals, SCGs and RAOs for soil through source removal to Track 1 unrestricted cleanup levels. SCGs for groundwater will also be achieved as impacted groundwater will be fully extracted and treated prior to discharge into the NYC sewer system. Compliance with SCGs for soil vapor is expected following completion of the remedial action.

3.4.3 Long-Term Effectiveness and Permanence

Alternative 1 achieves long term effectiveness and permanence by permanently removing and/or remediating all soils affected by Site contaminants or historic fill materials and by remediating groundwater. Under this Alternative, risk from soil impacts and groundwater will be eliminated. Aternative 1 will continue to meet RAOs for soil, groundwater and soil vapor in the future, providing a permanent long-term solution for the Site.

3.4.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by meeting unrestricted objectives and from on-site groundwater by extracting and treating groundwater beneath the Site during construction.

3.4.5 Short-Term Effectiveness

The potential for short-term adverse impacts and risks to the workers, the community, and the environment during the implementation of Alternative 1 is 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 all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic, will be controlled and regulated under the terms of the NYS Department of Buildings issued building permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities, will minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan has also been prepared to minimize disturbance to the local roads and community.

3.4.6 Implementability

The techniques, materials and equipment to implement Alternative 1 are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation and construction dewatering for the remediation of soils and groundwater are both a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites.

3.4.7 Cost

Costs associated with Alternative 1 are estimated at approximately $ 7,510,264. This cost estimate includes the following elements and assumptions:

- Excavate as per the basement foundation plans for the new buildings. Over-excavate as necessary to remediate hot-spot areas and remove all historic fill at the Site.
- Disposal of approximately 1,125 cy of of lead-hazardous soil from the hotspot located within the west central area of the property;
- Disposal of approximately 1,125 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels >3.000 ppm;
- Disposal of approximately 4,500 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels >1,000 ppm <3.000 ppm;
- Disposal of approximately 25,875 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels <1,000 ppm;
- Disposal of approximately 19,125 cy of clean native soil for beneficial reuse;
- Groundwater dewatering and treatment during foundation construction; and,
- HASP and CAMP monitoring for the duration of the remedial activities.

3.4.8 Compatibility with Land Use

The proposed redevelopment of the Site is compatible with its current M1-2 light industrial zoning. Following remediation, the Site will meet unrestricted use objectives which will exceed the objectives for its planned multi-tenant commercial / retail, health care and office use. A groundwater use restriction may be required to prevent future exposure to affected groundwater.

3.4.9 Community Acceptance

No questions regarding the Site have been raised regarding remedial options to date. This RAWP will be subject to a 45-day public comment period to determine if the community had comments on the presented remedial alternatives and selected remedy. If no comments are received regarding Alternative 1, it will be considered to be acceptable to the community.

3.5 REMEDIAL ALTERNATIVE 2

The following sections provide an evaluation of Alternative 2 based on the nine evaluation criteria as previously discussed.

3.5.1 Overall Protection of Human Health and the Environment

Alternative 2 will be protective of human health and the environment by eliminating constituents in soil related to petroleum and historic fill and remediating groundwater. The potential for human and environmental exposure to these constituents on-site will be eliminated by excavation of all petroleum contaminated and historic fill soils with parameters in excess of unrestricted criteria, disposing of excavated materials off-site, full dewatering and treatment of groundwater beneath the Site and backfilling as needed with certified clean fill, virgin mined materials or recycled concrete materials from a NYSDEC permitted recycling facility.

Potential post-remediation exposures to on-site residents from soil vapors are not expected to require the operation of SSD systems, though groundwater use will be restricted at the Site until groundwater quality recovers.

During remedial and construction activity, workers and area residents may be exposed to impacted soil and vapors. Worker exposure to soil and vapors will be minimized through implementation of a HASP. Exposures to area residents from dust and or vapors will be minimized through the use of engineering controls and through implementation of a CAMP.

3.5.2 Compliance with Remedial Goals, SCGs and RAOs

Alternative 2 will achieve compliance with the remedial goals, SCGs and RAOs for soil through source removal to restricted residential cleanup levels for the top 15 feet. SCGs for groundwater

will also be achieved as impacted groundwater will be fully extracted and treated prior to discharge into the NYC sewer system. Compliance with SCGs for soil vapor is expected following completion of the remedial action.

3.5.3 Long-term Effectiveness and Permanence

Alternative 2 achieves long term effectiveness and permanence by permanently removing and/or remediating all soils affected by Site contaminants above restricted residential objectives to a depth of 15 feet and by remediating groundwater. Under this Alternative risk from soil impacts and groundwater will be eliminated. Alternative 2 will continue to meet RAOs for soil groundwater and soil vapor in the future, providing a permanent long-term solution for the Site.

3.5.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 2 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by meeting restricted residential objectives in the upper 15 feet and from on-site groundwater by extracting and treating groundwater beneath the Site during construction. .

3.5.5 Short-term Effectiveness

The potential for short-term adverse impacts and risks to the workers, the community, and the environment during the implementation of Alternative 2 is 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 all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic will be controlled and regulated under the terms of the NYS Department of Buildings issued building permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities will

minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan will also be prepared to minimize disturbance to the local roads and community.

3.5.6 Implementability

The techniques, materials and equipment to implement Alternative 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation and construction dewatering for the remediation of soils and groundwater are both a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites.

3.5.7 Cost

Costs associated with Alternative 2 are identical to Alternative 1 and estimated at $1,231,621. This cost estimate includes the following elements and assumptions:

- Excavate as per the basement foundation plans for the new buildings. Over-excavate as necessary to remediate hot-spot areas and remove all historic fill at the Site.
- Disposal of approximately 1,125 cy of of lead-hazardous soil from the hotspot located within the west central area of the property;
- Disposal of approximately 1,125 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels >3.000 ppm;
- Disposal of approximately 4,500 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels >1,000 ppm <3.000 ppm;
- Disposal of approximately 25,875 cy of petroleum contaminated / historic fill soil as non-hazardous with lead levels <1,000 ppm;
- Disposal of approximately 19,125 cy of clean native soil for beneficial reuse;
- Groundwater dewatering and treatment during foundation construction; and,
- HASP and CAMP monitoring for the duration of the remedial activities.

3.5.8 Compatibility with Land Use

The proposed redevelopment of the Site is compatible with its current M1-2 light industrial zoning. Following remediation, the Site will meet unrestricted use objectives which will exceed

the objectives for its planned multi-tenant commercial / retail, health care and office use. A groundwater use restriction may be required to prevent future exposure to affected groundwater.

3.5.9 Community Acceptance

No questions regarding the Site have been raised regarding remedial options to date. This RAWP will be subject to a 45-day public comment period to determine if the community has any comments on the presented remedial alternatives and selected remedy. If no comments are received, it will be considered to be acceptable to the community.

3.6 SELECTION OF THE PREFERRED REMEDY

The remedy recommended for the site is a Track 1 alternative which consists of the removal and proper off-site disposal of all petroleum contaminated and historic fill material with parameters above unrestricted SCOs.

Any backfill materials used at the site will either consist of clean native soil excavated from other areas of the site, virgin mined materials, recycled materials or certified fill which meets unrestricted SCOs.

Groundwater will be remediated through construction dewatering and treatment followed by discharge into the NYC sewer system.

3.6.1 Preferred Remedy Land Use Factor Evaluation

As required by Article 27, Title 14 of the Environmental Conservation Law 27-1415, the following land use factor evaluation examines whether the preferred alternative is acceptable based on the 14 criteria presented in the following subsections.

Zoning

The proposed redevelopment project, which includes the construction of sixteen 10-story commercial building is in compliance with the M1-2 commercial zoning. Therefore the project will be constructed as-of-right regardless of the remedy implemented. The preferred remedy will comply with current zoning.

Applicable Comprehensive Community Master Plans or Land Use Plans

The proposed redevelopment project and selected remedy are consistent with comprehensive master and land use plans, specifically the Greenpoint-Willamsburg rezoning action (CEQR No. 04DCP003K). This area-wide comprehensive re-zoning was completed by the New York City Department of City Planning and adopted by the City Council in May 2005. The preferred remedy will be in full compliance with this applicable land use plan.

Surrounding Property Uses

The land use in the immediate vicinity of the Site (**Figure 6**) includes fuel oil terminal, tank truck repair facility and public park to the west, a metal stamping factory to the north, a construction site to the east and industrial / commercial buildings to the south. The new construction to the east includes a 22-story hotel building, a 2-story banquet hall / restaurant building and a 2-story commercial building with retail, office and community space.

The area surrounding the property is highly urbanized and predominantly consists of older heavy industry properties along the waterfront east to Kent and Wythe Avenues. Many of these properties are being renovated and repurposed, such as the City park to the west or redeveloped with new commercial buildings such as hotels, office and retail space. The areas east of Wythe Avenue have been undergoing a transformation as former industrial properties are being redeveloped for residential use. This transformation was related to the upzoning of many commercial industrial properties to residential as part of the Greenpoint-Willamsburg Rezoning Action.

The proposed remedy will not interfere with surrounding property uses and considers the short term affects to neighboring properties.

Citizen Participation

Citizen participation for implementation of the preferred alternative will be performed in accordance with DER 23 and NYCRR Part 375-1.10 and Part 375-3.10. A Citizen Participation Plan has been prepared and is available for public review at the identified document repositories (NYSDEC Region 2 Office, Greenpoint Branch of the Brooklyn Public Library).

Environmental Justice Concerns

The Site is not located within a potential environmental justice area. The NYSDEC defines a potential environmental justice area as a "minority or low-income community that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Environmental justice means the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Since the goal of the remedy will achieve the highest level of cleanup and will remove contaminated materials from the community, the remedy poses no environmental justice concerns.

Land use designations

The proposed remedy is consistent with land-use designations.

Population growth patterns

Population growth patterns support the proposed use for the Site. The preferred remedy will not negatively affect on population growth patterns.

Accessibility to existing infrastructure

The Site is accessible to existing infrastructure. The close proximity of the Site to Kent Avenue and the Brooklyn - Queens Expressway (I-287) will assist soil transportation and contractor access to the Site. The Site is also accessible to mass transit and is within walking distance to the G line with a subway stop on Nassau Avenue (6 blocks to the east) and the L line which has a subway stop on Bedford Avenue (5 blocks to the south). The preferred remedy will not alter accessibility to existing infrastructure.

Proximity to cultural resources

The proposed remedy will not negatively impact cultural resources

Proximity to natural resources

The proposed remedy will improve the local environment and will not negatively impact affect natural resources.

Off-Site groundwater impacts

The proposed remedy will improve potential off-site groundwater impacts by removing petroleum impacted soil from the site and treating petroleum impacted groundwater. The proposed remedy will not affect natural resources other than to potentially improve the quality of groundwater on a local basis.

Proximity to floodplains

Designated flood zone areas are located adjacent to the Site along Kent Avenue and N. 13th Street. The Site is located adjacent to, or slightly within, a moderate risk flood zone to the west and to the north, and adjacent to a high risk flood zone (subject to 1%, 100-year annual flood) in the east, northwest and northeast areas of the property.

Geography and geology of the Site

The selected remedy will excavate soil from the Site to a depth of 12-15 feet. Redevelopment will also remove soils to a depth of 20 feet for the basement levels of the new building. The selected alternative and development of the site have considered the geography and geology of the Site.

Current Institutional Controls

There are no institutional controls presently assigned to the Site.

3.7 SUMMARY OF SELECTED REMEDIAL ACTIONS

The remedy recommended for the site is a Track 1 alternative (Alternative 1) which consists of the removal of all on-site soils which exceed the UUSCOs and the remediation of petroleum impacted groundwater. It is expected that a Track 1 alternative will require excavation to a minimum depth of 12-15 feet across the Site with additional excavation to 20 feet below grade for construction of the new building. In addition all fill material with parameters above

unrestricted SCOs will be removed from the Site and properly disposed of at an off-site facility. The remedy will include the following items:

1. Excavation of soil/fill exceeding Track 1 unrestricted use SCOs as listed in **Table 1** to depths as great as 15 feet below grade;
2. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
3. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs;
4. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
5. Dewatering and treatment of petroleum impacted groundwater before discharging to the NYC sewer system under a NYCDEP sewer discharge permit.
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material.
7. If Track 1 SCOs are not achieved, a composite cover system consisting of the concrete building slab will be constructed.
8. .If Track 1 cleanup is not achieved, implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
9. If Track 1 cleanup is not achieved, an Environmental Easement will be filed against the Site to ensure implementation of the SMP.

Although the goal of the remedy will be to remove all soil exceeding the Track 1 SCOs, if Track 1 SCOs cannot be achieved then a Track 2 remedy may result.

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

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP. Any anticipated deviations to the RAWP shall be submitted to the NYSDEC for review.

4.0 REMEDIAL ACTION PROGRAM

The objective of this section of the Remedial Action Work Plan, is to present a scope of work which will be approved by NYSDEC and when completely implemented will ready the BCP site for development under the Contemplated Use consistent with the requirements of the Brownfield Cleanup Program.

4.1 GOVERNING DOCUMENTS

Governing documents and procedures included in the Remedial Work Plan include a Site-specific Health and Safety Plan (HASP), a Community Air Monitoring Plan (CAMP), a Citizen Participation Plan, a Soil Management Plan (SoMP), a Quality Assurance Project Plan (QAPP), fluid management procedures, and contractors' site operations and quality control procedures. Highlights of these documents and procedures are provided in the following sections.

4.1.1 Health & Safety Plan (HASP)

Contractors and subcontractors will have the option of adopting this HASP or developing their own site-specific document. If a contractor or subcontractor chooses to prepare their own HASP, the Remedial Engineer will insure that it meets the minimum requirements as detailed in the site-specific HASP prepared for the Site.

Activities performed under the HASP will comply with applicable parts of OSHA Regulations, primarily 29 CFR Parts 1910 and 1926. Modifications to the HASP may be made with the approval of the Remedial Engineer (RE), Site Safety Manager (SSM) and/or Project Manager (PM).

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

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an

appropriate 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 Ms. Chawinie Miller. Her resume is provided in **Attachment F**. Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. A copy of the Site Specific Health and Safety Plan is provided in **Attachment B.**

4.1.2 Quality Assurance Project Plan (QAPP)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or a cold-pak(s) to maintain a temperature of 4^{o}C.

Dedicated disposable sampling materials will be used for both soil and groundwater samples (if collected), eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water
- Wash with alconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Prepare field blanks by poring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory. Laboratory reports will be upgradeable to ASP category B deliverables for use in the preparation of a data usability report (DUSR). The QAPP for the Site is provided in **Attachment C**.

4.1.3 Construction Quality Assurance Plan (CQAP)

All construction work related to the remedy (i.e. soil excavation) will be monitored by EBC field personnel under the direct supervision of the Remedial Engineer. Monitoring during soil excavation will be performed to protect the health of site workers and the surrounding community. A Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) have been specifically developed for this project. These plans specify the monitoring procedures, action levels, and contingency measures that are required to protect public health.

All intrusive and soil disturbance activities will be monitored by an environmental professional (EP) under the direct supervision of the Remedial Engineer who will record observations in the site field book and complete a photographic log of the daily activities. The EP will provide daily updates to the Project Manager and Remedial Engineer who will both make periodic visits to the site as needed to assure construction quality. Daily updates will also be submitted to the NYSDEC. See section 4.4.1 Daily Reports.

4.1.4 Soil/Materials Management Plan (SoMP)

An SoMP has been prepared for excavation, handling, storage, transport and disposal of all soils/materials that are disturbed/excavated at the Site. The SoMP includes all of 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. The SoMP is presented in Section 5.4.

4.1.5 Erosion and Sediment Control Plan (ESCP)

Erosion and sediment controls will be performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Typical measures that will be utilized at various stages of the project to limit the potential for erosion and migration of soil include the use of hay bales, temporary stabilized construction entrances/exits, placement of silt fencing and/or hay bales around soil stockpiles, and dust control measures.

4.1.6 Community and Environmental Response Plan (CERP)

The CERP provides a summary of the controls, monitoring and work practices and how they will be used to provide the required protections to the public and the environment. The CERP includes a Community Air Monitoring Plan which provides 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 contaminant releases resulting from remedial activities. When the excavation area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals and locations of ventilation system intakes for nearby structures (i.e apartment buildings) at the downwind location.

The action levels specified require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CERP helps to confirm that the remedial work did not spread contamination off-site through the air.

The primary concerns for this site are vapors, nuisance odors and dust particulates. The CERP prepared for implementation of the RAWP is provided in **Attachment D**.

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 (CPP)

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 Citizen Participation Plan prepared for this project is provided in **Attachment E**.

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

Brooklyn Public Library – Greenpoint Branch
107 Norman Ave
Brooklyn, NY 11222

Hours:

Monday	10:00 pm – 6:00 pm
Tuesday	1:00 pm – 6:00 pm
Wednesday	1:00 pm – 8:00 pm
Thursday	1:00 pm – 8:00 pm
Friday	10:00 am – 6:00 pm
Saturday	10:00 am – 5:00 pm
Sunday	Closed

4.2 GENERAL REMEDIAL ACTION INFORMATION

4.2.1 Project Organization

The Project Manager for the Remedial Activity will be Mr. Kevin Brussee. Overall responsibility for the BCP project will be Mr. Charles B. Sosik, P.G., P.HG. The Remedial Engineer for this project is Mr. Ariel Czemerinski, P.E.. Resumes of key personnel involved in the Remedial Action are included in **Attachment F**.

4.2.2 Remedial Engineer

The Remedial Engineer for this project will be Mr. Ariel Czemerinski, P.E. 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 Site. 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 review all pre-remedial plans submitted by 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, and will certify compliance in the Final Remediation Report. The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

4.2.3 Remedial Action Schedule

The remedial action will begin with mobilization of equipment and material to the Site, which will begin approximately following RAWP approval and 10 days after the distribution of the remedial construction Fact Sheet. A pre-construction meeting will be held among NYSDEC, the Remedial Engineer, and the selected remedial contractor prior to site mobilization. Mobilization

will be followed by soil removal and disposal and confirmation sampling. The work is expected to take 8 weeks as part of the construction excavation and foundation installation.

4.2.4 Work Hours

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

4.2.5 Site Security

A construction fence will be erected around the entire property as required by the NYC Department of Buildings. The fence will be maintained as required and secured at the end of each work day.

4.2.6 Traffic Control

The Volunteer's construction management personnel will direct the arrival or departure of construction vehicles, and provide flag services as needed to maintain safe travel exiting and entering the Site from River Avenue. Traffic related to on-going remedial activity will require the staging of 10-wheel dump trucks Kent Avenue, N. 12th Street and N. 13th Street on a daily basis during soil excavation activity. The soil disposal transport route will be as follows:

- ENTERING SITE - from the Brooklyn Queens Expressway heading south; take the Metropolitan Avenue Exit and turn right heading west on Metropolitan Avenue to Kent Avenue. Turn right, heading north on Kent Avenue to the Site entrance on the right (10 blocks).
- EXITING SITE – Turn right onto Wythe Avenue heading south to Metropolitan Avenue (10 blocks). Turn left onto Metropolitan Avenue heading east to the Brooklyn-Queens Expressway. Pass beneath the Brooklyn-Queens Expressway and turn left onto the Meeker Avenue and continue to the on-ramp (bearing left) Brooklyn-Queens Expressway.

A map showing the truck routes is included as **Figure 10**.

4.2.7 Worker Training and Monitoring

An environmental remediation contractor with appropriate hazardous material handling experience and training (40 hr OSHA) is required to perform the excavation of lead hazardous soil. After the contaminated soil is removed and the remediation contractor has demobilized from the Site, an excavation contractor will remove petroleum impacted soil, historic fill and uncontaminated soil. The excavation contractor's on-site personnel will have a minimum of 24 hour Hazardous Waste Operations and Emergency Response Operations training. Note that health and safety air monitoring will include periodic monitoring within the excavator cab during the excavation and loading of odiferous and petroleum impacted soil.

All field personnel involved in remedial activities will participate in training, if required under 29 CFR 1910.120, including 24 and 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment.

All on-site personnel engaged in remedial or sampling activities must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.

- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

4.2.8 Agency Approvals

The Applicant has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, 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 19**. 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 Remediation Report.

4.2.9 NYSDEC BCP Signage

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

4.2.10 Pre-Construction Meeting with NYSDEC

A pre-construction meeting with the Project Manager, Remedial Engineer, Construction Manager, Owner's Representative and the NYSDEC will take place prior to the start of major construction activities.

4.2.11 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in **Table 20**. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.12 Remedial Action Costs

The total estimated cost of the Remedial Action is $ 7,510,264. An itemized and detailed summary of estimated costs for all remedial activity is attached as **Attachment H**. This will be revised based on actual costs and submitted as an Appendix to the Final Remediation Report.

4.3 SITE PREPARATION

4.3.1 Mobilization

Mobilization will include the delivery of construction equipment and materials to the site. All construction personnel 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 the RAWP. The remediation contractor, construction manager and all associated subcontractors will each receive a copy of the RAWP and the site specific HASP and will be briefed on their contents.

4.3.2 Erosion and Sedimentation Controls

Soil erosion and sediment control measures for management of storm water will be installed in accordance with the New York Guidelines for Urban Erosion and Sediment Control. Haybales and/or silt fence will be placed by the remedial contractor at locations surrounding excavation areas and within the perimeter fencing as needed, to control stormwater runoff and surface water from exiting the excavation. These control measures will be installed prior to initiating the soil excavation.

4.3.3 Stabilized Construction Entrance(s)

Stabilized construction entrances will be installed at all points of vehicle ingress and egress to the Site. The stabilized entrances will be constructed of a 4 to 6-inch bed of crushed stone or

crushed concrete which will be sloped back toward the interior of the Site. The stabilized entrances will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil.

4.3.4 Utility Marker and Easements Layout

The Applicant 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 Applicant and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Applicant 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.

4.3.5 Sheeting and Shoring

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities including excavation is the sole responsibility of the Applicant and its contractors. The Applicant and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The Applicant 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 Applicant 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.

The support of excavation plan (SOE) for this project will include protocols to excavate and seal the utility tunnel present near the west central property line along Kent Avenue. These protocols will be reviewed and approved by DEC before any excavation work occurs within 50 feet of the

tunnel location. Details of subsurface conditions are provided in the geotechnical report included under **Attachment I.**

4.3.6 Equipment and Material Staging

All equipment and work materials will be staged on-Site in areas as designated by the General Contractor, and / or Construction Site Superintendant.

4.3.7 Decontamination Area

A temporary truck decontamination pad will be constructed to decontaminate trucks and other vehicles/equipment leaving the Site. The pad will be constructed by placing a 4 to 6-inch bed of stone aggregate such as crushed rock or RCA. The pad will be bermed at the sides and sloped back to the interior of the Site. The truck pad will be sized to accommodate the largest construction vehicle used and located in line with the stabilized construction entrance. The pad will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil.

4.3.8 Site Fencing

An 8-foot high temporary construction fence will be installed around the perimeter of the Site with entrance / exit gates located on Kent Avenue, Wythe Avenue, N. 12th Street and N. 13th Street. This fence will be properly secured at the end of the day and supplemented, as needed, by installing orange safety fencing around open excavations to ensure on-site worker safety.

4.3.9 Demobilization

Demobilization will consist of the restoration of material staging areas and the disposal of materials and/or general refuse in accordance with acceptable rules and regulations. Materials used in remedial activities will be removed and disposed properly. All equipment will be decontaminated prior to leaving the Site.

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 in which remedial activity takes place. Daily reports will include:

- An update of progress made during the reporting day;
- Quantities of oxidant material applied at specific injection locations of the Site;
- 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.

These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

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 including noise, odor, truck traffic etc., will be recorded in the Site field book and reported to the NYSDEC via email on the same day as the complaint is received.

4.4.5 Deviations from the Remedial Action Work Plan

Minor deviations from the RAWP will be identified in the daily update report and will be noted in the Final Engineering Report. When deviations are reported a brief discussion will be provided which will state the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy.

Major changes to the scope of work must be discussed with the NYSDEC and the NYSDOH prior to implementation. If the changes are considered to be significant enough, an addendum to the RAWP Work Plan will be prepared and submitted to NYSDEC / NYSDOH for review.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

Excavation work includes the following; the removal and off-Site disposal of the top 3 to 5 feet of soil from the lead hazardous Hot-Spot area located in the west central area of the Site (1,125 cubic yards) as shown on **Figure 11**, removal and off-Site disposal remainder of petroleum contaminated and historic fill material (31,500 cubic yards) from the remainder of the site to depths ranging from 8 to 15 ft below grade, and removal and off-Site disposal of clean native soil to approximately 15-20 feet below grade for construction of the proposed building's cellar level foundation (19,125 cubic yards). Soil excavation will be performed using conventional equipment such as track-mounted excavators, backhoes and loaders.

All excavation work will be performed in accordance with the Site-specific HASP and CAMP. Removal of the hazardous lead soil will be performed by a qualified remedial contractor and fully trained personnel (40HR OSHA HAZWOPER). If an underground storage tank (UST) is discovered during excavation the NYSDEC Project Manager will be immediately notified and the UST removed and closed in accordance with DER-10, NYSDEC PBS regulations and NYC Fire Department regulations. It is anticipated that the excavation of historic fill materials and native soils will be performed by the excavation contractor for the construction project.

Petroleum contaminated soils and historic fill materials will be excavated to a depth of approximately 10-15 feet throughout the Site, as needed to achieve SCOs. Excavation for the basement level parking area of the new building will continue to a depth of approximately 20 feet. An excavation plan showing the excavation depths to achieve the Track 1 remedy is provided in **Figure 11**.

Dewatering will be required for excavation of contaminated areas and for foundation construction.

5.1 CONTINGENCY - UST REMOVAL METHODS

USTs, if encountered during excavation activities at the Site, will be removed in accordance with the procedures described under the NYSDEC Memorandum for the Permanent Abandonment of

Petroleum Storage Tanks and Section 5.5 of Draft DER-10 as follows:

- Remove all product to its lowest draw-off point
- Drain and flush piping into the tank
- Vacuum out the tank bottom consisting of water product and sludge
- Dig down to the top of the tank and expose the upper half of the tank
- Remove the fill tube and disconnect the fill, gauge, product and vent lines and pumps. Cap and plug open ends of lines
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank
- Clean tank or remove to a storage yard for cleaning
- If the tank is to be moved it must be transported by licensed waste transported. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport
- After cleaning the tank must be made acceptable for disposal at a scrap yard cleaning the tank interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.)
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.)
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).

5.2 SOIL CLEANUP OBJECTIVES

The Soil Cleanup Objectives for this Site are listed in **Table 1**. **Table 12** summarizes all soil samples that exceed the SCOs proposed for this Remedial Action. Spider maps showing all soil samples that exceed the SCOs proposed for this Remedial Action are shown in **Figures 7a and 7b**.

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

Endpoint soil samples will be collected following hazardous lead impacted soil removal from the hazardous lead Hot-Spot to verify that remedial goals have been achieved, and post excavation (endpoint) soil samples will be collected from across the Site to verify that remedial goals have been achieved. Endpoint soil samples will be collected from the Site as follows:

(1) Following excavation of the hazardous lead Hot-Spot area located in the east central area of the Site, 5 endpoint soil samples will be collected to verify that remedial goals have been achieved (**Figure 12**). The endpoint soil samples collected from the lead Hot-Spot will be analyzed for total lead and TCLP lead.

(2) Site-wide endpoint soil samples will be collected following removal of all soil needed for construction of the buildings cellar level to verify that remedial goals have been achieved (**Figure 13**). The Site-wide endpoint soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. The collection of sidewall endpoint soil samples will be not be performed because historic fill will be removed from across the entire Site resulting in only off-Site areas to collect the soil samples.

5.3.1 End-Point Sampling Frequency

Endpoint sampling frequency will be in accordance with DER-10 section 5.4 which recommends the collection of one bottom sample per 900 sf of bottom area and one sidewall sample per 30 liner feet. Sidewall samples will not be collected where sheeting or shoring is present and will not be part of this program as soil will be fully excavated to the site boundaries.

5.3.2 Methodology

Collected samples be placed in glass jars supplied by the analytical laboratory and stored in a cooler with ice to maintain a temperature of 4 degrees C. Samples will either be picked up at the Site by a laboratory dispatched courier at the end of the day or transported back to the EBC office where they will be picked up the following day by the laboratory courier. All samples will be analyzed by a NYSDOH ELAP certified environmental laboratory

All post excavation (endpoint) soil samples will be analyzed for VOCs by EPA Method 8260B, SVOCs by EPA method 8270BN, pesticides/PCBs by EPA method 8081/8082 and TAL metals.

5.3.3 Reporting of Results

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format.

5.3.4 QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of $4^{o}C$.

Dedicated disposable sampling materials will be used for soil samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight

samples collected. Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory.

5.3.5 DUSR

The DUSR provides a thorough evaluation of analytical data without third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under this RAWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this RAWP will be included in the final Engineering Report.

5.3.6 Reporting of End-Point Data in FER

All endpoint data collected as part of this remedial action will be summarized and presented in the Final Engineering Report. The summary tables will include comparison of results to unrestricted SCOs to verify attainment of Track 1. Laboratory reports and the DUSR will be included as an appendix in the FER.

5.4 ESTIMATED MATERIAL REMOVAL QUANTITIES

It is expected that 1,125 cubic yards (1,680 tons) of lead hazardous impacted soil will be generated by excavating the top 3 to 5 feet of soil from the Hot-Spot shown on **Figure 11**. Petroleum contaminated soil and historic fill material was documented throughout the Site to depths as great as 15 feet below grade. Therefore, an estimated 31,500 cubic yards (47,250 tons) of petroleum contaminated soil and historic fill material will be generated by excavating the remainder of the Site to 15 feet. An additional 19,125 cubic yards (28,687 tons) of clean native soil (15 to 20 feet below grade) will be excavated from the Site for construction of the proposed building's cellar The clean native soil will require off-Site disposal at a beneficial reuse facility.

5.5 SOIL/MATERIALS MANAGEMENT PLAN

5.5.1 Excavation of Lead Hazardous Soils (East Central Area)

Lead hazardous soil, has been documented within the A2 grid (approx. 6,650 sf area) in the west central portion of the property. The vertical extent is limited to 3 feet below grade though over-excavation to 5 feet is anticipated to assure removal of hazardous soil. The impacted soil in this area will be removed prior to the excavation for the building foundation.

The lead hotspot soil as well as other soil to a depth of 18 ft. at the Site, have been pre-characterized for disposal during the RI. Disposal facility approvals will be provided to the NYSDEC before transporting any soil from the Site.

Soil excavation will be performed in accordance with the procedures described under Section 5.5 of DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).

Final excavation depth, length, and width will be determined by the Remedial Engineer or his designee, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.). Expansion of the excavation beyond the planned hotspot area is anticipated and can easily be accommodated.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the HASP;

- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated;

- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile or dispose of separate from the impacted soil;

- If USTs are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued removal of overburden to access the top of the structure or continued trenching around the perimeter to minimize its disturbance;

- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc), an attempt will be made to remove it to the extent not limited by the site boundaries. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separate dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present;

- Excavated soils which are temporarily stockpiled on-site will be covered with 6-mil polyethylene sheeting while disposal options are determined. Sheeting will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property;

- Once the Remedial Engineer is satisfied with the removal effort, verification or confirmatory samples will be collected from the excavation as described in **Section 6.2** of this document.

The excavation of hot-spot areas will be performed by a qualified remedial contractor and fully trained personnel (40HR OSHA HAZWOPER).

5.5.2 Excavation Petroleum Contaminated Soil and Historic Fill Materials

Petroleum impacted soil has been documented throughout most of the Site including grid sections A2, A3, B1, B2, C1, C2, C3 and D2. Historic fill material has been identified across the Site to depths as great as 12 feet below grade. The historic fill material contains metals above unrestricted and restricted use SCOs including high levels of arsenic, lead, copper and mercury. Historic fill material will be segregated from non-contaminated native soils and disposed of off-Site at a permitted disposal facility. Petroleum contaminated soil and historic fill soil with lead levels above 1,000 mg/kg and those with lead levels above 3,000 mg/kg will require further segregation for disposal at alternate facilities. Excavated historic fill materials will be secured and temporarily stored on-Site until arrangements can be made for off-Site disposal. The petroleum contaminant soil and historic fill material has been classified as non-hazardous material. It is anticipated that the excavation of historic fill material will be performed by the excavation contractor for the construction project using trained personnel (24 hr HAZWOPER).

5.5.3 Excavation of Native Soils

Native soils are present directly below the fill materials and will require excavation for basement areas and foundation components during construction of the new buildings. Since excavation of the basement areas will begin following removal of lead impacted soil, petroleum contaminated soil and historic fill, it is expected that native soils will not be contaminated. However, if evidence of contamination is discovered beneath the existing building's foundation following demolition, or during the excavation of basement areas, the contamination will be removed to the extent possible and segregated from clean native soils for proper disposal. Clean native soils will be stockpiled on-site and characterized for reuse on-site in areas over excavated to remove historic fill. Any excess soil will be disposed of off-site as a beneficial re-use material upon approval by the NYSDEC Region 2’s Division of Materials Management. Clean native soils utilized on-site will be subject to a testing program to verify that they meet unrestricted SCOs prior to use.

It is anticipated that the excavation of native soil materials will be performed by the excavation contractor for the construction project.

5.5.4 Soil Screening Methods

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

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the Final Engineering Report.

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.

5.5.5 Stockpile Methods

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

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Soils which exhibit strong odors will be completely sealed with heavy tarps or vapor suppressant foam.

5.5.6 Materials Excavation and Load Out

The Remedial Engineer or a EP 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.

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).

Where effective, the equipment will be "dry" decontaminated using a broom and/or brushes. If significant amounts of soil or other contaminants remain after the dry decontamination, the equipment will also be pressure washed before leaving the Site. The EP will be responsible for ensuring that all outbound trucks are dry-brushed or washed on the truck wash/equipment pad 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 EP 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 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 material and contaminated soil on-Site is prohibited. All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be located and shown on maps to be reported in the Final Engineering Report.

5.5.7 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:

- ENTERING SITE - from the Brooklyn Queens Expressway heading south; take the Metropolitan Avenue Exit and turn right heading west on Metropolitan Avenue to Kent Avenue. Turn right, heading north on Kent Avenue to the Site entrance on the right (10 blocks).
- EXITING SITE – Turn right onto Wythe Avenue heading south to Metropolitan Avenue (10 blocks). Turn left onto Metropolitan Avenue heading east to the Brooklyn-Queens Expressway. Pass beneath the Brooklyn-Queens Expressway and turn left onto the Meeker Avenue and continue to the on-ramp (bearing left) Brooklyn-Queens Expressway.

These routes are shown in **Figure 10**.

These are the most appropriate routes to and from the Site and take 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. Material transported by trucks exiting the Site will be secured with tight-fitting covers. Wet loads are not anticipated since the entire site will be dewatered prior to excavating soils. However, if wet soils are excavated they will be stockpiled within the excavation to dry or blended with dry soils. No loads of material capable of generating free liquid will be allowed to leave the Site. All trucks will be inspected, dry-brushed and / or, as needed, before leaving the site.

5.5.8 Materials Disposal Off-Site

Multiple disposal facility designations may be employed for the materials removed from the Site. Once final arrangements have been made, the disposal location(s) will be reported to the NYSDEC Project Manager. It is anticipated that the soil will be disposed of at up to 5 different facilities, based on the following classification:

- Lead Hazardous - Contaminated Low Lead (petroleum and/or historic fill with TCLP lead >5 ug/L)
- Non Hazardous - Contaminated Very High Lead (petroleum and/or historic fill with lead > 3,000 mg/kg)
- Non Hazardous - Contaminated High Lead (petroleum and/or historic fill with lead > 1,000 mg/kg < 3,000 mg/kg
- Non Hazardous - Contaminated Low Lead (petroleum and/or historic fill with lead < 1,000 mg/kg
- Uncontaminated Native Soil - meets NJDSC Criteria for beneficial Reuse

The total quantity of material expected to be disposed off-Site is 51,750 cubic yards, including 1,125 cubic yards of lead hazardous soil, 1,125 cubic yards of petroleum contaminated / historic fill material with lead levels above 3,000 mg/kg, 4,500 cubic yards of petroleum contaminated / historic fill material with lead levels above 1,000 mg/kg but less than 3,000 mg/kg, 25,875 cubic yards of petroleum contaminated / historic fill material with lead levels below 1,000 mg/kg and 19,125 cubic yards of clean native soil.

Hazardous Soil Disposal and Transport

Soil classified as hazardous will be shipped under a hazardous waste manifest system. All hazardous waste transported and disposed of must have a USEPA ID Number and waste code and must be distributed in accordance with the regulatory requirements.

The multi-part manifest will be filled out for each load of soil shipped off of the Site. At a minimum, the following information will be recorded on each manifest:

1) Generator's Name, Address, and Phone Number
2) Destination Facility Name, Address and Phone Number
3) EPA ID Number
4) Waste classification code
5) Transporter Name, Address, Phone Number, License Plate Number, Driver Name, and SW Haulers Permit #
6) Signatures – Generator or an authorized agent for the generator shall print, sign, and date each non-hazardous material manifest after each truck is loaded. The transporter shall then sign and date noting time material was picked up at the site. Both the transporter and a representative of the disposal facility will sign the non-hazardous material manifest when the material has been delivered to disposal facility.

Non-Hazardous Soil Disposal and Transport

Non-hazardous historic fill material and petroleum contaminated soil taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Historical fill material 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 DSHM. 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.

Soil classified as non-hazardous fill will be transported under a non-hazardous waste manifest obtained from the selected disposal facility. The multi-part manifest will be filled out for each load of soil shipped off of the Site. At a minimum, the following information will be recorded on each manifest:

1) Generator's Name, Address, and Phone Number
2) Destination Facility Name, Address and Phone Number
3) Transporter Name, Address, Phone Number, License Plate Number, Driver Name, and SW Haulers Permit #
4 Signatures – Generator or an authorized agent for the generator shall print, sign, and date each non-hazardous material manifest after each truck is loaded. The transporter shall then sign and date noting time material was picked up at the site. Both the transporter and a representative of the disposal facility will sign the non-hazardous material manifest when the material has been delivered to disposal facility.

A copy of the manifest will be retained by AMC on-Site personnel for each shipment. Final signed manifests will be forwarded by the disposal facility to the generator. Copies of the final manifests will be presented in the FER.

Clean Soil Disposal

Clean native soil removed from the Site for development purposes (i.e. basement levels) will be handled as unregulated or beneficial use disposal. This soil will undergo a testing program to confirm that it meets Unrestricted Use SCOs or Residential / Groundwater Protection SCOs prior to unregulated disposal or meets Unrestricted Use SCOs prior to reuse on-Site. Confirmation testing of clean soils will be in accordance with DER-10 Section 5.4(e)(10) as follows:

Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Uncontaminated native soil confirmed by the above testing program and removed from the site, will be disposed of as unregulated C&D material or sent to a beneficial re-use facility. The final destination of soils whether classified as contaminated or uncontaminated must be approved by the NYSDEC.

C&D and Scrap Metal Disposal

Concrete demolition material generated on the Site from building slabs, parking areas and other structures will be segregated, sized and shipped to a concrete recycling facility upon approval by the NYSDEC's Division of Materials Management for Region 2. Concrete crushing or processing on-Site is prohibited. Asphalt removed from the parking areas will be sent to a separate recycling facility.

Additionally, it is common to encounter scrap metals and large boulders (greater than one foot in diameter) during excavation which may not be accepted by either the licensed disposal facility or the C&D facility. These materials will be segregated and subsequently recycled at local facilities. Uncontaminated metal objects will be taken to a local scrap metal facility.

Bricks and other C&D material are also not accepted by most soil disposal facilities if present at greater then 5% by volume. This material, if encountered, will be sent to a C&D landfill or other C&D processing facility if approved by the DEC. C&D material of this type is most often

encountered on sites in which former basement structures have been filled in with material from demolishing a former building. There was no evidence of former basement areas identified during previous investigations performed at the Site.

Scale Tickets

All trucks to be utilized for transport of hazardous or non-hazardous contaminated soil shall be weighed before and after unloading at the disposal facility. Disposal facilities must provide truck scales capable of generating load tickets measured in tons. The tonnage transported and disposed will be determined by the disposal facility and reported on a certified scale ticket which will be attached to each returned manifest. Weights will be reported on the certified scale ticket as Tare and Gross weights.

C&D Transport Tickets / Bills of Lading

Bill of Lading system or equivalent will be used for the disposal of C&D and related materials. Documentation for materials disposed of at recycling facilities (such as metal, concrete, asphalt) and as non-regulated C&D will include transport tickets for each load stating the origin of the material, the destination of the material and the quantity transported. This information will be reported in the Final Engineering Report.

Disposal Facility Documentation

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 Applicant 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.

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.

5.5.9 Materials Reuse On-Site

Re-use of on-Site clean native soil will only be allowed if the material is found to meet Unrestricted Use SCOs (for Track 1) or Restricted Residential Use SCOs (for Track 2) through the verification testing program detailed above. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site.

Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos. Concrete crushing or processing on-Site is prohibited. Contaminated on-Site material, including historic fill material 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.

5.5.10 Fluids Management

As the depth to groundwater at the site is approximately 10 to 15 feet above the planned excavation depth, dewatering operations will be employed during construction. 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 the NYCDEP. A totalizing flow meter will be used to ensure that the dewatering volume does not exceed permit limits. Drawdown readings will be recorded from each or the sentinel monitoring wells on a daily basis. The dewatering plan developed for this project is provide under **Attachment J**.

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.

5.5.11 Backfill from Off-Site Sources

Off-site fill material may be needed to stabilize the entrance - exit areas of the Site, for temporary driveways for loading trucks and as an underlayment to structural components of the new buildings including slabs and footings. Recycled Concrete Aggregate (RCA) derived from recognizable and uncontaminated concrete and supplied by facilities permitted by, and in full compliance with Part 360-16 and DSNY regulations, is an acceptable form of backfill material. The Remedial Engineer is responsible for ensuring that the facility is compliant with the registration and permitting requirements of 6 NYCRR Part 360 and DSNY regulations at the time the RCA is acquired. RCA imported from compliant facilities does not require additional testing unless required by NYS DEC and DSNY under its terms of operations for the facility. Documentation of part 360-16 and DSNY compliance must be provided to the Remedial Engineer before the RCA is transported to the Site.

Fill material may also consist of virgin mined sand, gravel or stone products. Materials from a virgin mined source may be imported to the Site without testing provided that that the material meets the specifications of the geotechnical engineer, Remedial Engineer, and Redevelopment Construction Documents and that the source of the material is approved by the Remediation Engineer and the NYSDEC Project Manager.

The source approval process will require a review of the following information:

- The origin of the material;
- The address of the facility which mines/processes the material;
- A letter from the facility stating that the material to be delivered to the site is a virgin mined material and that it has not been co-mingled with other materials during processing or stockpiling.

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.

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".

Under no circumstances will fill materials be imported to the site without prior approval from the NYSDEC Project Manager. If sufficient documentation is not obtained, fill materials will be tested at a frequency consistent with that as specified in Table 4 of NYSDEC CP-51 Soil Cleanup Guidance Policy. 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. Solid waste will not be imported onto the Site.

5.5.12 Stormwater Pollution Prevention

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.

5.5.13 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.

5.5.14 Community Air Monitoring Plan

The Community Air Monitoring Plan (CAMP) provides measures 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 construction sites.

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 remedial work did not spread contamination off-site through the air. The primary concerns for this site are odors associated with groundwater purging and sampling.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report. The complete CAMP developed for this site is included in Appendix A of the Community and Environmental Response Plan provided in **Attachment D** or this Work Plan.

5.5.15 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."

5.5.15.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Applicant's Remediation 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.

Odor suppressing equipment including a foam machine chemical spray machine and materials will be mobilized to the Site prior to beginning excavation work and remain on standby for deployment when needed.

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.

5.5.15.2 Dust Control Plan

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

- Dust suppression will be achieved though spraying water directly onto off-road areas including excavations and stockpiles.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water application.

5.5.15.3 Nuisance Control Plan

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 conforms, to NYCDEP noise control standards.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

If a Track 1 cleanup is achieved, all on-Site soil remaining after completion of remediation will meet Track 1 Unrestricted Use SCOs and an Institutional Control (IC) will not be required to protect human health and the environment.

However, if a Track 1 cleanup is not achieved, the Track 2 alternative will be implemented as a contingency and an IC will be required. The Track 2 alternative will allow restricted residential use of the property. Long-term management of the IC will be executed under an environmental easement recorded with the NYC Department of Finance, Office of the City Register.

If Track 1 is not achieved, long-term management of ICs and of residual contamination will be executed under a site-specific Site Management Plan (SMP) that will be developed and included in the FER, if needed.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. If Track 1 is not achieved the Controlled Property (the Site) will have the following EC systems:

- **Site Cover** will be required to allow for residential use of the Site. The cover will consist of the new building foundation

The FER will report residual contamination on the Site in tabular and map form.

7.0 ENGINEERING CONTROLS

The intent of this project is to achieve Track 1 Cleanup criteria, however, if a Track 1 Cleanup is not achieved, an Engineering Control in the form of an engineered cap will be required for this remedy.

If Track 1 is not achieved, the Site will be restricted to restricted residential, commercial and industrial uses and a site cover will be required to allow for the intended use of the Site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or two feet of soil meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) and Table 375-6.8(b). The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

8.0 INSTITUTIONAL CONTROLS

Since the intent of this project is to achieve Track 1 cleanup criteria, institutional controls are not expected to be part of the final remedy for the Site.

If Track 1 cleanup is not achieved, Institutional Controls (ICs) will be incorporated into the remedy to render the overall Site remedy protective of public health and the environmental. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan (SMP).

If required, a Site-Specific Environmental Easement will be recorded with the City of New York to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on the Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs.

The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

8.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. If the Site will have residual contamination after completion of all Remedial Actions than an Environmental Easement is required. If an Environmental Easement is needed following completion of the remedy an Environmental Easement approved by NYSDEC will be filed and recorded with the City of New York. The Environmental Easement (if needed) will be submitted as part of the Final Remediation Report.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the City of New York before the Certificate of Completion can be issued by NYSDEC. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the Site Management Plan (SMP), which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls which will be needed to support Engineering Controls are:

- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- Compliance with the Environmental Easement by the Grantee and the Grantee's successor's is required;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Controls;
- NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable;

8.2 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the Final Engineering Report and issuance of the Certificate of Completion (COC) for the Remedial

Action. The Site Management Plan is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the Site Management Plan are performed.

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

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

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The Site Management Plan will be based on a calendar year and will be due for submission to NYSDEC by March 1 of the year following the reporting period.

The Site Management Plan in the Final Engineering Report will include a monitoring plan for groundwater at the down-gradient Site perimeter to evaluate Site-wide performance of the remedy. Appropriately placed groundwater monitor wells will also be installed immediately down-gradient of all volatile organic carbon remediation areas for the purpose of evaluation of the effectiveness of the remedy that is implemented.

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

9.0 FINAL ENGINEERING REPORT

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

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).

9.1 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 _____certify that I am currently a NYS registered professional engineer and that this Final Engineering Report 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

NYS Professional Engineer # Date Signature

10.0 SCHEDULE

The remedial action will begin with mobilization of equipment and material to the Site which will begin approximately 1 week following RAWP approval and within 10 days of the distribution of the Construction Fact Sheet. Mobilization will be followed by removal and disposal of the lead hazardous impacted soil and historic fill material followed by confirmation sampling. The work is expected to take approximately 5 months as part of the construction excavation and foundation installation. The schedule of tasks completed under this RAWP is as follows:

Conduct pre-construction meeting with NYSDEC	Within 1 week of RAWP approval
Conduct pre-construction meeting with NYSDEC	Within 1 week of RAWP approval
Mobilize equipment to the site and construct truck pad and other designated areas	Within 1 week following the pre-construction meeting and issuance of Pre-Construction Fact Sheet
Begin excavation of Lead Hot-Spot	Immediately following mobilization Duration - 4 Days
Collect endpoint soil samples from the lead Hot-Spot	Immediately following excavation of lead-Hot-Spot Duration - 1 Week
Mobilize Excavation Contractor and equipment to the Site	Immediately excavation of lead Hot-Spot Duration - 1 week
Complete excavation and disposal of historic fill material and clean native soil.	Within 5 months of mobilization
Perform endpoint verification of entire site	Performed in sequence as final depth of each excavated area is complete.
Submit SMP (as a contingency) if Track 1 Cleanup is not achieved	Approximately 90 days after completion of site work

TABLES

TABLE 1
SOIL CLEANUP OBJECTIVES
SOIL IMPORT CRITERIA

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	1 [b]
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	3.9[c]
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

TABLE 1
SOIL CLEANUP OBJECTIVES

Contaminant	CAS Number	Unrestricted Use
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
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	1 [c]
Benzo(a)pyrene	50-32-8	1 [c]
Benzo(b)fluoranthene [f]	205-99-2	1 [c]
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	1 [c]
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]

TABLE 1
SOIL CLEANUP OBJECTIVES

Contaminant	CAS Number	Unrestricted Use
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
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	0.33[b]
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

TABLE 1
SOIL CLEANUP OBJECTIVES

Contaminant	CAS Number	Unrestricted Use
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-Trimethylbenzene[f]	108-67-8	8.4
Vinyl chloride[f]	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

[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 2
SUMMARY OF
SAMPLING PROGRAM RATIONALE AND ANALYSIS

Matrix	Location	Number of Samples	Rationale for Sampling	Laboratory Analysis
Subsurface soil (0 to 18 feet bgs)	9 test pits throughout the site. Samples collected at 3 ft intervals	46	To evaluate the extent of soil impact and obtain information on soil quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, Herbicides, TPH,, TAL metals, hexavalent chromium,TCLP metals, RCRA characteristics.
Total (Soils)		46		
Groundwater (water table)	From 10 monitoring wells across the Site.	10	To assess groundwater quality at the Site.	VOCs EPA Method 8260B plus TICs, SVOCs EPA Method 8270 plus TICs, pesticide / PCBs EPA Method 8081/8082, TAL metals dissolved and total.
Total (Groundwater)		10		
Soil Gas (5 ft below existing grade)	14 soil gas implants installed across the Site.	14	Evaluate soil gas across the Site.	VOCs EPA Method TO15
Total (Soil Gas)		8		
MS/MSD	Matrix spike and Matrix spike duplicates at the rate 5%	3	To meet requirements of QA / QC program	1 MS/MSD for VOCs EPA Method 8260B and 1 MS/MSD for SVOCs EPA Method 8270 BN, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Trip Blanks	One laboratory prepared trip blank to accompany samples each time they are delivered to the laboratory.	3	To meet requirements of QA / QC program	VOCs EPA Method 8260B
Total (QA / QC Samples)		6		

TABLE 3
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA1 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A1 (0-3) Comp 14K0830-01 11/20/2014 15:00 Soil		A1 (0-3) Grab 14K0830-02 11/20/2014 15:00 Soil		A1 (3-6) Comp 14K0830-03 11/20/2014 15:00 Soil		A1 (3-6) Grab 14K0830-04 11/20/2014 15:00 Soil		A1 (6-9) Comp 14K0830-05 11/20/2014 15:00 Soil		A1 (6-9) Grab 14K0830-06 11/20/2014 15:00 Soil		A1 (9-12) Comp 14K0830-07 11/20/2014 15:00 Soil		A1 (9-12) Grab 14K0830-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor			1		1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		7.9	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		48.3	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		ND		NT		54.0		NT		47.5		NT		57.8	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		17	J	NT		ND	U	NT		ND	J	NT		ND	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		430	U
Methylcyclohexane		~	NT		NT		NT		1200		NT		2000		NT		1600	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		ND	U	NT		ND	U	NT		430	U
p-Bromofluorobenzene		~	NT		52.4	U	NT		40.1		NT		44.8		NT		42.5	
o-Xylene	95-47-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		650	U	NT		ND	U	NT		940	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		52.2	U	NT		60.1		NT		52.4		NT		38.2	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 3
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA1 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A1 (0-3) Comp 14K0830-01 11/20/2014 15:00 Soil		A1 (0-3) Grab 14K0830-02 11/20/2014 15:00 Soil		A1 (3-6) Comp 14K0830-03 11/20/2014 15:00 Soil		A1 (3-6) Grab 14K0830-04 11/20/2014 15:00 Soil		A1 (6-9) Comp 14K0830-05 11/20/2014 15:00 Soil		A1 (6-9) Grab 14K0830-06 11/20/2014 15:00 Soil		A1 (9-12) Comp 14K0830-07 11/20/2014 15:00 Soil		A1 (9-12) Grab 14K0830-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		38.6	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	6440	U	NT		3020		NT		1190		NT		1210		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	5510	U	NT		2920		NT		1420		NT		1470		NT	
2-Fluorobiphenyl			4070	U	NT		2280		NT		1090		NT		1180		NT	
2-Methylnaphthalene	91-57-6	~	ND	U	NT		ND	U	NT		57.9	U	NT		220	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	489	U	NT		ND	U	NT		ND	U	NT		48.9	U	NT	
Acenaphthylene	208-96-8	100000	1060	J	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	3280	U	NT		574	U	NT		ND	U	NT		51.6	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	4670	J	NT		1980	J	NT		ND		NT		37.9	D	NT	
Benzo(a)pyrene	50-32-8	1000	2530	J	NT		1470	J	NT		ND	J	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	2700	J	NT		1580	J	NT		ND	J	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	2590	J	NT		1130	U	NT		ND	U	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	2630	J	NT		1550	J	NT		ND	J	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	1040	U	NT		370	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	4440	J	NT		2230	J	NT		ND		NT		ND	D	NT	
Dibenzo(a,h)anthracene	53-70-3	330	1290	U	NT		552	U	NT		ND	U	NT		ND	U	NT	
Dibenzofuran	132-64-9	7000	313	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	537	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	8410		NT		5470	J	NT		ND		NT		37.9	D	NT	
Fluorene	86-73-7	30000	541	U	NT		ND	U	NT		ND	U	NT		62.7	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	2510	J	NT		964	U	NT		ND	J	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		ND	U	NT		ND	U	NT		55.8	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	3930		NT		5360		NT		956		NT		1010		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	4180	J	NT		1920	J	NT		66.0	J	NT		149	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	6300		NT		3200		NT		1590		NT		1570		NT	
Pyrene	129-00-0	100000	7650		NT		3540	J	NT		ND		NT		78.4	D	NT	
Terphenyl-d14		~	4540		NT		1890		NT		1040		NT		1130		NT	

TABLE 3
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA1 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A1 (0-3) Comp 14K0830-01 11/20/2014 15:00 Soil		A1 (0-3) Grab 14K0830-02 11/20/2014 15:00 Soil		A1 (3-6) Comp 14K0830-03 11/20/2014 15:00 Soil		A1 (3-6) Grab 14K0830-04 11/20/2014 15:00 Soil		A1 (6-9) Comp 14K0830-05 11/20/2014 15:00 Soil		A1 (6-9) Grab 14K0830-06 11/20/2014 15:00 Soil		A1 (9-12) Comp 14K0830-07 11/20/2014 15:00 Soil		A1 (9-12) Grab 14K0830-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	87.9	U	NT		64.0	U	NT		77.6				74.9		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	73.5	U	NT		65.0	U	NT		61.8				59.7		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	0.0805	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	0.0805	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Aluminum	7429-90-5	~	7960		NT		6090		NT		9100		NT		9970		NT	
Antimony	7440-36-0	~	1.33		NT		1.09	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	18.5		NT		95.3		NT		4.16		NT		1.92		NT	
Barium	7440-39-3	350	255		NT		360		NT		66.6		NT		127		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	0.886	U	NT		4.63	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	30300		NT		29200		NT		2870		NT		1060		NT	
Chromium	7440-47-3	~	19.9		NT		22.4		NT		17.2		NT		22.3		NT	
Cobalt	7440-48-4	~	7.98		NT		14.6		NT		9.63		NT		9.38		NT	
Copper	7440-50-8	50	77.1		NT		245		NT		30.1		NT		14.7		NT	
Iron	7439-89-6	~	35200		NT		60600		NT		20100		NT		20500		NT	
Lead	7439-92-1	63	590		NT		3660		NT		70.8		NT		34.0		NT	
Magnesium	7439-95-4	~	8570		NT		3340		NT		2780		NT		3730		NT	
Manganese	7439-96-5	1600	379		NT		310		NT		359		NT		206		NT	
Nickel	7440-02-0	30	26.5		NT		27.2		NT		14.9		NT		16.8		NT	
Potassium	7440-09-7	~	1600		NT		977		NT		1410		NT		1840		NT	
Selenium	7782-49-2	3.9	5.22		NT		10.5		NT		2.65		NT		2.68		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	604		NT		394		NT		62.2		NT		38.1		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	38.7		NT		37.8		NT		28.9		NT		26.8		NT	
Zinc	7440-66-6	109	491		NT		1240		NT		62.0		NT		38.9		NT	
Metals, TCLP RCRA		mg/L	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Arsenic	7440-38-2	5	ND	U	NT		0.030	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	100	0.907		NT		0.815		NT		0.495		NT		0.452		NT	
Cadmium	7440-43-9	1	0.012	U	NT		0.004	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	0.831		NT		3.19		NT		0.168		NT		0.060		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.18	0.686		NT		1.10		NT		0.0901		NT		0.0344		NT	

TABLE 3
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA1 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A1 (0-3) Comp 14K0830-01 11/20/2014 15:00 Soil		A1 (0-3) Grab 14K0830-02 11/20/2014 15:00 Soil		A1 (3-6) Comp 14K0830-03 11/20/2014 15:00 Soil		A1 (3-6) Grab 14K0830-04 11/20/2014 15:00 Soil		A1 (6-9) Comp 14K0830-05 11/20/2014 15:00 Soil		A1 (6-9) Grab 14K0830-06 11/20/2014 15:00 Soil		A1 (9-12) Comp 14K0830-07 11/20/2014 15:00 Soil		A1 (9-12) Grab 14K0830-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury, TCLP		mg/L	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		0.0000390	U	NT	
Corrosivity			pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1			
pH		~	9.21		NT		8.37		NT		7.81		NT		7.94		NT	
Ignitability			-				-				-				-			
Dilution Factor			1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-			
Dilution Factor			1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Sulfide		~	16.0	U	NT		24.0	U	NT		24.0	U	NT		16.0	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%			
Dilution Factor			1				1				1				1			
% Solids	solids	~	90.6		89.8		78.5		78.3		82.90		82.8		87.20		88.3	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 4
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA2 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A2 (0-3) Comp 14K0834-01 11/20/2014 15:00 Soil		A2 (0-3) Grab 14K0834-02 11/20/2014 15:00 Soil		A2 (3-6) Comp 14K0834-03 11/20/2014 15:00 Soil		A2 (3-6) Grab 14K0834-04 11/20/2014 15:00 Soil		A2 (6-9) Comp 14K0834-05 11/20/2014 15:00 Soil		A2 (6-9) Grab 14K0834-06 11/20/2014 15:00 Soil		A2 (9-12) Comp 14K0834-07 11/20/2014 15:00 Soil		A2 (9-12) Grab 14K0834-08 11/20/2014 15:00 Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		11	U	NT		9.2	U	NT		2700	U	NT		1200	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		47.3	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		47.3		NT		47.6		NT		53.9		NT		51.5	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		5.8	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		ND	J	NT		ND	U	NT		ND	J	NT		ND	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		ND		NT		1000		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		460	U	NT		350	U
Methylcyclohexane		~	NT		NT		NT		ND		NT		3100		NT		510	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		ND	U	NT		700	U	NT		370	U
p-Bromofluorobenzene		~	NT		56.3	U	NT		49.5		NT		ND		NT		46.1	
o-Xylene	95-47-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		ND	U	NT		910	U	NT		ND	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		52.7	U	NT		50.8		NT		55.8		NT		52.1	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 4
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA2 (0-12 ft)

Sample ID		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A2 (0-3) Comp		A2 (0-3) Grab		A2 (3-6) Comp		A2 (3-6) Grab		A2 (6-9) Comp		A2 (6-9) Grab		A2 (9-12) Comp		A2 (9-12) Grab	
York ID			14K0834-01		14K0834-02		14K0834-03		14K0834-04		14K0834-05		14K0834-06		14K0834-07		14K0834-08	
Sampling Date			11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				2			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	34.8	U	NT		ND	U	NT		1480	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	2070	U	NT		418		NT		ND		NT		3080		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	1170	U	NT		2190		NT		1610		NT		2570		NT	
2-Fluorobiphenyl			1360	U	NT		1750		NT		2700		NT		3110		NT	
2-Methylnaphthalene	91-57-6	~	61.2	U	NT		ND	U	NT		9000	U	NT		20800	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	154	U	NT		47.7	U	NT		2970	U	NT		1370	U	NT	
Acenaphthylene	208-96-8	100000	95.3	J	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	496	U	NT		117	U	NT		4960	U	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	4670	J	NT		485	J	NT		6280		NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	314	J	NT		305	J	NT		4360	J	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	173	J	NT		156	J	NT		3670	J	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	170	J	NT		155	U	NT		1940	U	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	250	J	NT		264	J	NT		4140	J	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	69.5	U	NT		ND	U	NT		1300	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	ND	J	NT		586	J	NT		7020		NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		ND	U	NT		ND	U	NT		1230	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	53.6	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	674		NT		956	J	NT		16200		NT		ND	D	NT	
Fluorene	86-73-7	30000	203	U	NT		40.8	U	NT		3430	U	NT		1610	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	193	J	NT		202	U	NT		1970	J	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	862		NT		1410		NT		0.00		NT		43300		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	527	J	NT		704	J	NT		23700	J	NT		1620	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	1220		NT		2320		NT		3440		NT		2390		NT	
Pyrene	129-00-0	100000	2040		NT		1160	J	NT		15300		NT		ND	D	NT	
Terphenyl-d14		~	1630		NT		2750		NT		2530		NT		2160		NT	

TABLE 4
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA2 (0-12 ft)

Sample ID		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A2 (0-3) Comp		A2 (0-3) Grab		A2 (3-6) Comp		A2 (3-6) Grab		A2 (6-9) Comp		A2 (6-9) Grab		A2 (9-12) Comp		A2 (9-12) Grab	
York ID			14K0834-01		14K0834-02		14K0834-03		14K0834-04		14K0834-05		14K0834-06		14K0834-07		14K0834-08	
Sampling Date			11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordiphenyl		~	56.3	U	NT		87.5	U	NT		48.4		NT		42.1		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	54.2	U	NT		73.5	U	NT		79.6		NT		73		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Aluminum	7429-90-5	~	5210		NT		5860		NT		4210		NT		4910		NT	
Antimony	7440-36-0	~	2.51		NT		3.06	U	NT		26.3	U	NT		7.29	U	NT	
Arsenic	7440-38-2	13	15.6		NT		13.0		NT		1800		NT		854		NT	
Barium	7440-39-3	350	202		NT		1320		NT		342		NT		288		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	0.601	U	NT		2.60	U	NT		1.26	U	NT		ND	U	NT	
Calcium	7440-70-2	~	14700		NT		34500		NT		15900		NT		7160		NT	
Chromium	7440-47-3	~	15.5		NT		16.2		NT		18.6		NT		11.6		NT	
Cobalt	7440-48-4	~	9.62		NT		5.67		NT		33.8		NT		9.21		NT	
Copper	7440-50-8	50	105		NT		53.3		NT		500		NT		212		NT	
Iron	7439-89-6	~	29800		NT		13700		NT		60200		NT		50700		NT	
Lead	7439-92-1	63	712		NT		3230		NT		9350		NT		3740		NT	
Magnesium	7439-95-4	~	4780		NT		2770		NT		2240		NT		2420		NT	
Manganese	7439-96-5	1600	299		NT		283		NT		165		NT		667		NT	
Nickel	7440-02-0	30	14.3		NT		13.8		NT		21.5		NT		5.58		NT	
Potassium	7440-09-7	~	1520		NT		866		NT		603		NT		693		NT	
Selenium	7782-49-2	3.9	3.65		NT		1.78		NT		27.8		NT		48		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	177		NT		198		NT		176		NT		171		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		1.57	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	34.2		NT		17.2		NT		14.9		NT		14.2		NT	
Zinc	7440-66-6	109	507		NT		1870		NT		1110		NT		465		NT	
Metals, TCLP RCRA		mg/Kg	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Arsenic	7440-38-2	5	ND	U	NT		ND	U	NT		0.289	U	NT		ND	U	NT	
Barium	7440-39-3	100	1.19		NT		0.521		NT		0.852		NT		0.637		NT	
Cadmium	7440-43-9	1	0.011	U	NT		0.026	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	6.90		NT		1.11		NT		0.008		NT		ND		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.2	0.993		NT		1.42		NT		12.9		NT		2.6		NT	

TABLE 4
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA2 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A2 (0-3) Comp 14K0834-01 11/20/2014 15:00 Soil		A2 (0-3) Grab 14K0834-02 11/20/2014 15:00 Soil		A2 (3-6) Comp 14K0834-03 11/20/2014 15:00 Soil		A2 (3-6) Grab 14K0834-04 11/20/2014 15:00 Soil		A2 (6-9) Comp 14K0834-05 11/20/2014 15:00 Soil		A2 (6-9) Grab 14K0834-06 11/20/2014 15:00 Soil		A2 (9-12) Comp 14K0834-07 11/20/2014 15:00 Soil		A2 (9-12) Grab 14K0834-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury, TCLP		mg/L	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.18	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Corrosivity			pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1			
pH		~	8.77		NT		8.64		NT		8.27		NT		7.91		NT	
Ignitability			-				-				-				-			
Dilution Factor			1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-			
Dilution Factor			1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Sulfide		~	24.0	U	NT		16.0	U	NT		ND	U	NT		16.0	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%			
Dilution Factor			1				1				1				1			
% Solids	solids	~	92		86.7		81.7		76.2		70.2		77		75.9		80.8	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 5
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA3 (0-12 ft)

Sample ID		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A3 (0-3) Comp		A3 (0-3) Grab		A3 (3-6) Comp		A3 (3-6) Grab		A3 (6-9) Comp		A3 (6-9) Grab		A3 (9-12) Comp		A3 (9-12) Grab	
York ID			14K0837-01		14K0837-02		14K0837-03		14K0837-04		14K0837-05		14K0837-06		14K0837-07		14K0837-08	
Sampling Date			11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		140	U	NT		ND	U	NT		4900	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		32.1		NT		51.2		NT		50.0		NT		51.7	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		62	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		6.9	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		26	J	NT		ND	U	NT		3500	J	NT		ND	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		52		NT		ND		NT		ND		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		58	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		42	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylcyclohexane		~	NT		260		NT		ND		NT		ND		NT		1100	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		59	U	NT		2000	U	NT		ND	U	NT		ND	U
p-Bromofluorobenzene		~	NT		42.9	U	NT		49.7		NT		44.7		NT		46.1	
o-Xylene	95-47-6	~	NT		55	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		110	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		8.9	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		69	U	NT		2900	U	NT		2000	U	NT		1900	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		61.7	U	NT		53.9		NT		46.5		NT		50.7	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		160	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 5
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA3 (0-12 ft)

Sample ID		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A3 (0-3) Comp		A3 (0-3) Grab		A3 (3-6) Comp		A3 (3-6) Grab		A3 (6-9) Comp		A3 (6-9) Grab		A3 (9-12) Comp		A3 (9-12) Grab	
York ID			14K0837-01		14K0837-02		14K0837-03		14K0837-04		14K0837-05		14K0837-06		14K0837-07		14K0837-08	
Sampling Date			11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				2			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		1420	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	34.8	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	2070	U	NT		788		NT		1740		NT		5000		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	2600	U	NT		1670		NT		2410		NT		3710		NT	
2-Fluorobiphenyl			1590	U	NT		1400		NT		1920		NT		3540		NT	
2-Methylnaphthalene	91-57-6	~	268	U	NT		199	U	NT		20300	U	NT		6140	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	229	U	NT		348	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	310	J	NT		371	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	493	U	NT		1070	U	NT		657	U	NT		487	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	1590	J	NT		3090	J	NT		1170		NT		478	D	NT	
Benzo(a)pyrene	50-32-8	1000	624	J	NT		1480	J	NT		386	J	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	791	J	NT		1430	J	NT		377	J	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	737	J	NT		864	U	NT		214	U	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	618	J	NT		1610	J	NT		454	J	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		180	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	231	U	NT		332	U	NT		233	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	1460	J	NT		3810	J	NT		1300		NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	302		NT		452		NT				NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		268	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	53.6	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	3230		NT		7070	J	NT		2890		NT		ND	D	NT	
Fluorene	86-73-7	30000	252	U	NT		489	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	625	J	NT		923	U	NT		231	J	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	335	U	NT		ND	U	NT		13900	U	NT		6130	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		190	U	NT		2890	U	NT		ND	U	NT	
Nitrobenzene-d5		~	2280		NT		1040		NT		967		NT		7870		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	2180	J	NT		4620	J	NT		3090	J	NT		2090	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	2850		NT		1900		NT		2530		NT		4080		NT	
Pyrene	129-00-0	100000	3360		NT		7170	J	NT		2920		NT		ND	D	NT	
Terphenyl-d14		~	2260		NT		1370		NT		1840		NT		2660		NT	

TABLE 5
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA3 (0-12 ft)

Sample ID		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A3 (0-3) Comp		A3 (0-3) Grab		A3 (3-6) Comp		A3 (3-6) Grab		A3 (6-9) Comp		A3 (6-9) Grab		A3 (9-12) Comp		A3 (9-12) Grab	
York ID			14K0837-01		14K0837-02		14K0837-03		14K0837-04		14K0837-05		14K0837-06		14K0837-07		14K0837-08	
Sampling Date			11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	56.4	U	NT		64.4	U	NT		68.1		NT		67.4		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	43.3	U	NT		51.8	U	NT		63.6		NT		98.0		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Aluminum	7429-90-5	~	5510		NT		6740		NT		6010		NT		6850		NT	
Antimony	7440-36-0	~	1.72		NT		1.06	U	NT		7.09	U	NT		2.96	U	NT	
Arsenic	7440-38-2	13	65.6		NT		24.5		NT		212		NT		70.4		NT	
Barium	7440-39-3	350	204		NT		170		NT		98.3		NT		74.5		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	1.11	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	22700		NT		27300		NT		13200		NT		2480		NT	
Chromium	7440-47-3	~	17.3		NT		19.1		NT		17.2		NT		19.2		NT	
Cobalt	7440-48-4	~	8.49		NT		7.90		NT		9.08		NT		8.00		NT	
Copper	7440-50-8	50	116		NT		112		NT		580		NT		273		NT	
Iron	7439-89-6	~	29800		NT		37700		NT		30600		NT		21600		NT	
Lead	7439-92-1	63	757		NT		836		NT		4080		NT		2440		NT	
Magnesium	7439-95-4	~	4780		NT		3370		NT		2820		NT		3030		NT	
Manganese	7439-96-5	1600	290		NT		358		NT		249		NT		263		NT	
Nickel	7440-02-0	30	25.4		NT		13.8		NT		14.6		NT		13.6		NT	
Potassium	7440-09-7	~	987		NT		932		NT		1030		NT		1560		NT	
Selenium	7782-49-2	3.9	3.92		NT		4.41		NT		5.74		NT		3.50		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	188		NT		155		NT		133		NT		93.9		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	29.6		NT		26.2		NT		22.7		NT		24.3		NT	
Zinc	7440-66-6	109	596		NT		228		NT		159		NT		73.1		NT	
Metals, TCLP RCRA		mg/Kg	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Arsenic	7440-38-2	5	ND	U	NT		ND	U	NT		0.184	U	NT		ND	U	NT	
Barium	7440-39-3	100	0.890		NT		0.621		NT		0.530		NT		0.18		NT	
Cadmium	7440-43-9	1	0.010	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	1.17		NT		0.845		NT		1.78		NT		ND		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.18	0.615		NT		0.636		NT		0.0976		NT		2.05		NT	
Mercury, TCLP		mg/L	mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	

TABLE 5
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPA3 (0-12 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	A3 (0-3) Comp 14K0837-01 11/20/2014 15:00 Soil		A3 (0-3) Grab 14K0837-02 11/20/2014 15:00 Soil		A3 (3-6) Comp 14K0837-03 11/20/2014 15:00 Soil		A3 (3-6) Grab 14K0837-04 11/20/2014 15:00 Soil		A3 (6-9) Comp 14K0837-05 11/20/2014 15:00 Soil		A3 (6-9) Grab 14K0837-06 11/20/2014 15:00 Soil		A3 (9-12) Comp 14K0837-07 11/20/2014 15:00 Soil		A3 (9-12) Grab 14K0837-08 11/20/2014 15:00 Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Corrosivity			pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1			
pH		~	8.43		NT		8.61		NT		8.49		NT		7.76		NT	
Ignitability			-				-				-				-			
Dilution Factor			1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-			
Dilution Factor			1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1			
Reactivity - Sulfide		~	ND	U	NT		16.0	U	NT		ND	U	NT		24	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%			
Dilution Factor			1				1				1				1			
% Solids	solids	~	86.6		82.2		81.4		78.8		70.8		80.2		73.2		85.5	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 6
25 Kent Avenue
Bronx, NY
Waste Characterization Results, TPB1 (0-15 ft)

Sample ID			B1 (0-3) Comp		B1 (0-3) Grab		B1 (3-6) Comp		B1 (3-6) Grab		B1 (6-9) Comp		B1 (6-9) Grab		B1 (9-12) Comp		B1 (9-12) Grab		B1 (12-15) Comp		B1 (12-15) Grab	
York ID		NYSDEC Part 375	14K0838-01		14K0838-02		14K0838-03		14K0838-04		14K0838-05		14K0838-06		14K0838-07		14K0838-08		14K0838-09		14K0838-10	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				101			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				2	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		ND	U	NT		130000	U	NT		1300	U	NT		780	U	NT		150	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		47.7		NT		47.2		NT		49.7		NT		37.2		NT		45.3	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		33000	U	NT		ND	U	NT		260	U	NT		42	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		13	U	NT		ND	U	NT		ND	U	NT		16	U	NT		16	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		62	J	NT		ND	U	NT		ND	J	NT		59	U	NT		67	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		29000		NT		ND		NT		63		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		9.7	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		88	U	NT		9.6	U
Methylcyclohexane		~	NT		9.2		NT		97000		NT		970		NT		490		NT		17	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		22000	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		25000	U	NT		ND	U	NT		160	U	NT		15	U
p-Bromofluorobenzene		~	NT		54.6	U	NT		48.0		NT		46.9		NT		48.9		NT		49.7	
o-Xylene	95-47-6	~	NT		ND	U	NT		4400	U	NT		ND	U	NT		61	U	NT		7.5	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		14000	U	NT		ND	U	NT		110	U	NT		21	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		110	U	NT		12	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		16000	U	NT		ND	U	NT		96	U	NT		13	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		58.8	U	NT		49.8		NT		53.3		NT		56.4		NT		55.6	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		19000	U	NT		ND	U	NT		170	U	NT		28	U

TABLE 6
25 Kent Avenue
Bronx, NY
Waste Characterization Results, TPB1 (0-15 ft)

Sample ID			B1 (0-3) Comp		B1 (0-3) Grab		B1 (3-6) Comp		B1 (3-6) Grab		B1 (6-9) Comp		B1 (6-9) Grab		B1 (9-12) Comp		B1 (9-12) Grab		B1 (12-15) Comp		B1 (12-15) Grab	
York ID		NYSDEC Part 375	14K0838-01		14K0838-02		14K0838-03		14K0838-04		14K0838-05		14K0838-06		14K0838-07		14K0838-08		14K0838-09		14K0838-10	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				2				3			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	2920	U	NT		2230		NT		324		NT		644		NT		1670		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	3030	U	NT		2330		NT		178		NT		479		NT		1130		NT	
2-Fluorobiphenyl			2350	U	NT		1920		NT		212		NT		499		NT		953		NT	
2-Methylnaphthalene	91-57-6	~	1090	U	NT		20100	U	NT		477	U	NT		610	U	NT		ND	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	4810	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	310	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	12500	U	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	29200	J	NT		ND	J	NT		93.1		NT		ND	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	13600	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	12100	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	6290	J	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	13100	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	2280	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	20700	J	NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	3770		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	2720	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	55400		NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	6410	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	6200	J	NT		ND	U	NT		ND	J	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	3980		NT		9910		NT		619		NT		702		NT		1320		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	54900	J	NT		ND	J	NT		126	J	NT		ND	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	3250		NT		2160		NT		203		NT		660		NT		1580		NT	
Pyrene	129-00-0	100000	53800		NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT	
Terphenyl-d14		~	2230		NT		1650		NT		187		NT		579		NT		1070		NT	

TABLE 6
25 Kent Avenue
Bronx, NY
Waste Characterization Results, TPB1 (0-15 ft)

Sample ID			B1 (0-3) Comp		B1 (0-3) Grab		B1 (3-6) Comp		B1 (3-6) Grab		B1 (6-9) Comp		B1 (6-9) Grab		B1 (9-12) Comp		B1 (9-12) Grab		B1 (12-15) Comp		B1 (12-15) Grab	
York ID		NYSDEC Part 375	14K0838-01		14K0838-02		14K0838-03		14K0838-04		14K0838-05		14K0838-06		14K0838-07		14K0838-08		14K0838-09		14K0838-10	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	51.6	U	NT		51.3	U	NT		64.2		NT		60.2		NT		59.5		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	38.9	U	NT		44.3	U	NT		50.6		NT		43.4		NT		45.3		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Aluminum	7429-90-5	~	5390		NT		3060		NT		8440		NT		7030		NT		8280		NT	
Antimony	7440-36-0	~	4.58		NT		5.73	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	20.3		NT		39.9		NT		19.1		NT		3.41		NT		7.67		NT	
Barium	7440-39-3	350	226		NT		54.8		NT		72.5		NT		48.6		NT		52.9		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	0.877	U	NT		1.36	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	13800		NT		5570		NT		1720		NT		1200		NT		845		NT	
Chromium	7440-47-3	~	16.4		NT		5.97		NT		26.0		NT		15.1		NT		14.6		NT	
Cobalt	7440-48-4	~	7.05		NT		19.8		NT		11.4		NT		8.57		NT		8.8		NT	
Copper	7440-50-8	50	107		NT		106		NT		25.6		NT		17.0		NT		16.3		NT	
Iron	7439-89-6	~	30400		NT		13800		NT		34600		NT		19100		NT		16600		NT	
Lead	7439-92-1	63	979		NT		660		NT		36.8		NT		19.7		NT		11.9		NT	
Magnesium	7439-95-4	~	3190		NT		713		NT		2870		NT		2340		NT		2250		NT	
Manganese	7439-96-5	1600	224		NT		98.5		NT		278		NT		457		NT		315		NT	
Nickel	7440-02-0	30	13.8		NT		23.8		NT		10.3		NT		10.9		NT		12.5		NT	
Potassium	7440-09-7	~	994		NT		567		NT		1600		NT		1350		NT		1120		NT	
Selenium	7782-49-2	3.9	4.81		NT		3.32		NT		3.92		NT		3.04		NT		3.39		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	578		NT		170		NT		157		NT		256		NT		318		NT	
Thallium	7440-28-0	~	ND	U	NT		5.81	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	23.5		NT		15.1		NT		48.3		NT		25.5		NT		27		NT	
Zinc	7440-66-6	109	622		NT		467		NT		77.7		NT		53.5		NT		51.3		NT	
Metals, TCLP RCRA		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1			
Arsenic	7440-38-2	13	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	350	1.19		NT		0.479		NT		0.554		NT		0.477		NT		0.506		NT	
Cadmium	7440-43-9	2.5	0.011	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	~	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	63	3.17		NT		ND		NT		0.036		NT		0.046		NT		0.026		NT	
Selenium	7782-49-2	3.9	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Mercury	7439-97-6	0.18	0.381		NT		0.456		NT		0.763		NT		0.0403		NT		ND		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	

TABLE 6
25 Kent Avenue
Bronx, NY
Waste Characterization Results, TPB1 (0-15 ft)

Sample ID		NYSDEC Part 375	B1 (0-3) Comp		B1 (0-3) Grab		B1 (3-6) Comp		B1 (3-6) Grab		B1 (6-9) Comp		B1 (6-9) Grab		B1 (9-12) Comp		B1 (9-12) Grab		B1 (12-15) Comp		B1 (12-15) Grab	
York ID		Unrestricted Use	14K0838-01		14K0838-02		14K0838-03		14K0838-04		14K0838-05		14K0838-06		14K0838-07		14K0838-08		14K0838-09		14K0838-10	
Sampling Date		Soil Cleanup	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Corrosivity			pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1			
pH		~	9.19		NT		8.45		NT		8.59		NT		7.99		NT		8.19		NT	
Ignitability			-				-				-				-				-			
Dilution Factor			1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-				-			
Dilution Factor			1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Reactivity - Sulfide		~	24	U	NT		16.0	U	NT		16	U	NT		16	U	NT		16	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%			
Dilution Factor			1				1				1				1				1			
% Solids	solids	~	87.5		89.2		80.7		79.7		81.7		87.1		86.9		87.1		89.9		90	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 7
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPB2 (0-15 ft)

Sample ID		NYSDEC Part 375	B2 (0-3) Comp		B2 (0-3) Grab		B2 (3-6) Comp		B2 (3-6) Grab		B2 (6-9) Comp		B2 (6-9) Grab		B2 (9-12) Comp		B2 (9-12) Grab		B2 (12-15) Comp		B2 (12-15) Grab	
York ID		Unrestricted Use	14K0839-01		14K0839-02		14K0839-03		14K0839-04		14K0839-05		14K0839-06		14K0839-07		14K0839-08		14K0839-09		14K0839-10	
Sampling Date		Soil Cleanup	11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				101			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		10	U	NT		84000	U	NT		170000	U	NT		40000	U	NT		6.7	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		47.3		NT		46.2		NT		24.0		NT		20.9		NT		47.6	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		21000	U	NT		45000	U	NT		9500	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		23	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		13	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		94	J	NT		1200	U	NT		ND	J	NT		ND	U	NT		69	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		5500		NT		4800		NT		1800		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		860	U	NT		2100	U	NT		3300	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		6600	U	NT		11000	U	NT		2200	U	NT		ND	U
Methylcyclohexane		~	NT		ND		NT		29000		NT		53000		NT		16000		NT		ND	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		17000	U	NT		15000	U	NT		5000	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		12000	U	NT		20000	U	NT		4200	U	NT		ND	U
p-Bromofluorobenzene		~	NT		59.3	U	NT		38.0		NT		60.9		NT		42.2		NT		48.9	
o-Xylene	95-47-6	~	NT		ND	U	NT		4400	U	NT		8900	U	NT		4200	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		12000	U	NT		20000	U	NT		11000	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		4200	U	NT		11000	U	NT		4400	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		6.0	U	NT		ND	U	NT		13000	U	NT		2900	U	NT		ND	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		8.8	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		2200	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		320	U	NT		300	U	NT		ND	U
Toluene-d8		~	NT		53.7	U	NT		50.7		NT		54.8		NT		51.3		NT		53.8	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		17000	U	NT		29000	U	NT		15000	U	NT		ND	U

TABLE 7
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPB2 (0-15 ft)

Sample ID		NYSDEC Part 375	B2 (0-3) Comp		B2 (0-3) Grab		B2 (3-6) Comp		B2 (3-6) Grab		B2 (6-9) Comp		B2 (6-9) Grab		B2 (9-12) Comp		B2 (9-12) Grab		B2 (12-15) Comp		B2 (12-15) Grab	
York ID		Unrestricted Use	14K0839-01		14K0839-02		14K0839-03		14K0839-04		14K0839-05		14K0839-06		14K0839-07		14K0839-08		14K0839-09		14K0839-10	
Sampling Date		Soil Cleanup	11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	3330	U	NT		632		NT		1170		NT		1440		NT		967		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	2740	U	NT		981		NT		1750		NT		2180		NT		1040		NT	
2-Fluorobiphenyl			2010	U	NT		822		NT		1780		NT		1390		NT		719		NT	
2-Methylnaphthalene	91-57-6	~	1090	U	NT		285	U	NT		8330	U	NT		1160	U	NT		ND	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	276	U	NT		110	U	NT		1510	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	202	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	905	U	NT		157	U	NT		2580	U	NT		54.2	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	1310	J	NT		254	J	NT		2860		NT		33.2	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	1060	J	NT		92.3	J	NT		1850	J	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	1290	J	NT		101	J	NT		1780	J	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	559	J	NT		ND	U	NT		857	U	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	952	J	NT		76.4	J	NT		1830	J	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	142	U	NT		ND	U	NT		1250	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	1390	J	NT		374	J	NT		2480		NT		37.1	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	304		NT		ND		NT		493		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	140	U	NT		ND	U	NT		1320	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	255	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	4140		NT		306	J	NT		6560		NT		67.1	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	342	U	NT		116	U	NT		2120	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	557	J	NT		ND	U	NT		868	J	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		88.5	U	NT		2410	U	NT		575	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	1800		NT		879		NT		2050		NT		1450		NT		549		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	1800	J	NT		487	J	NT		9200	J	NT		222	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	3060		NT		1040		NT		2080		NT		2160		NT		1210		NT	
Pyrene	129-00-0	100000	2760		NT		324	J	NT		5400		NT		79.6	D	NT		ND	D	NT	
Terphenyl-d14		~	1850		NT		610		NT		1650		NT		1330		NT		940		NT	

TABLE 7
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPB2 (0-15 ft)

Sample ID			B2 (0-3) Comp		B2 (0-3) Grab		B2 (3-6) Comp		B2 (3-6) Grab		B2 (6-9) Comp		B2 (6-9) Grab		B2 (9-12) Comp		B2 (9-12) Grab		B2 (12-15) Comp		B2 (12-15) Grab	
York ID		NYSDEC Part 375	14K0839-01		14K0839-02		14K0839-03		14K0839-04		14K0839-05		14K0839-06		14K0839-07		14K0839-08		14K0839-09		14K0839-10	
Sampling Date		Unrestricted Use	11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	34.8	U	NT		39.0	U	NT		48.2		NT		45.7		NT		51.3		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	30.3	U	NT		50.3	U	NT		45.3		NT		16.8		NT		45.0		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Aluminum	7429-90-5	~	5210		NT		7020		NT		6380		NT		6180		NT		10200		NT	
Antimony	7440-36-0	~	3.74		NT		0.883	U	NT		2.65	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	19.4		NT		13.4		NT		25.4		NT		3.08		NT		2.09		NT	
Barium	7440-39-3	350	274		NT		47.4		NT		273		NT		41.3		NT		43.2		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	2.48	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	8780		NT		2860		NT		2460		NT		811		NT		557		NT	
Chromium	7440-47-3	~	21.3		NT		14.3		NT		16.5		NT		13.8		NT		17.9		NT	
Cobalt	7440-48-4	~	8.65		NT		8.48		NT		7.56		NT		7.35		NT		9.25		NT	
Copper	7440-50-8	50	148		NT		33.1		NT		33.6		NT		15.2		NT		15.4		NT	
Iron	7439-89-6	~	39200		NT		24500		NT		24200		NT		15000		NT		13800		NT	
Lead	7439-92-1	63	833		NT		49.1		NT		81.3		NT		8.94		NT		8.50		NT	
Magnesium	7439-95-4	~	3680		NT		2300		NT		2490		NT		2280		NT		2110		NT	
Manganese	7439-96-5	1600	381		NT		529		NT		393		NT		236		NT		92.5		NT	
Nickel	7440-02-0	30	19.8		NT		11.5		NT		11.5		NT		11.2		NT		15.2		NT	
Potassium	7440-09-7	~	1370		NT		1150		NT		1050		NT		1140		NT		1090		NT	
Selenium	7782-49-2	3.9	6.03		NT		3.65		NT		3.74		NT		1.85		NT		2.61		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	155		NT		80.7		NT		89.1		NT		73.5		NT		199		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	49.1		NT		21.7		NT		29.5		NT		21.2		NT		28.2		NT	
Zinc	7440-66-6	109	695		NT		54.9		NT		59.6		NT		31.4		NT		36.5		NT	
Metals, TCLP RCRA		mg/L	mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1			
Arsenic	7440-38-2	5	0.005	U	NT		ND	U	NT		0.005	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	100	0.942		NT		0.457		NT		0.497		NT		0.417		NT		0.476		NT	
Cadmium	7440-43-9	1	0.006	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	3.34		NT		0.071		NT		0.066		NT		0.015		NT		0.015		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Mercury	7439-97-6	0.18	0.341		NT		0.145		NT		0.0986		NT		ND		NT		ND		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	

TABLE 7
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPB2 (0-15 ft)

Sample ID		NYSDEC Part 375	B2 (0-3) Comp		B2 (0-3) Grab		B2 (3-6) Comp		B2 (3-6) Grab		B2 (6-9) Comp		B2 (6-9) Grab		B2 (9-12) Comp		B2 (9-12) Grab		B2 (12-15) Comp		B2 (12-15) Grab	
York ID		Unrestricted Use	14K0839-01		14K0839-02		14K0839-03		14K0839-04		14K0839-05		14K0839-06		14K0839-07		14K0839-08		14K0839-09		14K0839-10	
Sampling Date		Soil Cleanup	11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00		11/20/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Corrosivity			pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1			
pH		~	8.44		NT		7.49		NT		8.3		NT		7.64		NT		7.59		NT	
Ignitability			-				-				-				-				-			
Dilution Factor			1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-				-			
Dilution Factor			1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1			
Reactivity - Sulfide		~	24	U	NT		ND	U	NT		16	U	NT		16	U	NT		ND	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%			
Dilution Factor			1				1				1				1				1			
% Solids	solids	~	88.2		89		88.1		82		85.2		81.7		85.4		87.7		84.2		85	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 8
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC1 (0-18 ft)

Sample ID		NYSDEC Part 375	C1 (0-3) Comp		C1 (0-3) Grab		C1 (3-6) Comp		C1 (3-6) Grab		C1 (6-9) Comp		C1 (6-9) Grab		C1 (9-12) Comp		C1 (9-12) Grab		C1 (12-15) Comp		C1 (12-15) Grab		C1 (15-18) Comp		C1 (15-18) Grab	
York ID		Unrestricted Use	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Soil Cleanup	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		34	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		55.3		NT		48.1		NT		48.2		NT		56.1		NT		53.2		NT		49.0	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		18	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		160	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		390	J	NT		810	U	NT		1400	J	NT		14	U	NT		19	U	NT		50	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		5.8	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		370		NT		1700		NT		ND		NT		ND		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		2200	U	NT		ND	U	NT		ND	U
Methylcyclohexane		~	NT		8.1		NT		2600		NT		10000		NT		17		NT		27		NT		ND	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		ND	U	NT		890	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Bromofluorobenzene		~	NT		44.3	U	NT		44.2		NT		42.3		NT		47.0		NT		45.5		NT		47.8	
o-Xylene	95-47-6	~	NT		10	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		26	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		680	U	NT		1900	U	NT		ND	U	NT		ND	U	NT		ND	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		49.6	U	NT		48.1		NT		49.4		NT		68.3		NT		51.1		NT		52.2	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		36	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 8
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC1 (0-18 ft)

Sample ID			C1 (0-3) Comp		C1 (0-3) Grab		C1 (3-6) Comp		C1 (3-6) Grab		C1 (6-9) Comp		C1 (6-9) Grab		C1 (9-12) Comp		C1 (9-12) Grab		C1 (12-15) Comp		C1 (12-15) Grab		C1 (15-18) Comp		C1 (15-18) Grab	
York ID		NYSDEC Part 375	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	3640	U	NT		1840		NT		1970		NT		1610		NT		1810		NT		1460		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	3130	U	NT		2270		NT		1930		NT		846		NT		1710		NT		937		NT	
2-Fluorobiphenyl			2400	U	NT		1480		NT		1610		NT		1030		NT		1290		NT		453		NT	
2-Methylnaphthalene	91-57-6	~	ND	U	NT		81.8	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	ND	U	NT		71.8	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	ND	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	1120	U	NT		87.1	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	2810	J	NT		130	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	2630	J	NT		92.5	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	2370	J	NT		81.0	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	1290	J	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	2430	J	NT		92.5	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	3080	J	NT		125	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	1280	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	6850		NT		352	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	1240	J	NT		ND	U	NT		ND	J	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	2390		NT		1520		NT		1510		NT		455		NT		1220		NT		470		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	4660	J	NT		413	J	NT		9200	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		2380	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	3490		NT		ND		NT		2490		NT		1460		NT		2120		NT		1450		NT	
Pyrene	129-00-0	100000	5520		NT		302	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Terphenyl-d14		~	2480		NT		1600		NT		1810		NT		1730		NT		1660		NT		1680		NT	

TABLE 8
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC1 (0-18 ft)

Sample ID		NYSDEC Part 375	C1 (0-3) Comp		C1 (0-3) Grab		C1 (3-6) Comp		C1 (3-6) Grab		C1 (6-9) Comp		C1 (6-9) Grab		C1 (9-12) Comp		C1 (9-12) Grab		C1 (12-15) Comp		C1 (12-15) Grab		C1 (15-18) Comp		C1 (15-18) Grab	
York ID		Unrestricted Use	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Soil Cleanup	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	34.5	U	NT		43.3	U	NT		55.1		NT		54.5		NT		37.5		NT		27.6		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	25.5	U	NT		38.1	U	NT		49.3		NT		59.3		NT		35.7		NT		40.1		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Aluminum	7429-90-5	~	4640		NT		7730		NT		7540		NT		8260		NT		6460		NT		6340		NT	
Antimony	7440-36-0	~	1.31		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	49.4		NT		3.09		NT		2.34		NT		2.7		NT		2.08		NT		1.70		NT	
Barium	7440-39-3	350	1260		NT		59.1		NT		52.5		NT		53.8		NT		43.9		NT		44.8		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	0.700	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	9000		NT		1080		NT		1280		NT		1260		NT		1120		NT		1240		NT	
Chromium	7440-47-3	~	25.6		NT		14.8		NT		14.3		NT		16.7		NT		15.7		NT		14.9		NT	
Cobalt	7440-48-4	~	7.96		NT		8.66		NT		8.04		NT		8.48		NT		7.19		NT		7.56		NT	
Copper	7440-50-8	50	102		NT		17.0		NT		15.3		NT		17.4		NT		17.4		NT		16.3		NT	
Iron	7439-89-6	~	26400		NT		21300		NT		18800		NT		20700		NT		17500		NT		19300		NT	
Lead	7439-92-1	63	641		NT		13.7		NT		12.7		NT		26.2		NT		6.02		NT		6.37		NT	
Magnesium	7439-95-4	~	2140		NT		2400		NT		2250		NT		2100		NT		2240		NT		2280		NT	
Manganese	7439-96-5	1600	381		NT		205		NT		328		NT		346		NT		206		NT		292		NT	
Nickel	7440-02-0	30	16.2		NT		13.2		NT		12.7		NT		12.9		NT		13.2		NT		12.2		NT	
Potassium	7440-09-7	~	869		NT		1110		NT		1120		NT		913		NT		1240		NT		1230		NT	
Selenium	7782-49-2	3.9	5.08		NT		3.56		NT		3.70		NT		3.53		NT		3.11		NT		3.35		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	245		NT		112		NT		67.6		NT		92.6		NT		58.5		NT		66.1		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	24.2		NT		25.1		NT		23.8		NT		28.1		NT		26.7		NT		26.2		NT	
Zinc	7440-66-6	109	963		NT		44.8		NT		34.5		NT		39.5		NT		131		NT		33.5		NT	
Metals, TCLP RCRA		mg/L	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Arsenic	7440-38-2	5	0.013	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	100	2.42		NT		0.473		NT		0.506		NT		0.511		NT		0.401		NT		0.53		NT	
Cadmium	7440-43-9	1	0.010	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		0.006	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	1.39		NT		0.047		NT		0.031		NT		0.041		NT		0.011		NT		0.007		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	1.05		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				2			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Corrosivity			pH units				pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1				1			
pH		~	7.52		NT		8.05		NT		7.74		NT		7.67		NT		7.6		NT		7.25		NT	

TABLE 8
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC1 (0-18 ft)

Sample ID		NYSDEC Part 375	C1 (0-3) Comp		C1 (0-3) Grab		C1 (3-6) Comp		C1 (3-6) Grab		C1 (6-9) Comp		C1 (6-9) Grab		C1 (9-12) Comp		C1 (9-12) Grab		C1 (12-15) Comp		C1 (12-15) Grab		C1 (15-18) Comp		C1 (15-18) Grab	
York ID		Unrestricted Use	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Soil Cleanup	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Ignitability			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	
Paint Filter Test			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Sulfide		~	240	U	NT		ND	U	NT		16	U	NT		16	U	NT		24	U	NT		ND	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%				%			
Dilution Factor			1				1				1				1				1				1			
% Solids	solids	~	87.5		86.9		87.3		88.1		84.5		85.4		82.5		85.5		84.4		82.9		85.4		87	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 9
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC2 (0-18 ft)

Sample ID			C2 (0-3) Comp		C2 (0-3) Grab		C2 (3-6) Comp		C2 (3-6) Grab		C2 (6-9) Comp		C2 (6-9) Grab		C2 (9-12) Comp		C2 (9-12) Grab		C2 (12-15) Comp		C2 (12-15) Grab		C2 (15-18) Comp		C2 (15-18) Grab	
York ID		NYSDEC Part 375	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**	**Objectives**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		ND	U	NT		69	U	NT		ND	U	NT		2000	U	NT		ND	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		52.4		NT		55.5		NT		47.4		NT		48.4		NT		47.6		NT		49.1	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		11	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		12	J	NT		48	U	NT		ND	J	NT		ND	U	NT		ND	U	NT		27	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		ND		NT		1100		NT		500		NT		560		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		17	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		81	U	NT		470	U	NT		690	U	NT		ND	U	NT		ND	U
Methylcyclohexane		~	NT		ND		NT		150		NT		13000		NT		6300		NT		7200		NT		43	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		850	U	NT		540	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		67	U	NT		530	U	NT		1000	U	NT		ND	U	NT		ND	U
p-Bromofluorobenzene		~	NT		51.2	U	NT		44.6		NT		45.2		NT		47.0		NT		43.7		NT		48.8	
o-Xylene	95-47-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		23	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		38	U	NT		1200	U	NT		650	U	NT		560	U	NT		ND	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		6.4	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		50.5	U	NT		52.5		NT		56.6		NT		56.0		NT		54.9		NT		51.0	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		23	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 9
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC2 (0-18 ft)

Sample ID			C2 (0-3) Comp		C2 (0-3) Grab		C2 (3-6) Comp		C2 (3-6) Grab		C2 (6-9) Comp		C2 (6-9) Grab		C2 (9-12) Comp		C2 (9-12) Grab		C2 (12-15) Comp		C2 (12-15) Grab		C2 (15-18) Comp		C2 (15-18) Grab	
York ID		NYSDEC Part 375	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	4700	U	NT		1510		NT		3930		NT		1760		NT		ND		NT		1830		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	3850	U	NT		1110		NT		1250		NT		1040		NT		4190		NT		1050		NT	
2-Fluorobiphenyl			2780	U	NT		1530		NT		1610		NT		1740		NT		2920		NT		1800		NT	
2-Methylnaphthalene	91-57-6	~	220	U	NT		ND	U	NT		ND	U	NT		610	U	NT		ND	U	NT		ND	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	365	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	241	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	723	U	NT		ND	U	NT		176	U	NT		112	JD	NT		132	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	1760	J	NT		ND	J	NT		53.8		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	1170	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	1220	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	705	J	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	1190	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		270	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	289	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	1650	J	NT		ND	J	NT		72.9		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	368		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	410	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	3340		NT		48.1	J	NT		285		NT		85.3	D	NT		130	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	322	U	NT		ND	U	NT		ND	U	NT		114	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	660	J	NT		ND	U	NT		ND	J	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		149	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		57.1	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	4120		NT		712		NT		1980		NT		1190		NT		4130		NT		658		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	2600	J	NT		ND	J	NT		302	J	NT		371	D	NT		207	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	4570		NT		2250		NT		1720		NT		2380		NT		4440		NT		2560		NT	
Pyrene	129-00-0	100000	2900		NT		51.4	J	NT		92.5		NT		119	D	NT		122	D	NT		ND	D	NT	
Terphenyl-d14		~	3210		NT		1410		NT		1160		NT		1590		NT		2160		NT		1690		NT	

TABLE 9
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC2 (0-18 ft)

Sample ID			C2 (0-3) Comp		C2 (0-3) Grab		C2 (3-6) Comp		C2 (3-6) Grab		C2 (6-9) Comp		C2 (6-9) Grab		C2 (9-12) Comp		C2 (9-12) Grab		C2 (12-15) Comp		C2 (12-15) Grab		C2 (15-18) Comp		C2 (15-18) Grab	
York ID		NYSDEC Part 375	14K0840-01		14K0840-02		14K0840-03		14K0840-04		14K0840-05		14K0840-06		14K0840-07		14K0840-08		14K0840-09		14K0840-10		14K0840-11		14K0840-12	
Sampling Date		Unrestricted Use	11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00		11/21/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO	~		NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				15				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	71.1	U	NT		42.6	U	NT		41.9		NT		50.1		NT		65.4		NT		88.4		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	48.7	U	NT		41.7	U	NT		34.4		NT		41.6		NT		53.3		NT		90.8		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	0.0327	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	0.0327	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Aluminum	7429-90-5	~	6660		NT		6500		NT		8150		NT		6990		NT		5350		NT		8280		NT	
Antimony	7440-36-0	~	0.843		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	9.43		NT		2.07		NT		3.16		NT		2.82		NT		2.77		NT		1.74		NT	
Barium	7440-39-3	350	165		NT		48.5		NT		38.0		NT		48.0		NT		42.5		NT		34.2		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	12400		NT		1390		NT		1550		NT		1760		NT		1420		NT		860		NT	
Chromium	7440-47-3	~	15.6		NT		14.7		NT		16.1		NT		11.5		NT		13.6		NT		11.7		NT	
Cobalt	7440-48-4	~	8.49		NT		7.11		NT		7.00		NT		6.35		NT		6.41		NT		5.54		NT	
Copper	7440-50-8	50	283		NT		33.4		NT		24.8		NT		62.9		NT		17.9		NT		12.7		NT	
Iron	7439-89-6	~	20700		NT		16400		NT		18600		NT		14400		NT		16000		NT		13900		NT	
Lead	7439-92-1	63	332		NT		26.2		NT		20.4		NT		41.4		NT		16.1		NT		10.2		NT	
Magnesium	7439-95-4	~	5380		NT		2290		NT		2850		NT		2320		NT		1810		NT		2720		NT	
Manganese	7439-96-5	1600	1270		NT		218		NT		240		NT		340		NT		319		NT		134		NT	
Nickel	7440-02-0	30	17.5		NT		10.6		NT		14.2		NT		12.1		NT		9.99		NT		14.0		NT	
Potassium	7440-09-7	~	1050		NT		1390		NT		911		NT		841		NT		930		NT		825		NT	
Selenium	7782-49-2	3.9	3.19		NT		3.39		NT		2.64		NT		2.23		NT		1.93		NT		1.44		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	214		NT		63.6		NT		51.0		NT		47.6		NT		51.1		NT		78.2		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	29.3		NT		25.6		NT		20.0		NT		21.5		NT		22.9		NT		15.2		NT	
Zinc	7440-66-6	109	323		NT		44.0		NT		36.6		NT		36.2		NT		32.6		NT		31.3		NT	
Metals, TCLP RCRA		mg/L	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Arsenic	7440-38-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	100	0.791		NT		0.507		NT		0.425		NT		0.376		NT		0.444		NT		0.256		NT	
Cadmium	7440-43-9	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	0.098		NT		0.028		NT		0.026		NT		0.041		NT		0.016		NT		0.01		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	0.587		NT		0.0474		NT		ND		NT		0.0841		NT		0.0833		NT		ND		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Corrosivity			pH units				pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1				1			
pH	~		8.8		NT		7.8		NT		7.68		NT		7.7		NT		7.66		NT		7.32		NT	
Ignitability			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	

TABLE 9
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC2 (0-18 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	C2 (0-3) Comp 14K0840-01 11/21/2014 15:00 Soil		C2 (0-3) Grab 14K0840-02 11/21/2014 15:00 Soil		C2 (3-6) Comp 14K0840-03 11/21/2014 15:00 Soil		C2 (3-6) Grab 14K0840-04 11/21/2014 15:00 Soil		C2 (6-9) Comp 14K0840-05 11/21/2014 15:00 Soil		C2 (6-9) Grab 14K0840-06 11/21/2014 15:00 Soil		C2 (9-12) Comp 14K0840-07 11/21/2014 15:00 Soil		C2 (9-12) Grab 14K0840-08 11/21/2014 15:00 Soil		C2 (12-15) Comp 14K0840-09 11/21/2014 15:00 Soil		C2 (12-15) Grab 14K0840-10 11/21/2014 15:00 Soil		C2 (15-18) Comp 14K0840-11 11/21/2014 15:00 Soil		C2 (15-18) Grab 14K0840-12 11/21/2014 15:00 Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Paint Filter Test			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Sulfide		~	16	U	NT		ND	U	NT		16	U	NT		16	U	NT		32	U	NT		24	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%				%			
Dilution Factor			1				1				1				1				1				1			
% Solids	solids	~	82.9		90.5		90.5		88.9		89.2		88.9		83.2		79.6		87.9		87.5		78.4		79.6	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 10
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC3 (0-18 ft)

Sample ID			C3 (0-3) Comp		C3 (0-3) Grab		C3 (3-6) Comp		C3 (3-6) Grab		C3 (6-9) Comp		C3 (6-9) Grab		C3 (9-12) Comp		C3 (9-12) Grab		C3 (12-15) Comp		C3 (12-15) Grab		C3 (15-18) Comp		C3 (15-18) Grab	
York ID		NYSDEC Part 375	14K0888-01		14K0888-02		14K0888-03		14K0888-04		14K0888-05		14K0888-06		14K0888-07		14K0888-08		14K0888-09		14K0888-10		14K0888-11		14K0888-12	
Sampling Date		Unrestricted Use	11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		53.3		NT		52.7		NT		53.7		NT		55.0		NT		50.6		NT		51.2	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		15	J	NT		13	U	NT		6700	J	NT		3200	U	NT		ND	U	NT		ND	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		ND		NT		ND		NT		ND		NT		2200		NT		540	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		9200	U	NT		1300	U	NT		8900	U	NT		670	U
Methylcyclohexane		~	NT		ND		NT		ND		NT		10000		NT		ND		NT		19000		NT		1200	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		14000	U	NT		ND	U	NT		11000	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		ND	U	NT		19000	U	NT		2400	U	NT		16000	U	NT		1300	U
p-Bromofluorobenzene		~	NT		45.0	U	NT		44.1		NT		39.9		NT		42.3		NT		51.6		NT		49.7	
o-Xylene	95-47-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		680	U	NT		16000	U	NT		ND	U	NT		14000	U	NT		1000	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		1200	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		50.6	U	NT		49.7		NT		51.2		NT		50.4		NT		64.9		NT		51.6	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 10
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC3 (0-18 ft)

Sample ID			C3 (0-3) Comp		C3 (0-3) Grab		C3 (3-6) Comp		C3 (3-6) Grab		C3 (6-9) Comp		C3 (6-9) Grab		C3 (9-12) Comp		C3 (9-12) Grab		C3 (12-15) Comp		C3 (12-15) Grab		C3 (15-18) Comp		C3 (15-18) Grab	
York ID		NYSDEC Part 375	14K0888-01		14K0888-02		14K0888-03		14K0888-04		14K0888-05		14K0888-06		14K0888-07		14K0888-08		14K0888-09		14K0888-10		14K0888-11		14K0888-12	
Sampling Date		Unrestricted Use	11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	2010	U	NT		1880		NT		3810		NT		2180		NT		2160		NT		2100		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	2350	U	NT		2500		NT		5810		NT		3270		NT		3330		NT		3160		NT	
2-Fluorobiphenyl			1930	U	NT		1780		NT		3060		NT		2100		NT		2120		NT		1970		NT	
2-Methylnaphthalene	91-57-6	~	ND	U	NT		ND	U	NT		1230	U	NT		318	U	NT		365	U	NT		63.7	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	157	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	ND	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	426	U	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	1000	J	NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	559	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	496	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	247	J	NT		ND	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	630	J	NT		ND	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	156	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	1120	J	NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	99.9		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	2340		NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	131	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	256	J	NT		ND	U	NT		ND	J	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	ND	U	NT		ND	U	NT		1700	U	NT		ND	U	NT		478	U	NT		99.2	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		54.5	U	NT	
Nitrobenzene-d5		~	1640		NT		1640		NT		7980		NT		2640		NT		2970		NT		2270		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	1900	J	NT		ND	J	NT		9200	J	NT		70.8	D	NT		ND	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	2740		NT		2670		NT		6400		NT		3170		NT		3160		NT		3160		NT	
Pyrene	129-00-0	100000	2020		NT		ND	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Terphenyl-d14		~	1730		NT		1580		NT		2770		NT		1870		NT		1880		NT		1790		NT	

TABLE 10
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC3 (0-18 ft)

Sample ID			C3 (0-3) Comp		C3 (0-3) Grab		C3 (3-6) Comp		C3 (3-6) Grab		C3 (6-9) Comp		C3 (6-9) Grab		C3 (9-12) Comp		C3 (9-12) Grab		C3 (12-15) Comp		C3 (12-15) Grab		C3 (15-18) Comp		C3 (15-18) Grab	
York ID		NYSDEC Part 375	14K0888-01		14K0888-02		14K0888-03		14K0888-04		14K0888-05		14K0888-06		14K0888-07		14K0888-08		14K0888-09		14K0888-10		14K0888-11		14K0888-12	
Sampling Date		Unrestricted Use	11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	76.0	U	NT		73.3	U	NT		49.8		NT		65.9		NT		84.0		NT		47.2		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	77.9	U	NT		74.3	U	NT		43.8		NT		60.6		NT		69.2		NT		57.8		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	0.312	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	0.312	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Aluminum	7429-90-5	~	6200		NT		4160		NT		13400		NT		12700		NT		8430		NT		9270		NT	
Antimony	7440-36-0	~	1.57		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	9.06		NT		2.69		NT		4.61		NT		3.90		NT		3.45		NT		2.78		NT	
Barium	7440-39-3	350	195		NT		26.7		NT		35.0		NT		36.5		NT		20.8		NT		24.8		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	8450		NT		971		NT		1220		NT		674		NT		529		NT		712		NT	
Chromium	7440-47-3	~	16.1		NT		9.81		NT		20.3		NT		17.0		NT		9.92		NT		12.0		NT	
Cobalt	7440-48-4	~	14.1		NT		3.49		NT		10.2		NT		8.11		NT		6.94		NT		8.49		NT	
Copper	7440-50-8	50	271		NT		9.55		NT		27.6		NT		16.5		NT		14.6		NT		16.5		NT	
Iron	7439-89-6	~	19000		NT		9460		NT		24300		NT		21300		NT		17600		NT		19700		NT	
Lead	7439-92-1	63	571		NT		21.0		NT		8.87		NT		8.25		NT		6.11		NT		6.30		NT	
Magnesium	7439-95-4	~	1930		NT		1060		NT		4040		NT		3480		NT		3240		NT		3310		NT	
Manganese	7439-96-5	1600	1310		NT		154		NT		967		NT		171		NT		173		NT		170		NT	
Nickel	7440-02-0	30	17.8		NT		6.99		NT		22.6		NT		19.3		NT		15.4		NT		17.9		NT	
Potassium	7440-09-7	~	821		NT		532		NT		1460		NT		1140		NT		869		NT		959		NT	
Selenium	7782-49-2	3.9	3.93		NT		2.11		NT		5.77		NT		5.40		NT		4.84		NT		4.61		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	294		NT		40.5		NT		108		NT		78.2		NT		98.3		NT		187		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	30.1		NT		11.8		NT		25.7		NT		22.4		NT		14.8		NT		16.5		NT	
Zinc	7440-66-6	109	244		NT		21.0		NT		45.3		NT		42.5		NT		34.9		NT		38.7		NT	
Metals, TCLP RCRA		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Arsenic	7440-38-2	13	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	350	0.679		NT		0.288		NT		0.235		NT		0.222		NT		0.220		NT		0.228		NT	
Cadmium	7440-43-9	2.5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	~	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT		0.006	U	NT		ND	U	NT	
Lead	7439-92-1	63	0.326		NT		0.041		NT		0.024		NT		0.019		NT		0.021		NT		0.015		NT	
Selenium	7782-49-2	3.9	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	1.29		NT		0.0465		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Corrosivity			pH units				pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1				1			
pH		~	9.14		NT		8.4		NT		7.86		NT		7.54		NT		7.25		NT		6.82		NT	
Ignitability			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	

TABLE 10
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPC3 (0-18 ft)

Sample ID		NYSDEC Part 375	C3 (0-3) Comp		C3 (0-3) Grab		C3 (3-6) Comp		C3 (3-6) Grab		C3 (6-9) Comp		C3 (6-9) Grab		C3 (9-12) Comp		C3 (9-12) Grab		C3 (12-15) Comp		C3 (12-15) Grab		C3 (15-18) Comp		C3 (15-18) Grab	
York ID		Unrestricted Use	14K0888-01		14K0888-02		14K0888-03		14K0888-04		14K0888-05		14K0888-06		14K0888-07		14K0888-08		14K0888-09		14K0888-10		14K0888-11		14K0888-12	
Sampling Date		Soil Cleanup	11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00		11/24/2014 15:00	
Client Matrix		Objectives	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Paint Filter Test			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Sulfide		~	64	U	NT		32	U	NT		48	U	NT		56	U	NT		56	U	NT		208	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%				%			
Dilution Factor			1				1				1				1				1				1			
% Solids	solids	~	87.1		85.3		90.3		81.8		83		82.7		77.6		79.3		79		81.4		81.7		76.9	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 11
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPD1 (0-18 ft)

Sample ID			D1 (0-3) Comp		D1 (0-3) Grab		D1 (3-6) Comp		D1 (3-6) Grab		D1 (6-9) Comp		D1 (6-9) Grab		D1 (9-12) Comp		D1 (9-12) Grab		D1 (12-15) Comp		D1 (12-15) Grab		D1 (15-18) Comp		D1 (15-18) Grab	
York ID		NYSDEC Part 375	14K0925-01		14K0925-02		14K0925-03		14K0925-04		14K0925-05		14K0925-06		14K0925-07		14K0925-08		14K0925-09		14K0925-10		14K0925-11		14K0925-12	
Sampling Date		Unrestricted Use	11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-GRO (C5-C10)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			100				100				100				100				100				100			
Total Petroleum Hydrocarbons-GRO		~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Volatile Organics, NJDEP/TCL/Part 375 List		µg/Kg			µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg	
Dilution Factor					1				1				1				1				1				1	
1,1,1,2-Tetrachloroethane	630-20-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,1-Trichloroethane	71-55-6	680	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2,2-Tetrachloroethane	79-34-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1,2-Trichloroethane	79-00-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethane	75-34-3	270	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,1-Dichloroethylene	75-35-4	330	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trichlorobenzene	120-82-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2,4-Trimethylbenzene	95-63-6	3600	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromo-3-chloropropane	96-12-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dibromoethane	106-93-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichlorobenzene	95-50-1	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane	107-06-2	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,2-Dichloroethane-d4		~	NT		54.3		NT		50.9		NT		53.0		NT		51.0		NT		49.2		NT		51.6	
1,2-Dichloropropane	78-87-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3,5-Trimethylbenzene	108-67-8	8400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,3-Dichlorobenzene	541-73-1	2400	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dichlorobenzene	106-46-7	1800	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
1,4-Dioxane	123-91-1	100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Butanone	78-93-3	120	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
2-Hexanone	591-78-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
4-Methyl-2-pentanone	108-10-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acetone	67-64-1	50	NT		ND	J	NT		ND	U	NT		ND	J	NT		26	U	NT		23	U	NT		25	U
Acrolein	107-02-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Acrylonitrile	107-13-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Benzene	71-43-2	60	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromodichloromethane	75-27-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromoform	75-25-2	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Bromomethane	74-83-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon disulfide	75-15-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Carbon tetrachloride	56-23-5	760	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chlorobenzene	108-90-7	1100	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroethane	75-00-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloroform	67-66-3	370	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Chloromethane	74-87-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,2-Dichloroethylene	156-59-2	250	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
cis-1,3-Dichloropropylene	10061-01-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Cyclohexane		~	NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND	
Dibromochloromethane	124-48-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dibromomethane	74-95-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Dichlorodifluoromethane	75-71-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Ethyl Benzene	100-41-4	1000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Hexachlorobutadiene	87-68-3	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Isopropylbenzene	98-82-8	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylcyclohexane		~	NT		ND		NT		20		NT		ND		NT		ND		NT		ND		NT		ND	
Methyl acetate	79-20-9	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methyl tert-butyl ether (MTBE)	1634-04-4	930	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Methylene chloride	75-09-2	50	NT		21	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J	NT		ND	J
n-Butylbenzene	104-51-8	12000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
n-Propylbenzene	103-65-1	3900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		16000	U	NT		1300	U
p-Bromofluorobenzene		~	NT		80.1	U	NT		54.9		NT		49.0		NT		51.1		NT		50.6		NT		48.1	
o-Xylene	95-47-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p- & m- Xylenes	179601-23-1	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
p-Isopropyltoluene	99-87-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
sec-Butylbenzene	135-98-8	11000	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Styrene	100-42-5	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butyl alcohol (TBA)	75-65-0	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
tert-Butylbenzene	98-06-6	5900	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Tetrachloroethylene	127-18-4	1300	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene	108-88-3	700	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Toluene-d8		~	NT		64.6	U	NT		58.6		NT		51.9		NT		49.7		NT		51.1		NT		50.0	
trans-1,2-Dichloroethylene	156-60-5	190	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
trans-1,3-Dichloropropylene	10061-02-6	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichloroethylene	79-01-6	470	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Trichlorofluoromethane	75-69-4	~	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Vinyl Chloride	75-01-4	20	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U
Xylenes, Total	1330-20-7	260	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U

TABLE 11
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPD1 (0-18 ft)

Sample ID			D1 (0-3) Comp		D1 (0-3) Grab		D1 (3-6) Comp		D1 (3-6) Grab		D1 (6-9) Comp		D1 (6-9) Grab		D1 (9-12) Comp		D1 (9-12) Grab		D1 (12-15) Comp		D1 (12-15) Grab		D1 (15-18) Comp		D1 (15-18) Grab	
York ID		NYSDEC Part 375	14K0925-01		14K0925-02		14K0925-03		14K0925-04		14K0925-05		14K0925-06		14K0925-07		14K0925-08		14K0925-09		14K0925-10		14K0925-11		14K0925-12	
Sampling Date		Unrestricted Use	11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
1,1'-Biphenyl	92-52-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2,4-Trichlorobenzene	120-82-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Dichlorobenzene	95-50-1	1100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,3-Dichlorobenzene	541-73-1	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
1,4-Dichlorobenzene	106-46-7	1800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,5-Trichlorophenol	95-95-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Trichlorophenol	88-06-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4,6-Tribromophenol		~	1650	U	NT		1410		NT		132		NT		1150		NT		1210		NT		3470		NT	
2,4-Dichlorophenol	120-83-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dimethylphenol	105-67-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrophenol	51-28-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,4-Dinitrotoluene	121-14-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2,6-Dinitrotoluene	606-20-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chloronaphthalene	91-58-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Chlorophenol	95-57-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Fluorophenol		~	729	U	NT		1010		NT		328		NT		625		NT		655		NT		1490		NT	
2-Fluorobiphenyl			1460	U	NT		1330		NT		850		NT		988		NT		918		NT		2060		NT	
2-Methylnaphthalene	91-57-6	~	203	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Methylphenol	95-48-7	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitroaniline	88-74-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
2-Nitrophenol	88-75-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3- & 4-Methylphenols	65794-96-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3,3'-Dichlorobenzidine	91-94-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
3-Nitroaniline	99-09-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chloroaniline	106-47-8	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitroaniline	100-01-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4-Nitrophenol	100-02-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthene	83-32-9	20000	ND	U	NT		157	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acenaphthylene	208-96-8	100000	ND	J	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Acetophenone	98-86-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Anthracene	120-12-7	100000	314	U	NT		461	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Atrazine	1912-24-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzaldehyde	100-52-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzidine	92-87-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzo(a)anthracene	56-55-3	1000	574	J	NT		1010	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(a)pyrene	50-32-8	1000	299	J	NT		584	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(b)fluoranthene	205-99-2	1000	303	J	NT		578	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzo(g,h,i)perylene	191-24-2	100000	281	J	NT		295	U	NT		ND	U	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Benzo(k)fluoranthene	207-08-9	800	351	J	NT		625	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Benzoic acid	65-85-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Benzyl butyl phthalate	85-68-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroethyl)ether	111-44-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Caprolactam	105-60-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Carbazole	86-74-8	~	136	U	NT		185	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chrysene	218-01-9	1000	1080	J	NT		1240	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Cyclohexane		~	ND		NT		ND		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzo(a.h)anthracene		~	ND		NT		154		NT		ND		NT		ND		NT		ND		NT		ND		NT	
Dibenzofuran	132-64-9	7000	ND	U	NT		142	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Diethyl phthalate	84-66-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dimethyl phthalate	131-11-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-butyl phthalate	84-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Di-n-octyl phthalate	117-84-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Fluoranthene	206-44-0	100000	1930		NT		2360	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Fluorene	86-73-7	30000	ND	U	NT		168	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobenzene	118-74-1	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorobutadiene	87-68-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachlorocyclopentadiene	77-47-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Hexachloroethane	67-72-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	500	267	J	NT		312	U	NT		ND	J	NT		ND	JD	NT		ND	JD	NT		ND	JD	NT	
Isophorone	78-59-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Naphthalene	91-20-3	12000	227	U	NT		185	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene	98-95-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Nitrobenzene-d5		~	783		NT		760		NT		513		NT		360		NT		195		NT		705		NT	
N-Nitrosodimethylamine	62-75-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
N-Nitrosodiphenylamine	86-30-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Pentachlorophenol	87-86-5	800	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenanthrene	85-01-8	100000	1580	J	NT		1900	J	NT		ND	J	NT		ND	D	NT		ND	D	NT		ND	D	NT	
Phenol	108-95-2	330	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Phenol-d5		~	2200		NT		2020		NT		1290		NT		1640		NT		1550		NT		3060		NT	
Pyrene	129-00-0	100000	1810		NT		2260	J	NT		ND		NT		ND	D	NT		ND	D	NT		ND	D	NT	
Terphenyl-d14		~	1470		NT		1680		NT		1370		NT		1570		NT		1560		NT		2950		NT	

TABLE 11
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPD1 (0-18 ft)

Sample ID			D1 (0-3) Comp		D1 (0-3) Grab		D1 (3-6) Comp		D1 (3-6) Grab		D1 (6-9) Comp		D1 (6-9) Grab		D1 (9-12) Comp		D1 (9-12) Grab		D1 (12-15) Comp		D1 (12-15) Grab		D1 (15-18) Comp		D1 (15-18) Grab	
York ID		NYSDEC Part 375	14K0925-01		14K0925-02		14K0925-03		14K0925-04		14K0925-05		14K0925-06		14K0925-07		14K0925-08		14K0925-09		14K0925-10		14K0925-11		14K0925-12	
Sampling Date		Unrestricted Use	11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00		11/25/2014 15:00	
Client Matrix		Soil Cleanup	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	Objectives	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Petroleum Hydrocarbons-DRO (C10-C28)			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Total Petroleum Hydrocarbons-DRO		~	NT		NT		NT		NT		NT		NT		NT	U	NT		NT	U	NT		NT	U	NT	
Herbicides, NJDEP/TCL/Part 375 List		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
2,4,5-T	93-76-5	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4,5-TP (Silvex)	93-72-1	3.8	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
2,4-D	94-75-7	~	NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT		NT	U	NT	
Pesticides, NJDEP/TCL/Part 375 List		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			5				5				5				5				5				5			
4,4'-DDD	72-54-8	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDE	72-55-9	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
4,4'-DDT	50-29-3	3.3	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aldrin	309-00-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-BHC	319-84-6	20	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
alpha-Chlordane	5103-71-9	94	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
beta-BHC	319-85-7	36	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chlordane, total	57-74-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Decaochlordbiphenyl		~	41.6	U	NT		47.2	U	NT		49.7		NT		54.0		NT		55.1		NT		55.5		NT	
delta-BHC	319-86-8	40	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Dieldrin	60-57-1	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan I	959-98-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan II	33213-65-9	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endosulfan sulfate	1031-07-8	2400	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin	72-20-8	14	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin aldehyde	7421-93-4	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Endrin ketone	53494-70-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-BHC (Lindane)	58-89-9	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
gamma-Chlordane	5103-74-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor	76-44-8	42	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Heptachlor epoxide	1024-57-3	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Methoxychlor	72-43-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Toxaphene	8001-35-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Tetrachloro-m-xylene		~	44.6	U	NT		52.1	U	NT		56.0		NT		63.3		NT		57.8		NT		63.3		NT	
Polychlorinated Biphenyls (PCB)		µg/Kg	µg/kg				µg/kg				µg/kg				µg/kg				µg/kg				µg/kg			
Dilution Factor			1				1				1				1				1				1			
Aroclor 1016	12674-11-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1221	11104-28-2	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1232	11141-16-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1242	53469-21-9	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1248	12672-29-6	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1254	11097-69-1	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Aroclor 1260	11096-82-5	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Total PCBs	1336-36-3	100	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Metals, Target Analyte		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Aluminum	7429-90-5	~	4370		NT		5650		NT		10800		NT		8930		NT		3570		NT		13000		NT	
Antimony	7440-36-0	~	1.90		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Arsenic	7440-38-2	13	18.6		NT		8.95		NT		4.68		NT		3.34		NT		1.54		NT		3.48		NT	
Barium	7440-39-3	350	164		NT		133		NT		93.2		NT		42.2		NT		23.7		NT		56.6		NT	
Beryllium	7440-41-7	7.2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Cadmium	7440-43-9	2.5	2.21	U	NT		0.628	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Calcium	7440-70-2	~	37200		NT		76800		NT		3920		NT		3150		NT		2570		NT		2690		NT	
Chromium	7440-47-3	~	16.8		NT		11.5		NT		15.8		NT		13.9		NT		10.1		NT		14.9		NT	
Cobalt	7440-48-4	~	6.06		NT		5.06		NT		7.64		NT		6.99		NT		4.49		NT		7.66		NT	
Copper	7440-50-8	50	181		NT		70.1		NT		27.2		NT		14.7		NT		6.79		NT		11.0		NT	
Iron	7439-89-6	~	24200		NT		11900		NT		17400		NT		17200		NT		11900		NT		15400		NT	
Lead	7439-92-1	63	347		NT		212		NT		138		NT		9.73		NT		2.93		NT		11.1		NT	
Magnesium	7439-95-4	~	2040		NT		1870		NT		2570		NT		2350		NT		1140		NT		2220		NT	
Manganese	7439-96-5	1600	207		NT		184		NT		336		NT		263		NT		113		NT		265		NT	
Nickel	7440-02-0	30	22.2		NT		14.0		NT		15.0		NT		14.5		NT		8.46		NT		15.3		NT	
Potassium	7440-09-7	~	539		NT		976		NT		1070		NT		1170		NT		625		NT		610		NT	
Selenium	7782-49-2	3.9	6.80		NT		4.01		NT		4.43		NT		4.94		NT		2.94		NT		5.45		NT	
Silver	7440-22-4	2	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Sodium	7440-23-5	~	298		NT		617		NT		205		NT		139		NT		81.1		NT		140		NT	
Thallium	7440-28-0	~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Vanadium	7440-62-2	~	32.8		NT		18.6		NT		23.9		NT		26.7		NT		28.3		NT		20.3		NT	
Zinc	7440-66-6	109	615		NT		329		NT		41.0		NT		31.4		NT		17.3		NT		32.9		NT	
Metals, TCLP RCRA		mg/L	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Arsenic	7440-38-2	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Barium	7440-39-3	100	0.487		NT		0.416		NT		0.501		NT		0.365		NT		0.482		NT		0.186		NT	
Cadmium	7440-43-9	1	0.008	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Chromium	7440-47-3	5	ND		NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Lead	7439-92-1	5	0.021		NT		0.017		NT		0.005		NT		0.006		NT		0.015		NT		0.006		NT	
Selenium	7782-49-2	1	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Silver	7440-22-4	5	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Mercury by 7473		mg/Kg	mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	0.478		NT		0.219		NT		0.116		NT		ND		NT		ND		NT		0.0455		NT	
Mercury, TCLP		mg/Kg	mg/L				mg/L				mg/L				mg/L				mg/L				mg/L			
Dilution Factor			1				1				1				1				1				1			
Mercury	7439-97-6	0.18	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Corrosivity			pH units				pH units				pH units				pH units				pH units				pH units			
Dilution Factor			1				1				1				1				1				1			
pH		~	7.66		NT		9.11		NT		12		NT		9.54		NT		9.01		NT		7.81		NT	
Ignitability			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Ignitability		~	Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT		Non-Ignit.		NT	

TABLE 11
25 Kent Avenue
Brooklyn, NY
Waste Characterization Results, TPD1 (0-18 ft)

Sample ID York ID Sampling Date Client Matrix		NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	D1 (0-3) Comp 14K0925-01 11/25/2014 15:00 Soil		D1 (0-3) Grab 14K0925-02 11/25/2014 15:00 Soil		D1 (3-6) Comp 14K0925-03 11/25/2014 15:00 Soil		D1 (3-6) Grab 14K0925-04 11/25/2014 15:00 Soil		D1 (6-9) Comp 14K0925-05 11/25/2014 15:00 Soil		D1 (6-9) Grab 14K0925-06 11/25/2014 15:00 Soil		D1 (9-12) Comp 14K0925-07 11/25/2014 15:00 Soil		D1 (9-12) Grab 14K0925-08 11/25/2014 15:00 Soil		D1 (12-15) Comp 14K0925-09 11/25/2014 15:00 Soil		D1 (12-15) Grab 14K0925-10 11/25/2014 15:00 Soil		D1 (15-18) Comp 14K0925-11 11/25/2014 15:00 Soil		D1 (15-18) Grab 14K0925-12 11/25/2014 15:00 Soil	
Compound	**CAS Number**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Paint Filter Test			-				-				-				-				-				-			
Dilution Factor			1				1				1				1				1				1			
Paint Filter Test		~	No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT		No Free Liquid		NT	
Reactivity-Cyanide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Cyanide		~	ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT		ND	U	NT	
Reactivity-Sulfide			mg/kg				mg/kg				mg/kg				mg/kg				mg/kg				mg/kg			
Dilution Factor			1				1				1				1				1				1			
Reactivity - Sulfide		~	40	U	NT		64	U	NT		48	U	NT		64	U	NT		56	U	NT		56	U	NT	
TCLP Extraction for METALS EPA 1311			N/A				N/A				N/A				N/A				N/A				N/A			
Dilution Factor			1				1				1				1				1				1			
TCLP Extraction		~	Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT		Completed		NT	
Total Solids			%				%				%				%				%				%			
Dilution Factor			1				1				1				1				1				1			
% Solids	solids	~	82.9		82.1		82.6		82.5		86.2		90.4		82.7		87.9		80.7		84.9		74.2		83.7	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

TABLE 12
25 Kent Avenue
Brooklyn, NY
Parameters Detected Above Track 1 Soil Cleanup Objectives
Test Pits A1-A3

COMPOUND	Range in Exceedances	Frequency of Detection	Test Pit A1 11/20/2014				Test Pit A2 11/20/2014				Test Pit A3 11/20/2014			
			(0-3')	(3-6')	(6-9')	(9-12')	(0-3')	(3-6')	(6-9')	(9-12')	(0-3')	(3-6')	(6-9')	(9-12')
Sample Results in ug/kg														
1,2,4-Trimethylbenzene	4,900-170,000	4	-	-	-	-	-	-	-	-	-	-	**4,900**	-
1,3,5-Trimethylbenzene	9,500-45,000	3	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	47.3-48.3	2	**48.3**	-	-	-	**47.3**	-	-	-	-	-	-	-
2-Butanone	160	1	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	59-6,700	11	-	-	-	-	-	-	-	-	-	-	**3,500**	-
Ethyl Benzene	2,100-3,300	2	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	15,000-22,000	3	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	4,200-25,000	6	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	13,000-16,000	2	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	15,000-29,000	4	-	-	-	-	-	-	-	-	-	-	-	-
Sample Results in ug/kg														
Benzo(a)anthracene	1,000-29,200	14	**4,670**	**1,980**	-	-	**4,670**	-	**9,280**	-	**1590**	**3090**	-	-
Benzo(a)pyrene	1,060-13,600	9	**2,530**	**1,470**	-	-	-	-	**4,360**	-	-	**1480**	-	-
Benzo(b)fluoranthene	1,220-12,100	9	**2,700**	**1,580**	-	-	-	-	**3,670**	-	-	**1430**	-	-
Benzo(k)fluoranthene	952-13,100	9	**2,630**	**1,550**	-	-	-	-	**4,140**	-	-	**1610**	-	-
Chrysene	1,080-20,700	13	-	**2,230**	-	-	-	-	**7,020**	-	**1460**	**3810**	**1,300**	-
Dibenzo(a,h)anthracene	552	1	-	**552**	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	557-6,200	8	**2510**	**964**	-	-	-	-	**1,970**	-	-	**923**	-	-
Naphthalene	13,900	1	-	-	-	-	-	-	-	-	-		**13900**	-
Sample Results in mg/kg														
Arsenic	13-1800	18	**18.5**	**95**	-	-	**15.6**	**13**	**1,800**	**854**	**65.6**	**24.5**	**212**	**70.4**
Barium	360-1320	3	-	**360**	-	-	**-**	**1,320**	**-**	**-**	**-**	**-**	**-**	**-**
Cadmium	2.6-4.63	2	-	**4.63**	-	-	**-**	**2.6**	**-**	**-**	**-**	**-**	**-**	**-**
Copper	53.3-580	17	**92.1**	**245**	-	-	**105**	**53.3**	**500**	**212**	**116**	**112**	**580**	**273**
Lead	70.8-9350	21	**397**	**3,660**	**70.8**	-	**712**	**3,230**	**9,350**	**3,740**	**757**	**836**	**4,080**	**2,440**
TCLP Lead *	6.90	1	-	-	-	-	**6.90**	**-**	**-**	**-**				
Magnesium	590	1	**590**	-	-	-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Mercury	0.219-12.9	12	**0.686**	**1.10**	-	-	**0.993**	**1.42**	**12.9**	**2.6**	**-**	**-**	**-**	**-**
Selenium	3.90-48	21	**5.22**	**10.5**			**-**	**-**	**27.80**	**48**	**3.92**	**4.41**	**5.74**	
Zinc	131-1870	18	**491**	**1,240**	-	-	**507**	**1870**	**1110**	**465**	**596**	**228**	**159**	**-**

Table 12
25 Kent Avenue
Brooklyn, NY
Parameters Detected Above Track 1 Soil Cleanup Objectives
Test Pits B1-B2

COMPOUND	Range in Exceedances	Frequency of Detection	Test Pit B1 11/20/2014					Test Pit B2 11/20/2014				
			(0-3')	(3-6')	(6-9')	(9-12')	(12-15')	(0-3')	(3-6')	(6-9')	(9-12')	(12-15')
Sample Results in ug/kg												
1,2,4-Trimethylbenzene	4,900-170,000	4	-	-	-	-	-	-	**84,000**	**170,000**	**40000**	-
1,3,5-Trimethylbenzene	9,500-45,000	3	-	-	-	-	-	-	**21,000**	**45,000**	**9500**	-
1,2-Dichloroethane	47.3-48.3	2	-	-	-	-	-	-	-	-	-	-
2-Butanone	160	1	-	-	-	-	-	-	-	-	-	-
Acetone	59-6,700	11	**62**	-	-	**59**	**67**	**94**	-	-	-	**69**
Ethyl Benzene	2,100-3,300	2	-	-	-	-	-	-	-	**2,100**	**3300**	-
n-Butylbenzene	15,000-22,000	3	-	**22,000**	-	-	-	-	**17,000**	**15,000**	-	-
n-Propylbenzene	4,200-25,000	6	-	**25,000**	-	-	-	-	**12,000**	**20,000**	**4200**	-
sec-Butylbenzene	13,000-16,000	2	-	-	-	-	-	-	-	**13,000**	-	-
Xylenes Total	15,000-29,000	4	-	**19,000**	-	-	-	-	**17,000**	**29,000**	**15,000**	-
Sample Results in ug/kg												
Benzo(a)anthracene	1,000-29,200	14	**29,200**	-	-	-	-	**1,310**	-	**2,860**	-	-
Benzo(a)pyrene	1,060-13,600	9	**13,600**	-	-	-	-	**1,060**	-	**1,850**	-	-
Benzo(b)fluoranthene	1,220-12,100	9	**12,100**	-	-	-	-	**1,290**	-	**1,780**	-	-
Benzo(k)fluoranthene	952-13,100	9	**13,100**	-	-	-	-	**952**	-	**1,830**	-	-
Chrysene	1,080-20,700	13	**20,700**	-	-	-	-	**1,390**	-	**2,480**	-	-
Dibenzo(a,h)anthracene	552	1	-	-	-	-	-	-		**-**	-	-
Indeno(1,2,3-cd)pyrene	557-6,200	8	**6200**	-	-	-	-	**557**		**-**	-	-
Naphthalene	13,900	1	-	-	-	-	-	-		**-**	-	-
Sample Results in mg/kg												
Arsenic	13-1800	18	**20.3**	**40**	**19**	-	-	**19.40**	**13.40**	**25.40**	-	-
Barium	360-1320	3	-	-	-	-	-	-	-	-	-	-
Cadmium	2.6-4.63	2	-	-	-	-	-	-	-	-	-	-
Copper	53.3-580	17	**107.0**	**106**	-	-	-	**148.0**	-	-	-	-
Lead	70.8-9350	21	**979**	**660**	-	-	-	**833**	-	**81.3**	-	-
TCLP Lead *	6.90	1	-	-	-	-	-	-	-	-	-	-
Magnesium	590	1	-	-	-	-	-	-	-	-	-	-
Mercury	0.219-12.9	12	**0.381**	**0.456**	**0.763**	-	-	-	-	-	-	-
Selenium	3.90-48	21	**4.81**	-	**3.92**	-	-	**6.03**	-	-	-	-
Zinc	131-1870	18	**622**	**467**	-	-	-	**695**	-	-	-	-

* Results in ug/L

Table 12
25 Kent Avenue
Brooklyn, New York
Parameters Detected Above Track 1 Soil Cleanup Objectives
Test Pits C1-C3

COMPOUND	Range in Exceedances	Frequency of Detection	Test Pit C1 11/21/2014						Test Pit C2 11/21/2014						Test Pit C3 11/21/2015					
			(0-3')	(3-6')	(6-9')	(9-12')	(12-15')	(15-18')	(0-3')	(3-6')	(6-9')	(9-12')	(12-15')	(15-18')	(0-3')	(3-6')	(6-9')	(9-12')	(12-15')	(15-18')
Sample Results in ug/kg																				
1,2,4-Trimethylbenzene	4,900-170,000	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	9,500-45,000	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	47.3-48.3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	160	1	**160**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	59-6,700	11	**390**	**810**	**1,400**	-	-	-	-	-	-	-	-	-	-	-	**6,700**	**3,200**	-	-
Ethyl Benzene	2,100-3,300	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	15,000-22,000	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	4,200-25,000	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**14,000**	-	-	-
sec-Butylbenzene	13,000-16,000	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**16,000**	-	-	-
Xylenes Total	15,000-29,000	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample Results in ug/kg																				
Benzo(a)anthracene	1,000-29,200	14	**2,810**	-	-	-	-	-	**1,760**	-	-	-	-	-	**1,000**	-	-	-	-	-
Benzo(a)pyrene	1,060-13,600	9	**2,630**	-	-	-	-	-	**1,170**	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	1,220-12,100	9	**2,370**	-	-	-	-	-	**1,220**	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	952-13,100	9	**2,430**	-	-	-	-	-	**1,190**	-	-	-	-	-	-	-	-	-	-	-
Chrysene	1,080-20,700	13	**3,080**	-	-	-	-	-	**1,650**	-	-	-	-	-	**1,120**	-	-	-	-	-
Dibenzo(a,h)anthracene	552	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	557-6,200	8	**1240**	-	-	-	-	-	**660**	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	13,900	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample Results in mg/kg																				
Arsenic	13-1800	18	**49.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	360-1320	3	**1,260**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	2.6-4.63	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	53.3-580	17	**102.0**	-	-	-	-	-	**283**	-	-	-	-	-	-	-	-	-	-	-
Lead	70.8-9350	21	**641**	-	-	-	-	-	**332**	-	-	-	-	-	**571**	-	-	-	-	-
TCLP Lead *	6.90	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	590	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.219-12.9	12	-	-	-	-	-	-	-	-	-	-	-	-	**1.29**	-	-	-	-	-
Selenium	3.90-48	21	**5.08**	-	-	-	-	-	-	-	-	-	-	-	**3.9**	-	**5.8**	**5.4**	**4.8**	**4.61**
Zinc	131-1870	18	**963**	-	-	-	**131**	-	**323**	-	-	-	-	-	**244**	-	-	-	-	-

* Results in ug/L

Table 12
25 Kent Avenue
Brooklyn, New York
Parameters Detected Above Track 1 Soil Cleanup Objectives
Test Pit D1

COMPOUND	Range in Exceedances	Frequency of Detection	Test Pit D1 11/25/2014					
			(0-3')	(3-6')	(6-9')	(9-12')	(12-15')	(15-18')
Sample Results in ug/kg								
1,2,4-Trimethylbenzene	4,900-170,000	4	-	-	-	-	-	-
1,3,5-Trimethylbenzene	9,500-45,000	3	-	-	-	-	-	-
1,2-Dichloroethane	47.3-48.3	2	-	-	-	-	-	-
2-Butanone	160	1	-	-	-	-	-	-
Acetone	59-6,700	11	-	-	-	-	-	-
Ethyl Benzene	2,100-3,300	2	-	-	-	-	-	-
n-Butylbenzene	15,000-22,000	3	-	-	-	-	-	-
n-Propylbenzene	4,200-25,000	6	-	-	-	-	**16,000**	-
sec-Butylbenzene	13,000-16,000	2	-	-	-	-	-	-
Xylenes Total	15,000-29,000	4	-	-	-	-	-	-
Sample Results in ug/kg								
Benzo(a)anthracene	1,000-29,200	14	-	**1,010**	-	-	-	-
Benzo(a)pyrene	1,060-13,600	9	-	-	-	-	-	-
Benzo(b)fluoranthene	1,220-12,100	9	-	-	-	-	-	-
Benzo(k)fluoranthene	952-13,100	9	-	-	-	-	-	-
Chrysene	1,080-20,700	13	**1,080**	**1,240**	-	-	-	-
Dibenzo(a,h)anthracene	552	1	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	557-6,200	8	-	-	-	-	-	-
Naphthalene	13,900	1	-	-	-	-	-	-
Sample Results in mg/kg								
Arsenic	13-1800	18	**19**	-	-	-	-	-
Barium	360-1320	3	-	-	-	-	-	-
Cadmium	2.6-4.63	2	-	-	-	-	-	-
Copper	53.3-580	17	**181**	**70.1**	-	-	-	-
Lead	70.8-9350	21	**347**	**212**	**138**	-	-	-
TCLP Lead *	6.90	1	-	-	-	-	-	-
Magnesium	590	1	-	-	-	-	-	-
Mercury	0.219-12.9	12	**0.478**	**0.219**	-	-	-	-
Selenium	3.90-48	21	**6.80**	**4.01**	**4.43**	**4.94**	-	**5.45**
Zinc	131-1870	18	**615**	**329**	-	-	-	-

* Results in ug/L

Table 13
25 Kent Avenue
Brooklyn, New York
Ground Water Analytical Results
Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards	MW1		MW2		MW3		MW4		MW5		MW6		MW7		MW8		MW9		MW10	
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
		Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
1,1,1,2-Tetrachlorothane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,1,1-Trichloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,1,2,2-Tetrachloroethane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,1,2-Trichloroethane	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	**9.5**	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,1-Dichloroethene	5	< 2.0	2	< 2.0	2	< 1.0	1	**0.26**	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,1-Dichloropropene		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,2,3-Trichlorobenzene		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,2,3-Trichloropropane	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,4-Trichlorobenzene		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,2,4-Trimethylbenzene	5	**1**	2	**7.8**	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	**2.5**	2	< 2.0	2	< 1.0	1
1,2-Dibromo-3-chloropropane	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dibromoethane		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dichlorobenzene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 4.0	4	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,2-Dichloroethane	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 1.0	1	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6
1,2-Dichloropropane	0.94	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,3,5-Trimethylbenzene	5	< 2.0	2	**1.6**	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	**0.78**	2	< 2.0	2	< 1.0	1
1,3-Dichlorobenzene		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 3.0	3	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,3-Dichloropropane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
1,4-Dichlorobenzene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	**1.4**	2	**0.21**	1	< 2.0	2	< 2.0	2	< 1.0	1
2,2-Dichloropropane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
2-Chlorotoluene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
2-Hexanone (Methyl Butyl Ketone)		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
2-Isopropyltoluene	5	**2.6**	2	**34**	2	< 1.0	1	< 1.0	1	**9.2**	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
4-Chlorotoluene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
4-Methyl-2-Pentanone		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	**41**	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Acetone		**4**	10	**4.7**	10	**1.7**	5	**2.1**	5	**27**	25	**11**	10	**2**	5	**6.2**	10	**2.1**	10	**1.9**	5
Acrolein		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Acrylonitrile	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Benzene	1	**3,300**	140	< 0.70	0.7	< 0.70	0.7	**0.5**	0.7	**350**	28	**0.58**	0.7	< 0.70	0.7	**9.9**	0.7	< 0.70	0.7	< 0.70	0.7
Bromobenzene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Bromochloromethane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Bromodichloromethane		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Bromoform		< 10	10	< 10	10	< 5.0	5	< 5.0	5	< 25	25	< 10	10	< 5.0	5	< 10	10	< 10	10	< 5.0	5
Bromomethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Carbon Disulfide	60	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Carbon tetrachloride	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Chlorobenzene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Chloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Chloroform	7	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Chloromethane	60	< 5.0	5	**0.44**	5	**0.51**	5	**0.58**	5	**1.4**	5	**0.56**	5	**0.38**	5	**1.1**	5	**0.42**	5	**0.42**	5
cis-1,2-Dichloroethene	5	< 2.0	2	< 2.0	2	**0.26**	1	**0.62**	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
cis-1,3-Dichloropropene		< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 1.0	1	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
Dibromochloromethane		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Dibromomethane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Dichlorodifluoromethane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Ethylbenzene	5	**68**	20	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	**2.2**	2	< 2.0	2	< 1.0	1
Hexachlorobutadiene	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 1.0	1	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5
Isopropylbenzene	5	**10**	2	**11**	2	< 1.0	1	< 1.0	1	**33**	5	< 2.0	2	**0.41**	1	**2.2**	2	**4.1**	2	< 1.0	1
m&p-Xylenes	5	**6.4**	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	**1.5**	2	< 1.0	1	**1.7**	2	< 2.0	2	< 1.0	1
Methyl Ethyl Ketone (2-Butanone)		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Methyl t-butyl ether (MTBE)	10	< 2.0	2	**6**	2	**2.2**	1	**0.45**	1	**1.4**	5	**0.9**	2	**1**	1	**2.1**	2	**2.6**	2	< 1.0	1
Methylene chloride	5	**2.7**	5	**0.54**	5	< 3.0	3	< 3.0	3	**1.7**	5	**1.4**	5	< 3.0	3	**0.32**	5	**0.84**	5	< 3.0	3
Naphthalene	10	**58**	2	**1.7**	2	< 1.0	1	< 1.0	1	**600**	40	**0.88**	2	< 1.0	1	**0.72**	2	**0.9**	2	< 1.0	1
n-Butylbenzene	5	**1.4**	2	**0.74**	2	< 1.0	1	< 1.0	1	**27**	5	< 2.0	2	< 1.0	1	< 2.0	2	**0.7**	2	< 1.0	1
n-Propylbenzene	5	**4.7**	2	**9.7**	2	< 1.0	1	< 1.0	1	**51**	5	< 2.0	2	**0.46**	1	**1.4**	2	**2.2**	2	< 1.0	1
o-Xylene	5	**2.3**	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	**1.7**	2	< 2.0	2	< 1.0	1
p-Isopropyltoluene		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
sec-Butylbenzene	5	**5.2**	2	**3**	2	< 1.0	1	< 1.0	1	**22**	5	< 2.0	2	**0.91**	1	**0.58**	2	**3.3**	2	< 1.0	1
Styrene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
tert-Butylbenzene	5	**1.4**	2	**1.6**	2	**0.9**	1	< 1.0	1	**3.6**	5	**0.46**	2	**0.84**	1	< 2.0	2	**1.3**	2	< 1.0	1
Tetrachloroethene	5	< 2.0	2	< 2.0	2	< 1.0	1	**1.9**	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	**1.7**	1
Tetrahydrofuran (THF)		< 10	10	< 10	10	< 5.0	5	< 5.0	5	< 25	25	< 10	10	< 5.0	5	< 10	10	< 10	10	< 5.0	5
Toluene	5	**3.8**	2	< 2.0	2	< 1.0	1	< 1.0	1	**1.6**	5	< 2.0	2	< 1.0	1	**0.64**	2	< 2.0	2	< 1.0	1
trans-1,2-Dichloroethene	5	**0.52**	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
trans-1,3-Dichloropropene	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 1.0	1	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
trans-1,4-dichloro-2-butene	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Trichloroethene	5	< 2.0	2	< 2.0	2	< 1.0	1	**1.9**	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Trichlorofluoromethane	5	< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Trichlorotrifluoroethane		< 2.0	2	< 2.0	2	< 1.0	1	< 1.0	1	< 5.0	5	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1
Vinyl Chloride	2	< 2.0	2	< 2.0	2	< 1.0	1	**0.15**	1	< 2.0	2	< 2.0	2	< 1.0	1	< 2.0	2	< 2.0	2	< 1.0	1

Notes:
RL- Reporting Limit
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 14
25 Kent Avenue
Brooklyn, New York
Groundwater Analytical Results
Semi-Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1 µg/L		MW2 µg/L		MW3 µg/L		MW4 µg/L		MW5 µg/L		MW6 µg/L		MW7 µg/L		MW8 µg/L		MW9 µg/L		MW10 µg/L	
		Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
1,2,4-Trichlorobenzene		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,2-Dichlorobenzene		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
1,2-Diphenylhydrazine		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,3-Dichlorobenzene	3	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
1,4-Dichlorobenzene		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2,4,5-Trichlorophenol	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2,4,6-Trichlorophenol	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2,4-Dichlorophenol		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2,4-Dimethylphenol		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	**24**	5	< 5.0	5	< 1.0	1
2,4-Dinitrophenol	5	< 25	25	< 1.0	1	< 1.0	1	< 1.0	1	< 3100	3100	< 25	25	< 1.0	1	< 25	25	< 25	25	< 1.0	1
2,4-Dinitrotoluene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2,6-Dinitrotoluene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2-Chloronaphthalene	10	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2-Chlorophenol	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2-Methylnaphthalene		**11**	5	< 5.0	5	< 5.0	5	< 5.0	5	**6,000**	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2-Methylphenol (o-cresol)	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
2-Nitroaniline	5	< 25	25	< 5.0	5	< 5.0	5	< 5.0	5	< 3100	3100	< 25	25	< 5.0	5	< 25	25	< 25	25	< 5.0	5
2-Nitrophenol	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
3&4-Methylphenol (m&p-cresol)		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
3,3'-Dichlorobenzidine	5	< 10	10	< 5.0	5	< 5.0	5	< 5.0	5	< 1300	1300	< 10	10	< 5.0	5	< 10	10	< 10	10	< 5.0	5
3-Nitroaniline	5	< 25	25	< 5.0	5	< 5.0	5	< 5.0	5	< 3100	3100	< 25	25	< 5.0	5	< 25	25	< 25	25	< 5.0	5
4,6-Dinitro-2-methylphenol	1	< 25	25	< 1.0	1	< 1.0	1	< 1.0	1	< 3100	3100	< 25	25	< 1.0	1	< 25	25	< 25	25	< 1.0	1
4-Bromophenyl phenyl ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
4-Chloro-3-methylphenol	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
4-Chloroaniline	5	< 10	10	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 1300	1300	< 10	10	< 3.5	3.5	< 10	10	< 10	10	< 3.5	3.5
4-Chlorophenyl phenyl ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
4-Nitroaniline	5	< 25	25	< 5.0	5	< 5.0	5	< 5.0	5	< 3100	3100	< 25	25	< 5.0	5	< 25	25	< 25	25	< 5.0	5
4-Nitrophenol		< 25	25	< 1.0	1	< 1.0	1	< 1.0	1	< 3100	3100	< 25	25	< 1.0	1	< 25	25	< 25	25	< 1.0	1
Acetophenone		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Aniline	5	< 25	25	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 3100	3100	< 25	25	< 3.5	3.5	< 25	25	< 25	25	< 3.5	3.5
Anthracene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Benzidine	5	< 10	10	< 4.5	4.5	< 4.5	4.5	< 4.5	4.5	< 1300	1300	< 10	10	< 4.5	4.5	< 10	10	< 10	10	< 4.5	4.5
Benzoic acid		< 25	25	< 25	25	< 25	25	< 25	25	< 3100	3100	< 25	25	< 25	25	< 25	25	< 25	25	< 25	25
Benzyl butyl phthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bis(2-chloroethoxy)methane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bis(2-chloroethyl)ether	1	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
Bis(2-chloroisopropyl)ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Carbazole		< 25	25	< 25	25	< 25	25	< 25	25	< 3100	3100	< 25	25	< 25	25	< 25	25	< 25	25	< 25	25
Dibenzofuran		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Diethyl phthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Dimethylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Di-n-butylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Di-n-octylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Fluoranthene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Fluorene	50	**2.1**	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Hexachlorobutadiene	0.5	< 5.0	5	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 630	630	< 5.0	5	< 0.40	0.4	< 5.0	5	< 5.0	5	< 0.40	0.4
Hexachlorocyclopentadiene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Isophorone	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	**4.2**	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Naphthalene	10	**20**	5	< 5.0	5	< 5.0	5	< 5.0	5	**3,100**	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Nitrobenzene	0.4	< 5.0	5	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 630	630	< 5.0	5	< 0.10	0.1	< 5.0	5	< 5.0	5	< 0.10	0.1
N-Nitrosodimethylamine		< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
N-Nitrosodi-n-propylamine		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
N-Nitrosodiphenylamine	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Phenol	50	**30**	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
Pyrene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,2,4,5-Tetrachlorobenzene		< 5.0	5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 630	630	< 5.0	5	< 0.50	0.5	< 5.0	5	< 5.0	5	< 0.50	0.5
Acenaphthene	20	**1.6**	5	< 5.0	5	< 5.0	5	< 5.0	5	< 630	630	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Acenaphthylene		< 5.0	5	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 630	630	< 5.0	5	< 0.10	0.1	< 5.0	5	< 5.0	5	< 0.10	0.1
Benz(a)anthracene	0.002	< 5.0	5	**0.03**	0.02	**0.03**	0.02	**0.24**	0.02	< 630	630	< 5.0	5	**0.06**	0.02	< 5.0	5	< 5.0	5	**0.4**	0.02
Benzo(a)pyrene		< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.21**	0.02	< 630	630	< 5.0	5	**0.04**	0.02	< 5.0	5	< 5.0	5	**0.32**	0.02
Benzo(b)fluoranthene	0.002	< 5.0	5	**0.02**	0.02	< 0.02	0.02	**0.3**	0.02	< 630	630	< 5.0	5	**0.06**	0.02	< 5.0	5	< 5.0	5	**0.46**	0.02
Benzo(ghi)perylene		< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.12**	0.02	< 630	630	< 5.0	5	**0.03**	0.02	< 5.0	5	< 5.0	5	**0.18**	0.02
Benzo(k)fluoranthene	0.002	< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.12**	0.02	< 630	630	< 5.0	5	**0.02**	0.02	< 5.0	5	< 5.0	5	**0.17**	0.02
Bis(2-ethylhexyl)phthalate	5	< 5.0	5	< 1.0	1	< 1.0	1	< 1.0	1	< 630	630	< 5.0	5	< 1.0	1	< 5.0	5	< 5.0	5	< 1.0	1
Chrysene	0.002	< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.23**	0.02	< 630	630	< 5.0	5	**0.04**	0.02	< 5.0	5	< 5.0	5	**0.36**	0.02
Dibenz(a,h)anthracene		< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.03**	0.02	< 630	630	< 5.0	5	< 0.02	0.02	< 5.0	5	< 5.0	5	< 0.02	0.02
Hexachlorobenzene	0.04	< 5.0	5	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 630	630	< 5.0	5	< 0.02	0.02	< 5.0	5	< 5.0	5	< 0.02	0.02
Hexachloroethane	5	< 5.0	5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 630	630	< 5.0	5	< 0.50	0.5	< 5.0	5	< 5.0	5	< 0.50	0.5
Indeno(1,2,3-cd)pyrene	0.002	< 5.0	5	< 0.02	0.02	< 0.02	0.02	**0.11**	0.02	< 630	630	< 5.0	5	**0.03**	0.02	< 5.0	5	< 5.0	5	**0.14**	0.02
Pentachloronitrobenzene		< 5.0	5	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 630	630	< 5.0	5	< 0.10	0.1	< 5.0	5	< 5.0	5	< 0.10	0.1
Pentachlorophenol	1	< 5.0	5	< 0.80	0.8	< 0.80	0.8	< 0.80	0.8	< 630	630	< 5.0	5	< 0.80	0.8	< 5.0	5	< 5.0	5	< 0.80	0.8
Phenanthrene	50	**2.2**	5	**0.17**	0.1	**0.1**	0.1	**0.85**	0.1	< 630	630	< 5.0	5	**0.18**	0.1	< 5.0	5	< 5.0	5	**0.87**	0.1
Pyridine	50	< 5.0	5	< 10	10	< 10	10	< 10	10	< 630	630	< 5.0	5	< 10	10	< 5.0	5	< 5.0	5	< 10	10

Notes:
RL- Reporting Limit
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 15
25 Kent Avenue
Brooklyn, New York
Groundwater Analytical Results
Pesticides/PCBs

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1 mg/L		MW2 mg/L		MW3 mg/L		MW4 mg/L		MW5 mg/L		MW6 mg/L		MW7 mg/L		MW8 mg/L		MW9 mg/L		MW10 mg/L	
		Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
PCB-1016	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1221	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1232	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1242	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1248	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1254	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1260	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	**0.058**	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1262	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
PCB-1268	**0.09**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05
4,4-DDD	**0.3**	< 0.012	0.012	< 0.012	0.012	< 0.012	0.012	< 0.010	0.01	< 0.030	0.03	< 0.030	0.03	< 0.010	0.01	**0.02**	0.012	< 0.012	0.012	< 0.010	0.01
4,4-DDE	**0.2**	< 0.012	0.012	< 0.012	0.012	< 0.012	0.012	< 0.010	0.01	< 0.030	0.03	< 0.030	0.03	< 0.010	0.01	**0.026**	0.012	< 0.012	0.012	< 0.010	0.01
4,4-DDT	**0.11**	< 0.012	0.012	< 0.012	0.012	< 0.012	0.012	< 0.010	0.01	< 0.030	0.03	**0.056**	0.03	< 0.010	0.01	< 0.012	0.012	< 0.012	0.012	< 0.010	0.01
a-BHC	**0.94**	< 0.030	0.03	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005	< 0.050	0.05	< 0.050	0.05	< 0.005	0.005	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005
a-Chlordane		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Alachlor		< 0.38	0.38	< 0.38	0.38	< 0.38	0.38	< 0.075	0.075	< 0.75	0.75	< 0.050	0.05	< 0.075	0.075	< 0.38	0.38	< 0.38	0.38	< 0.075	0.075
Aldrin		< 0.008	0.008	< 0.008	0.008	< 0.008	0.008	< 0.004	0.004	< 0.015	0.015	< 0.015	0.015	< 0.002	0.002	< 0.008	0.008	< 0.008	0.008	< 0.002	0.002
b-BHC	**0.04**	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005	< 0.050	0.05	< 0.050	0.05	< 0.005	0.005	< 0.040	0.04	< 0.025	0.025	< 0.005	0.005
Chlordane	**0.05**	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25	< 0.050	0.05	< 0.50	0.5	< 0.50	0.5	< 0.050	0.05	< 0.25	0.25	< 0.25	0.25	< 0.050	0.05
d-BHC	**0.04**	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005	< 0.050	0.05	< 0.050	0.05	< 0.005	0.005	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005
Dieldrin	**0.004**	< 0.008	0.008	**0.065**	0.008	< 0.008	0.008	< 0.004	0.004	< 0.015	0.015	< 0.025	0.025	< 0.005	0.005	< 0.008	0.008	< 0.008	0.008	< 0.002	0.002
Endosulfan I		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Endosulfan II		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Endosulfan Sulfate		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Endrin		< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01
Endrin aldehyde	**5**	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Endrin ketone		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
gamma-BHC	**0.05**	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.025	0.025	< 0.025	0.025	< 0.005	0.005
g-Chlordane		< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.10	0.1	< 0.10	0.1	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01
Heptachlor	**0.04**	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01
Heptachlor epoxide	**0.03**	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01	< 0.050	0.05	< 0.050	0.05	< 0.010	0.01	< 0.025	0.025	< 0.025	0.025	< 0.010	0.01
Methoxychlor	**35**	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.10	0.1	< 1.0	1	< 1.0	1	< 0.10	0.1	< 0.50	0.5	< 0.50	0.5	< 0.10	0.1
Toxaphene		< 1.3	1.3	< 1.3	1.3	< 1.3	1.3	< 0.25	0.25	< 2.5	2.5	< 2.5	2.5	< 0.25	0.25	< 1.3	1.3	< 1.3	1.3	< 0.25	0.25

Notes:
RL- Reporting limit
ND - Non-detect
ND* - Due to matrix interference from non target compounds in the sample an elevated RL was reported.
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 16
25 Kent Avenue
Brooklyn, New York
Groundwater Analytical Results
TAL Filtered Metals

Compound	NYSDEC Groundwater Quality Standards mg/L	MW1 mg/L		MW2 mg/L		MW3 mg/L		MW4 mg/L		MW5 mg/L		MW6 mg/L		MW7 mg/L		MW8 mg/L		MW9 mg/L		MW10 mg/L	
		Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
Aluminum	**NS**	**0.01**	0.01	**0.01**	0.01	**0.1**	0.01	**0.06**	0.01	**0.17**	0.01	**0.02**	0.01	**0.03**	0.01	**0.06**	0.01	**0.06**	0.01	**0.15**	0.01
Antimony	**0.003**	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003
Arsenic	**0.025**	**0.001**	0.003	**0.002**	0.003	< 0.003	0.003	< 0.003	0.003	**0.004**	0.003	**0.004**	0.003	**0.003**	0.003	**0.113**	0.003	**0.002**	0.003	**0.002**	0.003
Barium	**1**	**0.251**	0.011	**0.116**	0.011	**0.377**	0.011	**0.079**	0.011	**0.097**	0.011	**0.082**	0.011	**0.203**	0.011	**0.252**	0.011	**0.267**	0.011	**0.062**	0.011
Beryllium	**0.003**	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001
Cadmium	**0.005**	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Calcium	**NS**	**102**	0.11	**75.5**	0.11	**259**	0.11	**238**	0.11	**45.5**	0.11	**226**	0.11	**184**	0.11	**173**	0.11	**100**	0.11	**101**	0.11
Chromium	**0.05**	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	**0.003**	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	**0.001**	0.001
Cobalt	**NS**	**0.003**	0.005	**0.001**	0.005	**0.004**	0.005	**0.007**	0.005	**0.001**	0.005	< 0.005	0.005	**0.003**	0.005	**0.003**	0.005	**0.003**	0.005	< 0.005	0.005
Copper	**0.2**	< 0.005	0.005	< 0.005	0.005	**0.002**	0.005	< 0.005	0.005	**0.001**	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	**0.003**	0.005
Iron	**0.5**	**0.19**	0.01	**3.28**	0.01	**0.95**	0.01	**0.37**	0.01	**1.56**	0.01	**0.21**	0.01	**0.15**	0.01	**48.9**	0.11	**1.17**	0.01	**0.19**	0.01
Lead	**0.025**	< 0.002	0.002	< 0.002	0.002	**0.002**	0.002	**0.002**	0.002	< 0.002	0.002	**0.002**	0.002	< 0.002	0.002	**0.009**	0.002	< 0.002	0.002	< 0.002	0.002
Magnesium	**35**	**38.8**	0.11	**11.4**	0.11	**34.6**	0.11	**29.7**	0.11	**118**	0.11	**45.3**	0.11	**24**	0.11	**59.7**	0.11	**37.5**	0.11	**3.73**	0.11
Manganese	**0.3**	**0.357**	0.005	**2.24**	0.053	**15**	0.053	**2.29**	0.053	**0.17**	0.005	**2.02**	0.053	**2.26**	0.053	**2.2**	0.053	**0.724**	0.053	**0.006**	0.005
Mercury	**0.0007**	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002
Nickel	**0.1**	**0.001**	0.004	< 0.004	0.004	**0.004**	0.004	**0.004**	0.004	**0.002**	0.004	< 0.004	0.004	**0.002**	0.004	**0.006**	0.004	**0.003**	0.004	< 0.004	0.004
Potassium	**NS**	**24.6**	1.1	**22.5**	1.1	**38**	1.1	**38.8**	1.1	**63.9**	1.1	**31.5**	1.1	**23.1**	1.1	**52.4**	1.1	**19.9**	1.1	**8**	1.1
Selenium	**0.01**	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Silver	**0.05**	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005
Sodium	**2**	**119**	1.1	**120**	1.1	**263**	1.1	**94.4**	1.1	**593**	11	**140**	1.1	**161**	1.1	**106**	1.1	**119**	1.1	**33.6**	1.1
Thallium	**0.0005**	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005
Vanadium	**NS**	< 0.011	0.011	< 0.011	0.011	< 0.011	0.011	< 0.011	0.011	**0.013**	0.011	< 0.011	0.011	< 0.011	0.011	< 0.011	0.011	**0.001**	0.011	**0.003**	0.011
Zinc	**2**	**0.002**	0.011	**0.006**	0.011	**0.003**	0.011	**0.006**	0.011	**0.006**	0.011	**0.001**	0.011	**0.011**	0.011	**0.135**	0.011	**0.003**	0.011	**0.005**	0.011

Notes:
RL- Reporting limit
NS - No Standard
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 17
25 Kent Avenue
Bronx, NY
Parameters Detected Above Ambient Water Quality Standards

VOCs

COMPOUND	Range in Detections	MW1 2/22/2013	MW2 2/13/2013	MW3 2/22/2013	MW4 2/23/2013	MW5 2/24/2013	MW6 2/25/2013	MW7 2/26/2013	MW8 2/27/2013	MW9 2/28/2013	MW10 3/1/2013
Sample Results in (µg/L)											
1,1,2-Trichloroethane	9.5	-		-	-	9.5	-	-	-	-	-
1,2,4-Trimethylbenzene	7.8	-	7.8	-	-	-	-	-	-	-	-
2-Isopropyltoluene		34	-	-	-	9.2	-	-	-	-	-
Benzene	9.9-3,300	3,300	-	-	-	350	-	-	9.9	-	-
Chloroform	6.6-179	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dicholorethene	77.3-292	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	68	68	-	-	-	-	-	-	-	-	-
Isopropylbenzene	10.0-33.0	10	11	-	-	33	-	-	-	-	-
n-Butylbenzene	27	-		-	-	27	-	-	-	-	-
n-Propylbenzene	9.7-51	-	9.7	-	-	51	-	-	-	-	-
Napthalene	58-600	58	-	-	-	600	-	-	-	-	-
sec-Butlybenzene	5.2-22	5.2	-	-	-	22	-	-	-	-	-
Tetrachloroethene	5.1-223	-	-	-	-	-	-	-	-	-	-
Trichloroethene	51-135	-	-	-	-	-	-	-	-	-	-

SVOCs

COMPOUND	Range in Detections	MW1 2/22/2013	MW2 2/13/2013	MW3 2/22/2013	MW4 2/23/2013	MW5 2/24/2013	MW6 2/25/2013	MW7 2/26/2013	MW8 2/27/2013	MW9 2/28/2013	MW10 3/1/2013
Sample Results in (µg/L)											
2,4-Dimethylphenol		-	-	-	-	-	-	-	24	-	-
Naphthalene	20	20	-	-	-	-	-	-	-	-	-
Phenol	30	30	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	0.03-0.4	-	0.03	0.03	0.24	-	0.06	-	-	-	0.4
Benzo(a)pyrene	0.04-0.32	-	-	-	0.21	-	0.04	-	-	-	0.32
Benzo(b)fluoranthene	0.02-0.46	-	0.02	-	0.3	-	0.06	-	-	-	0.46
Benzo(k)fluoranthene	0.02-0.17	-	-	-	0.12	-	0.02	-	-	-	0.17
Chrysene	0.04-0.36	-	-	-	0.23	-	0.04	-	-	-	0.36
Indeno(1,2,3-cd)pyrene		-	-	-	0.11	-	0.03	-	-	-	0.14
Manganese	1,580	1,580	-	-	-	-	-	-	-	-	-

TABLE 17
25 Kent Avenue
Bronx, NY
Parameters Detected Above Ambient Water Quality Standards

Pesticides/PCBs

COMPOUND	Range in Detections	MW1 2/22/2013		MW2 2/13/2013		MW3 2/22/2013		MW4 2/23/2013		MW5 2/24/2013		MW6 2/25/2013		MW7 2/26/2013		MW8 2/27/2013		MW9 2/28/2013		MW10 3/1/2013	
Sample Results in (mg/L)																					
4,4-DDD	**0.02**	-		-		-		-		-		-		-		0.02		-		-	
4,4-DDE	**0.026**	-		-		-		-		-		-		-		0.026		-		-	
4,4-DDT	**109**	-		-		-		-		-		0.056		-		-		-		-	
Dieldrin	**0.065**	-		0.065		-		-		-		-		-		-		-		-	

Metals (Dissolved)

COMPOUND	Range in Detections	MW1 2/22/2013		MW2 2/13/2013		MW3 2/22/2013		MW4 2/23/2013		MW5 2/24/2013		MW6 2/25/2013		MW7 2/26/2013		MW8 2/27/2013		MW9 2/28/2013		MW10 3/1/2013	
Sample Results in (mg/L)																					
Aluminum	**0.15-0.17**	-		-		-		-		0.17		-		-		-		-		0.15	
Arsenic	**0**	-		-		-		-		-		-		-		0.113		-		-	
Iron	**0.37-48.9**	-		3.28		0.95		0.37		1.56		-		-		48.9		1.17		-	
Magnesium	**37.5-118**	38.8		-		-		-		118		45.3		-		59.7		37.5		-	
Manganese	**0.357-15**	0.357		2.24		15		2.29		-		2.02		2.26		2.2		0.724		-	
Sodium	**33.6-593**	119		120		263		94.4		593		140		161		106		119		33.6	

TABLE 18
25 Kent Avenue
Brooklyn, New York
Soil Gas - Volatile Organic Compounds

COMPOUNDS	NYSDOH Maximum Sub-Slab Value (µg/m³) [a]	NYSDOH Soil Outdoor Background Levels (µg/m³) [b]	SG-1 (µg/m3)		SG-2 (µg/m3)		SG-3 (µg/m3)		SG-4 (µg/m3)		SG-5 (µg/m3)		SG-6 (µg/m3)		SG-7 (µg/m3)		SG-8 (µg/m3)		SG-9 (µg/m3)		SG-10 (µg/m3)		SG-11 (µg/m3)		SG-12 (µg/m3)		SG-13 (µg/m3)		SG-14 (µg/m3)	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1,1-Trichloroethane	100	<2.0 - 2.8	< 1.00	1	**3.27**	1	**2.62**	1	**105**	1	**284**	1	< 1.00	1	**6.54**	1	**24.8**	1	**1.85**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**8.18**	1
1,1,2,2-Tetrachloroethane		<1.5	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1,2-Trichloroethane		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethane		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**1.66**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethene		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trichlorobenzene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trimethylbenzene		<1.0	**2.6**	1	**2.6**	1	**2.31**	1	**2.11**	1	**2.36**	1	**2.01**	1	**3.64**	1	**2.16**	1	**4.52**	1	**2.85**	1	< 1.00	1	**3.19**	1	**2.01**	1	**3.34**	1
1,2-Dibromoethane		<1.5	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorobenzene		<2.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichloroethane		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichloropropane			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorotetrafluoroethane			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,3,5-Trimethylbenzene		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**1.03**	1	< 1.00	1	**1.28**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,3-Butadiene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,3-Dichlorobenzene		<2.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dichlorobenzene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dioxane			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
2-Hexanone			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
4-Ethyltoluene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**1.18**	1	< 1.00	1	**1.18**	1	< 1.00	1	< 1.00	1	**1.03**	1	< 1.00	1	< 1.00	1	< 1.00	1
4-Isopropyltoluene			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
4-Methyl-2-pentanone			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Acetone		NA	**85.7**	1	**124**	1	< 1.01	1	**153**	1	< 1.00	1	**65**	1	**227**	1	**198**	1	**180**	1	**47.5**	1	**335**	1	**249**	1	**163**	1	**175**	1
Acrylonitrile			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Benzene		<1.6 - 4.7	**3.67**	1	**1.63**	1	**260**	1	**8.24**	1	**1.4**	1	**1.18**	1	**75**	1	**3.58**	1	**27.7**	1	< 1.00	1	< 1.00	1	**252**	1	**9.07**	1	**28.7**	1
Benzyl Chloride		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromodichloromethane		<5.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromoform		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromomethane		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Carbon Disulfide		NA	**1.68**	1	**3.17**	1	**5.79**	1	**1.77**	1	**6.53**	1	< 1.00	1	**7.81**	1	**23**	1	**20.5**	1	**4.45**	1	**193**	1	**9.71**	1	**14.1**	1	**2.3**	1
Carbon Tetrachloride	5	<3.1	**0.377**	0.25	< 1.00	0.25	**2.07**	0.25	< 0.27	0.25	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25	**0.251**	0.25	**0.503**	0.25	**0.440**	0.25	< 0.25	0.25	< 0.25	0.25	< 0.26	0.25	**0.44**	0.25
Chlorobenzene		<2.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Chloroethane		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Chloroform		<2.4	< 1.00	1	< 1.00	1	< 1.00	1	**3.02**	1	**1.07**	1	< 1.00	1	**1.71**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**2.39**	1	< 1.00	1	**1.95**	1	< 1.00	1
Chloromethane		<1.0 - 1.4	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
cis-1,2-Dichloroethene		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**2.73**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**90.7**	1	< 1.00	1
cis-1,3-Dichloropropene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Cyclohexane		NA	**1.03**	1	**2.79**	1	**332**	1	**3.75**	1	**5.78**	1	**2.41**	1	**19.6**	1	**3.30**	1	< 1.01	1	**11.4**	1	**36500**	1	**88.1**	1	**15.8**	1	**1.75**	1
Dibromochloromethane		<5.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Dichlorodifluromethane		NA	**1.98**	1	**1.93**	1	**2.12**	1	**1.88**	1	**1.33**	1	**1.58**	1	**2.52**	1	**1.78**	1	**2.82**	1	**2.17**	1	< 1.00	1	**2.08**	1	**1.53**	1	**2.72**	1
Ethanol			**27.7**	1	**20.9**	1	**16.5**	1	**78.5**	1	**16.2**	1	**21.8**	1	**46.9**	1	**20.1**	1	**72.1**	1	**23.2**	1	< 1.00	1	**55.7**	1	**17.5**	1	**23.9**	1
Ethyl Acetate		NA	**1.12**	1	**2.09**	1	< 1.00	1	**2.34**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**< 1.00**	1	**2.59**	1	**3.42**	1
Ethylbenzene		<4.3	**4.56**	1	**5.47**	1	**4.34**	1	**4.64**	1	**4.69**	1	**3.69**	1	**12.8**	1	**4.04**	1	**10.6**	1	**4.99**	1	< 1.00	1	**5.94**	1	**4.38**	1	**6.6**	1
Heptane		NA	**2.54**	1	**5.86**	1	**3130**	1	**11.3**	1	**27.6**	1	**1.68**	1	**69.6**	1	**5.65**	1	**378**	1	**84**	1	**979**	1	**36.3**	1	**21.6**	1	**4.38**	1
Hexachlorobutadiene		NA	< 1.00	1	< 1.00	1	< 1.05	1	< 1.02	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.03	1	< 1.04	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.01	1	< 1.00	1
Hexane		<1.5	**2.11**	1	**9.16**	1	**1550**	1	**12.6**	1	**108**	1	**8.77**	1	**44.7**	1	**4.02**	1	**986**	1	**10.9**	1	**5600**	1	**83.5**	1	**39.1**	1	**2.11**	1
Isopropylalcohol		NA	**30.5**	1	**26.3**	1	**22.2**	1	< 1.00	1	**20.4**	1	**19**	1	**44.2**	1	**23.8**	1	**38.8**	1	**28.2**	1	< 1.00	1	**30.2**	1	**16.6**	1	**28.5**	1
Isopropylbenzene			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Xylene (m&p)		<4.3	**15.5**	1	**17.7**	1	**14.9**	1	**15.4**	1	**16.1**	1	**12.4**	1	**38.4**	1	**14.0**	1	**32.2**	1	**15.8**	1	< 1.00	1	**20.1**	1	**14.6**	1	**21.4**	1
Methyl Ethyl Ketone			**1.8**	1	**2.8**	1	< 1.00	1	**3.83**	1	< 1.00	1	**1.33**	1	**13.2**	1	**12.5**	1	< 1.00	1	< 1.00	1	< 1.00	1	**5.25**	1	**4.60**	1	**4.98**	1
MTBE		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**6.74**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Methylene Chloride		<3.4	< 1.00	1	**3.54**	1	**4.34**	1	< 1.00	1	**1.08**	1	**13.9**	1	**1.01**	1	< 1.00	1	< 1.00	1	**1.22**	1	< 1.00	1	< 1.00	1	**2.57**	1	**1.01**	1
n-Butylbenzene			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Xylene (o)		<4.3	**5.47**	1	**6.29**	1	**6.16**	1	**6.16**	1	**6.38**	1	**4.21**	1	**13.8**	1	**5.38**	1	**11.8**	1	**5.25**	1	< 1.00	1	**8.33**	1	**5.47**	1	**8.85**	1
Propylene		NA	**1.1**	1	**3.11**	1	< 1.01	1	< 1.01	1	< 1.00	1	< 1.00	1	**7.02**	1	< 1.01	1	< 1.01	1	**1.79**	1	**1180**	1	**227**	1	< 1.01	1	**2.1**	1
sec-Butylbenzene			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Styrene		<1.0	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Tetrachloroethene	100		**0.949**	0.25	**46.3**	0.25	**37.1**	0.25	**151**	0.25	**88.8**	0.25	**0.746**	0.25	**67.8**	0.25	**119**	0.25	**68.5**	0.25	**0.407**	0.25	< 1.00	0.25	**1.63**	0.25	**2.17**	0.25	**245**	0.25
Tetrahydrofuran		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Toluene		1.0 - 6.1	**13.3**	1	**19.6**	1	**29.2**	1	**22.8**	1	**6.44**	1	**11.4**	1	**145**	1	**17.1**	1	**93.8**	1	**11.6**	1	< 1.00	1	**60.2**	1	**24.1**	1	**28.7**	1
trans-1,2-Dichloroethene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**12.7**	1
trans-1,3-Dichloropropene		NA	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Trichloroethene	5	<1.7	< 0.25	0.25	**7.63**	0.25	**1.18**	0.25	**16.7**	0.25	**15.3**	0.25	< 0.25	0.25	**6.12**	0.25	**2.31**	0.25	< 0.29	0.25	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25	< 0.26	0.25	**16.2**	0.25
Trichlorofluoromethane		NA	**1.12**	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	**1.91**	1	**1.35**	1	< 1.00	1	< 1.00	1	**1.12**	1	**1.85**	1
Trichlorotrifluoroethane			< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Vinyl Chloride		<1.0	< 0.25	0.25	< 0.25	0.25	< 0.30	0.25	< 0.27	0.25	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25	< 0.28	0.25	< 0.29	0.25	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25	< 0.26	0.25	< 0.25	0.25
BTEX			**42.5**		**50.69**		**0**		**0**		**35.01**		**32.88**		**285**		**0**		**0**		**37.64**		**0**		**346.57**		**0**		**94.25**	
Total VOCs			**200.12**		**308.09**		**4685.79**		**178.67**		**308.38**		**168.696**		**822.11**		**230.67**		**1564.5**		**245.677**		**8287**		**1052.52**		**237.8**		**593.39**	

Notes:
NA No guidance value or standard available
(a) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006. New York State Department of Health.
(b) NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005, Summary of Background Levels for Selected Compounds (NYSDOH

TABLE 19

Project Permit Listing

To Be Updated as Project Progresses

Permit	*Permit Number*	*Originating Agency*	*Pursuant to*	*Issued*	*Expires*	*Contact Phone*
NO PERMITS ISSUED AT THIS TIME - TO BE ADDED						

Table 20
Emergency Contact List

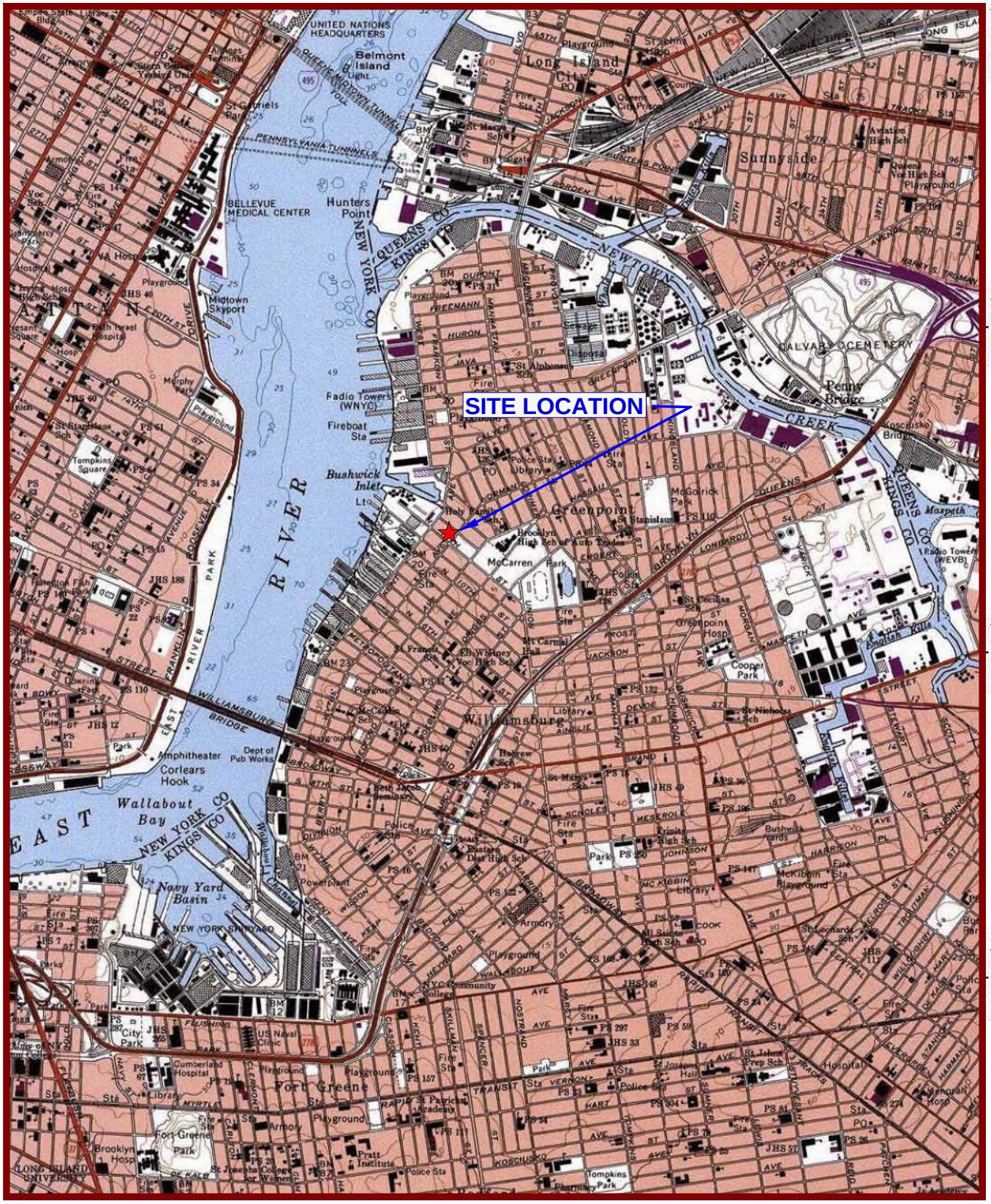
General Contacts

General Emergencies	911
NYC Police	911
NYC Fire Department	911
NYC Department of Health	212-676-2400
Woodhull Medical Center	718-963-6010
Brooklyn Hospital Center	718-250-6010
Poison Control	800-222-1222
National Response Center	800-424-8802
NYSDEC Spills Hotline	800-457-7362

Project Contacts

NYSDEC Project Manager	To be named	To be added
NYSDOH Project Manager	To be named	To be added
EBC Project Manager	Kevin Brussee	631-504-6000
EBC BCP Program Manager	Charles Sosik	631-504-6000
EBC Site Safety Officer	Chawinie Miller	631-504-6000
Remedial Engineer	Ariel Czemerinski	516-987-1662
Construction Manager	Allan Konstam	917-494-9723

FIGURES

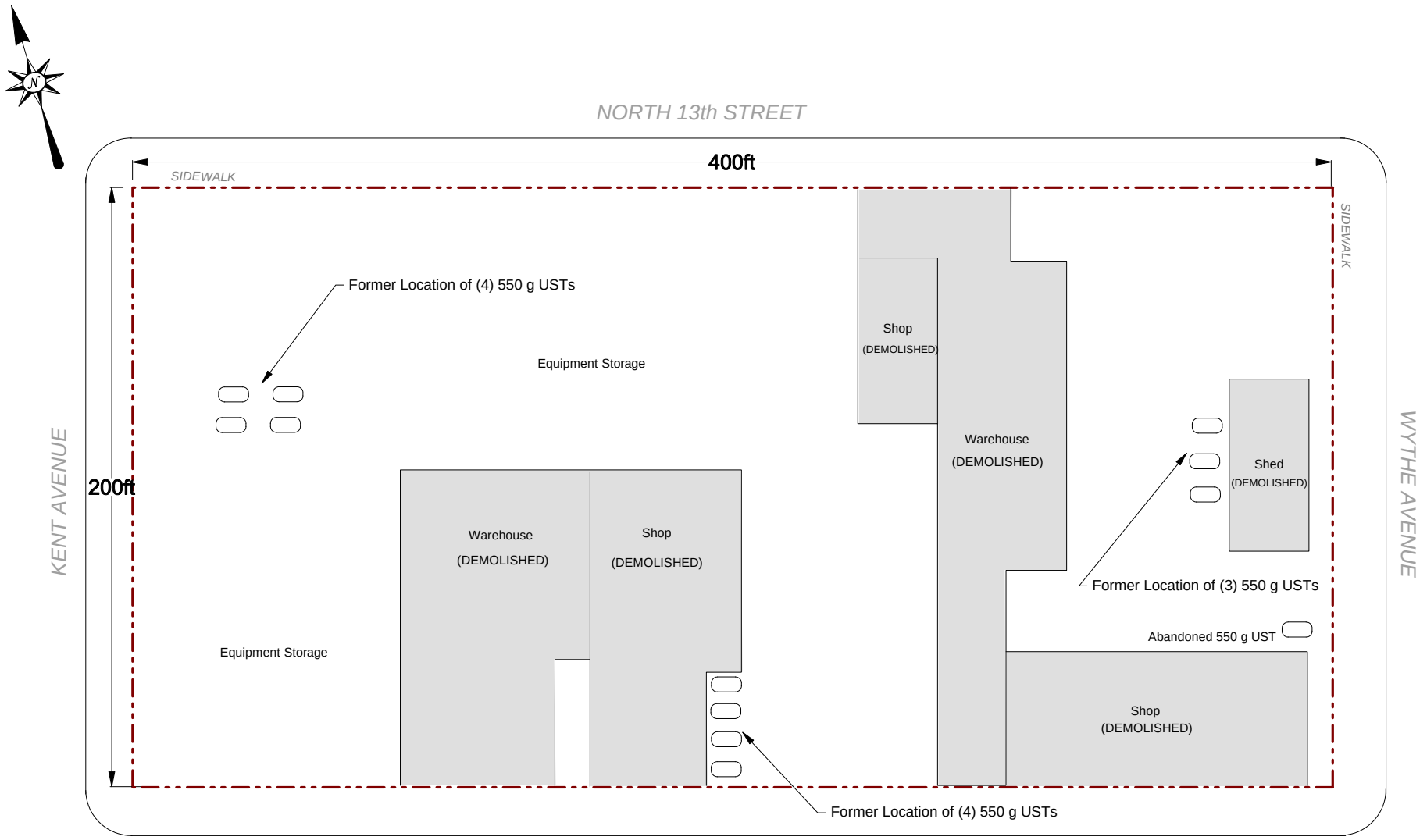


USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

FORMER SUNBELT EQUIPMENT
25 KENT AVENUE, BROOKLYN, NY

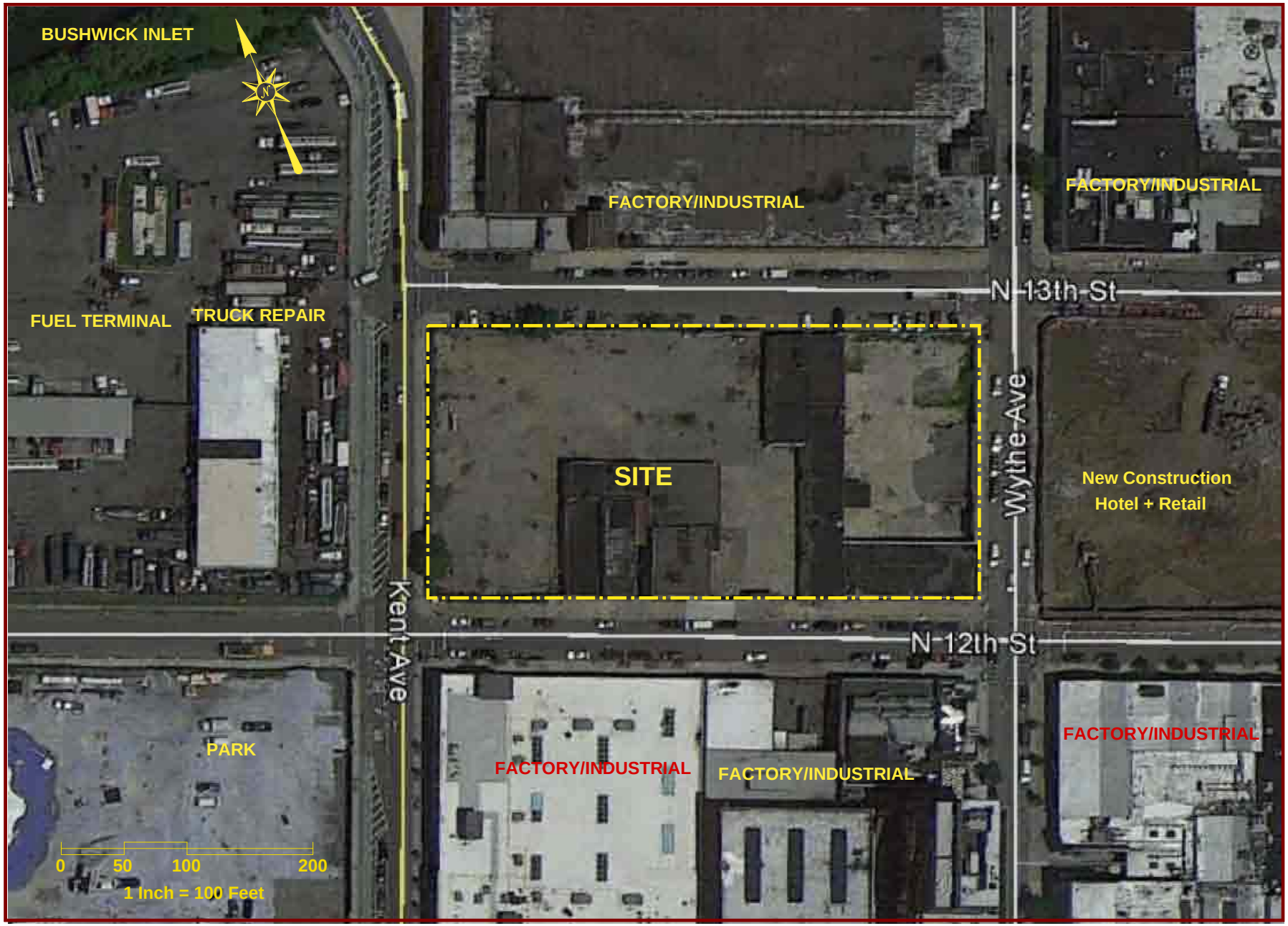
FIGURE 1 SITE LOCATION MAP



EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 2

Site Name: FORMER SUNBELT EQUIPMENT SITE
Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249
Drawing Title: SITE PLAN



EBC
Environmental Business Consultants
1808 Middle Country Road, Ridge, NY 11961
Phone: 631.504.6000
Fax: 631.924.2780

Former Sunbelt Equipment
25 Kent Avenue, Brooklyn, NY

FIGURE 3 Project Site and Adjacent Properties

EBC
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Figure No. 4

Site Name: Sunbelt Rentals
Site Address: 25 Kent Avenue, Brooklyn, NY 11249
Drawing Title: Test Pit Sampling Locations

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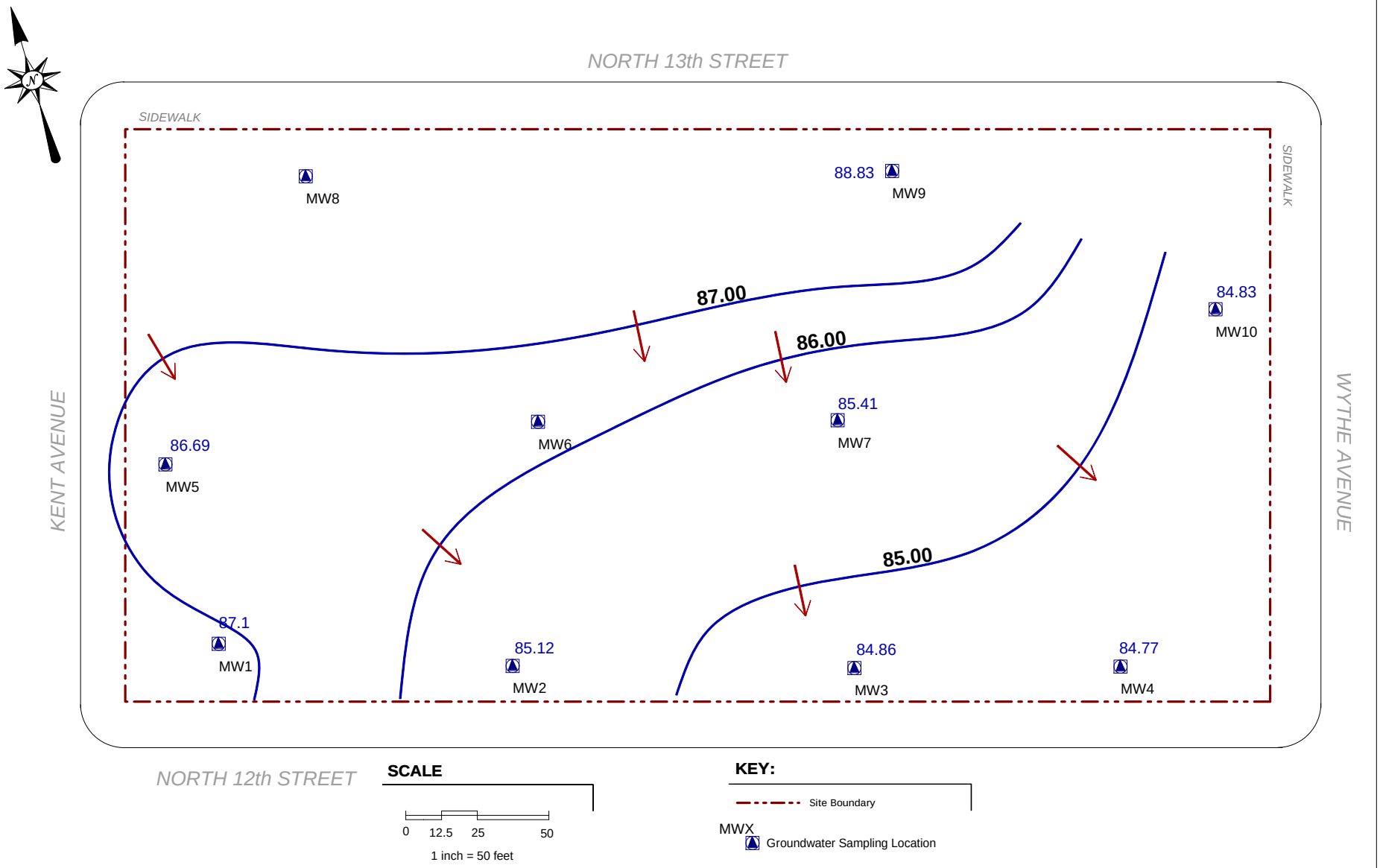
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 5

Site Name: FORMER SUNBELT EQUIPMENT SITE
Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249
Drawing Title: SOIL GAS AND MONITORING WELL LOCATIONS



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Environmental Business Consultants
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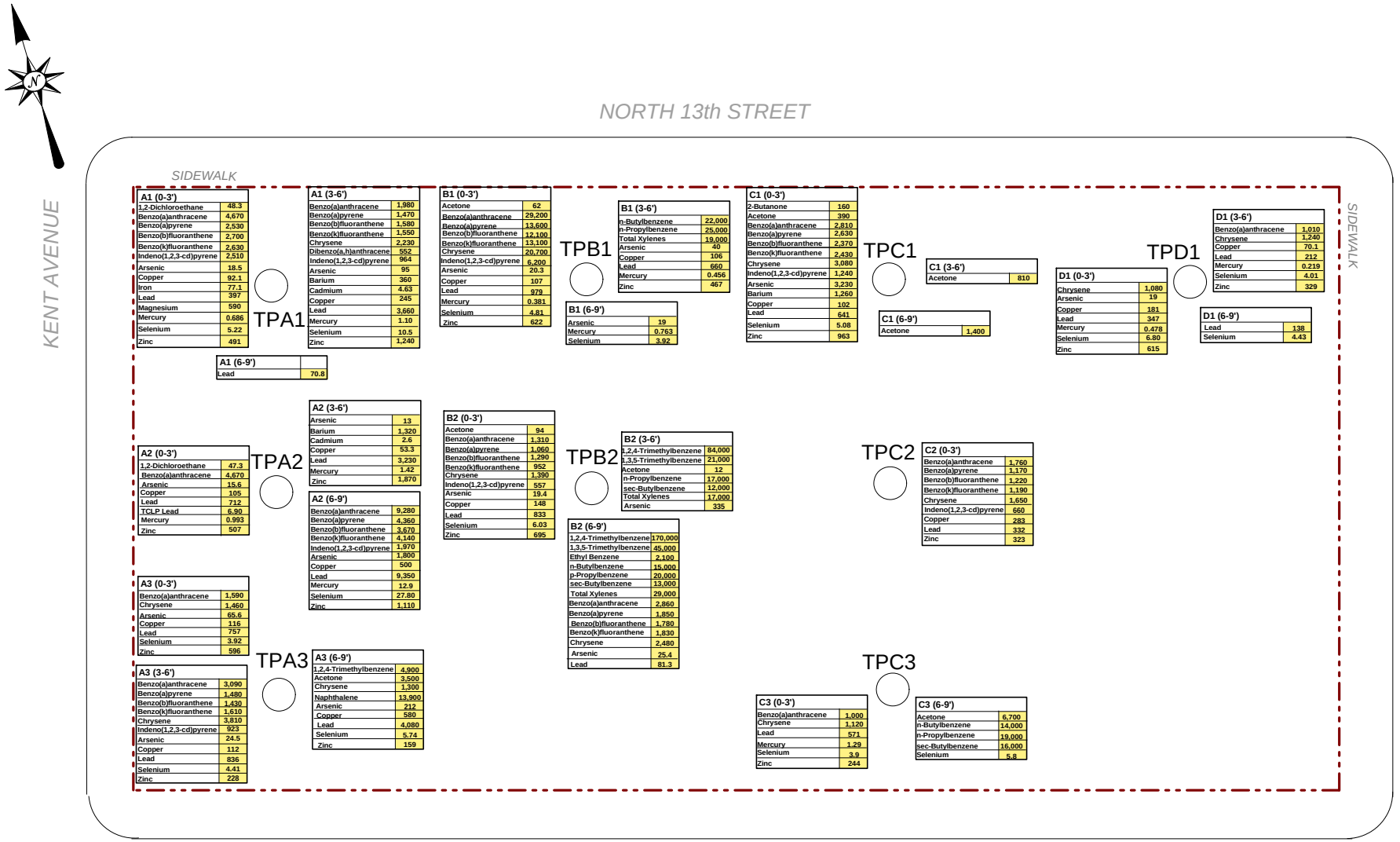
Fax 631. 924 .2870

Figure No. 6

Site Name: Former Sunbelt Equipment Site

Site Address: 25 Kent Avenue, Brooklyn, NY 11249

Drawing Title: Groundwater Elevation and Flow Map (12/22/14)



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Environmental Business Consultants
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. **7A**

Site Name: Sunbelt Rentals
Site Address: 25 Kent Avenue, Brooklyn, NY 11249
Drawing Title: Shallow Soil Exceedences

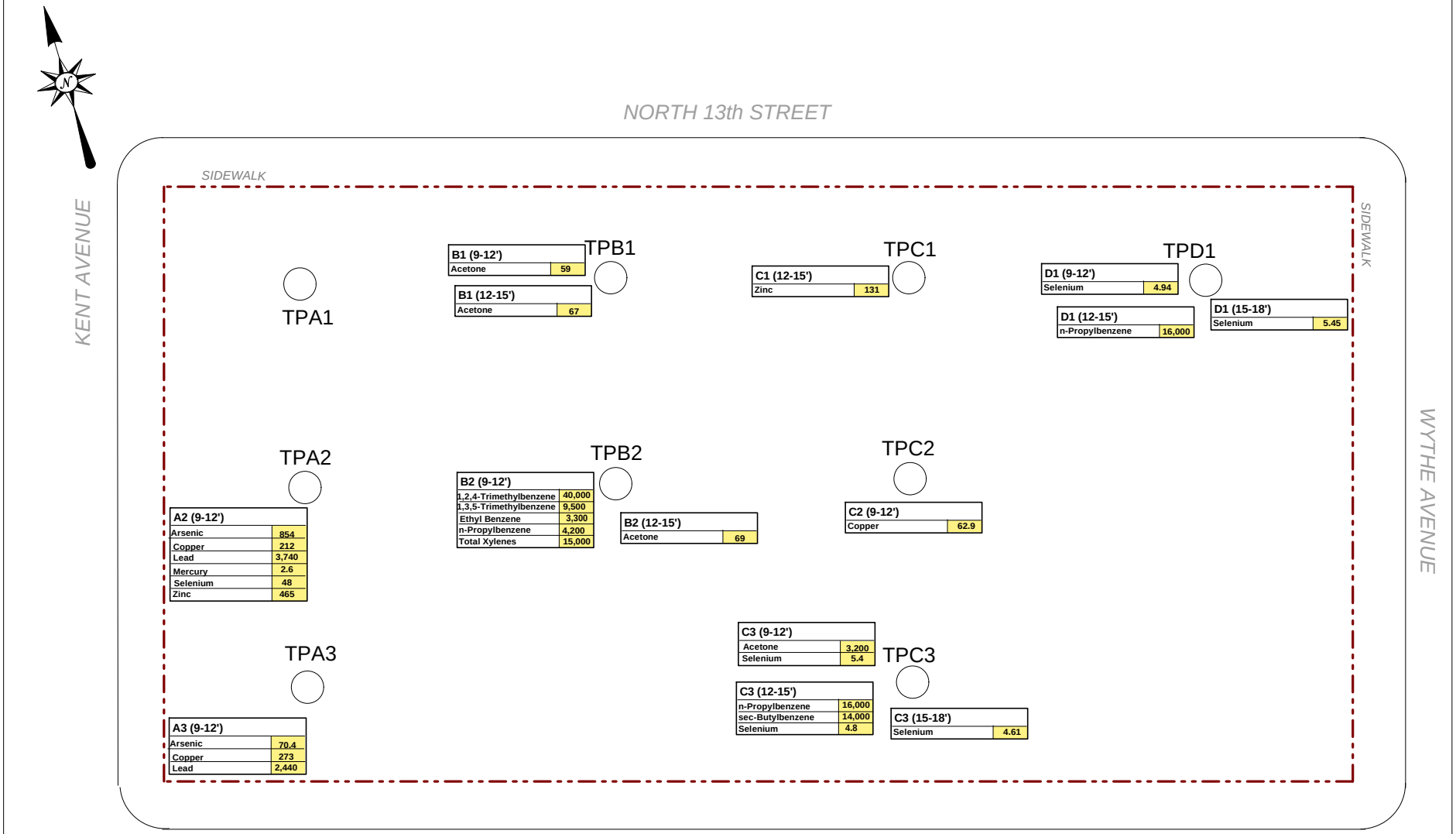

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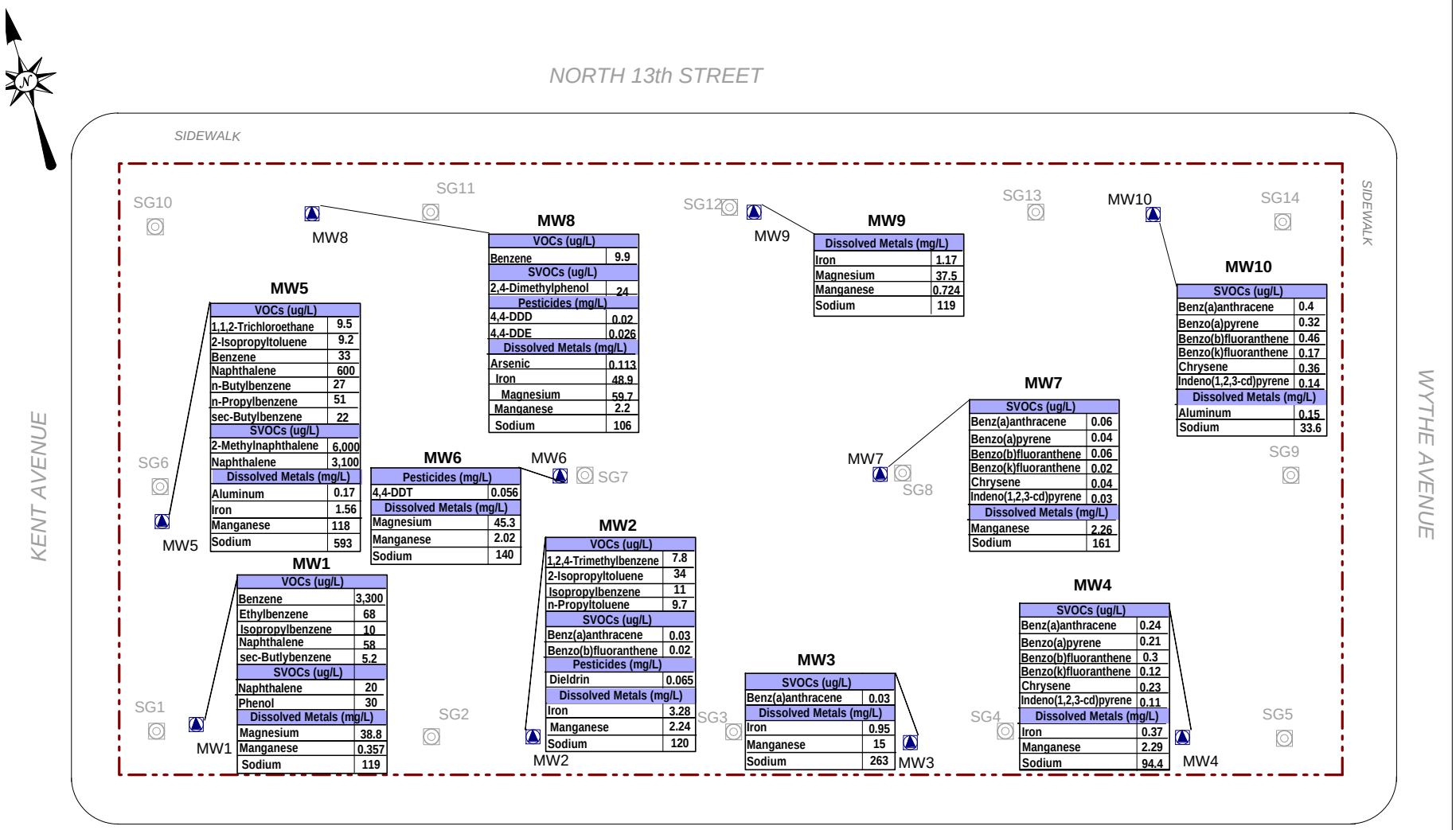
Figure No. 7B

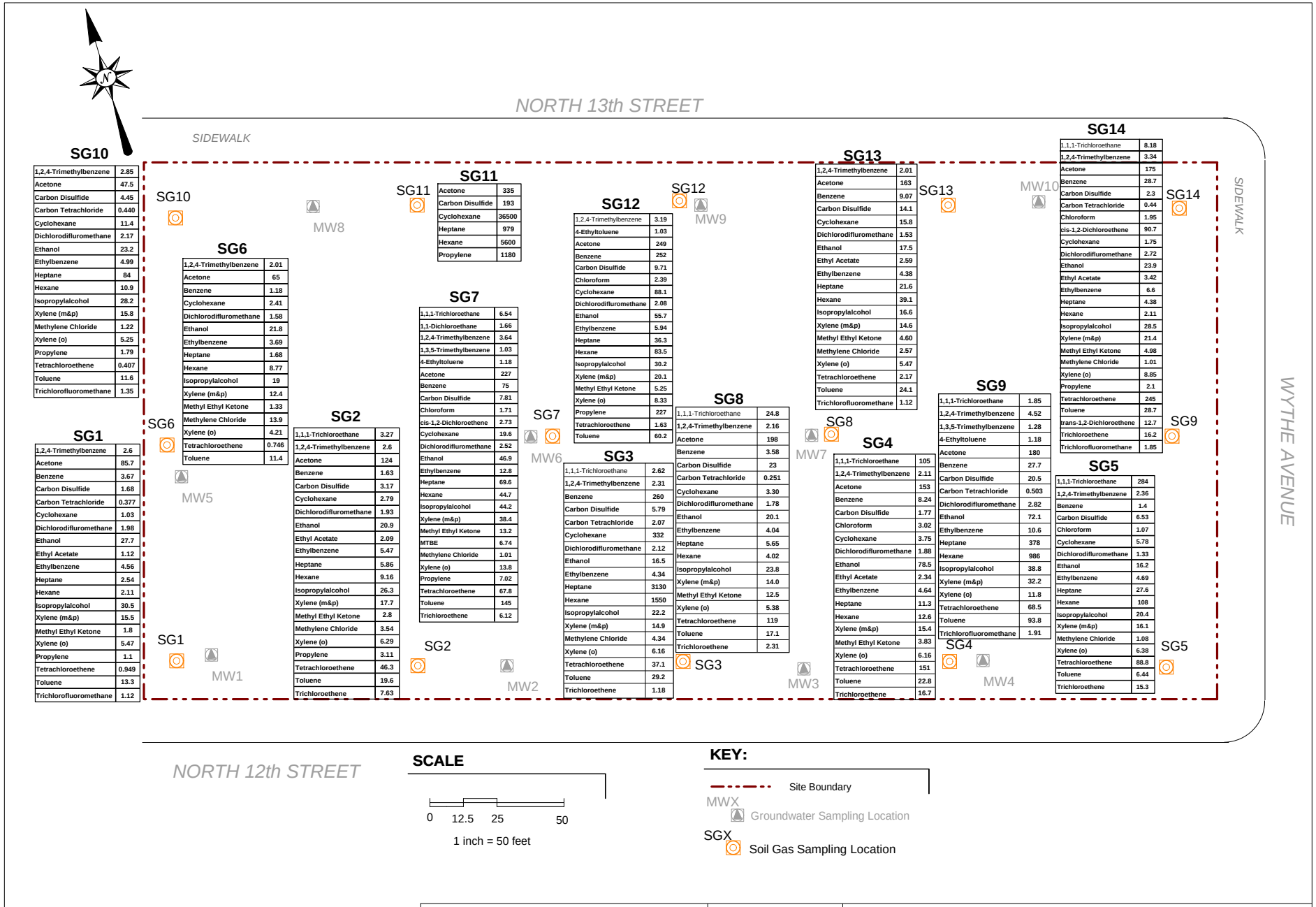
Site Name: Sunbelt Rentals
Site Address: 25 Kent Avenue, Brooklyn, NY 11249
Drawing Title: Deep Soil Exceedences



EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 8

Site Name: FORMER SUNBELT EQUIPMENT
Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249
Drawing Title: GROUNDWATER RESULTS ABOVE AWQS



SG10

1,2,4-Trimethylbenzene	2.85
Acetone	47.5
Carbon Disulfide	4.45
Carbon Tetrachloride	0.440
Cyclohexane	11.4
Dichlorodifluromethane	2.17
Ethanol	23.2
Ethylbenzene	4.99
Heptane	84
Hexane	10.9
Isopropylalcohol	28.2
Xylene (m&p)	15.8
Methylene Chloride	1.22
Xylene (o)	5.25
Propylene	1.79
Tetrachloroethene	0.407
Toluene	11.6
Trichlorofluoromethane	1.35

SG11

Acetone	335
Carbon Disulfide	193
Cyclohexane	36500
Heptane	979
Hexane	5600
Propylene	1180

SG6

1,2,4-Trimethylbenzene	2.01
Acetone	65
Benzene	1.18
Cyclohexane	2.41
Dichlorodifluromethane	1.58
Ethanol	21.8
Ethylbenzene	3.69
Heptane	1.68
Hexane	8.77
Isopropylalcohol	19
Xylene (m&p)	12.4
Methyl Ethyl Ketone	1.33
Methylene Chloride	13.9
Xylene (o)	4.21
Tetrachloroethene	0.746
Toluene	11.4

SG7

1,1,1-Trichloroethane	6.54
1,1-Dichloroethane	1.66
1,2,4-Trimethylbenzene	3.64
1,3,5-Trimethylbenzene	1.03
4-Ethyltoluene	1.18
Acetone	227
Benzene	75
Carbon Disulfide	7.81
Chloroform	1.71
cis-1,2-Dichloroethene	2.73
Cyclohexane	19.6
Dichlorodifluromethane	2.52
Ethanol	46.9
Ethylbenzene	12.8
Heptane	69.6
Hexane	44.7
Isopropylalcohol	44.2
Xylene (m&p)	38.4
Methyl Ethyl Ketone	13.2
MTBE	6.74
Methylene Chloride	1.01
Xylene (o)	13.8
Propylene	7.02
Tetrachloroethene	67.8
Toluene	145
Trichloroethene	6.12

SG12

1,2,4-Trimethylbenzene	3.19
4-Ethyltoluene	1.03
Acetone	249
Benzene	252
Carbon Disulfide	9.71
Chloroform	2.39
Cyclohexane	88.1
Dichlorodifluromethane	2.08
Ethanol	55.7
Ethylbenzene	5.94
Heptane	36.3
Hexane	83.5
Isopropylalcohol	30.2
Xylene (m&p)	20.1
Methyl Ethyl Ketone	5.25
Xylene (o)	8.33
Propylene	227
Tetrachloroethene	1.63
Toluene	60.2

SG13

1,2,4-Trimethylbenzene	2.01
Acetone	163
Benzene	9.07
Carbon Disulfide	14.1
Cyclohexane	15.8
Dichlorodifluromethane	1.53
Ethanol	17.5
Ethyl Acetate	2.59
Ethylbenzene	4.38
Heptane	21.6
Hexane	39.1
Isopropylalcohol	16.6
Xylene (m&p)	14.6
Methyl Ethyl Ketone	4.60
Methylene Chloride	2.57
Xylene (o)	5.47
Tetrachloroethene	2.17
Toluene	24.1
Trichlorofluoromethane	1.12

SG14

1,1,1-Trichloroethane	8.18
1,2,4-Trimethylbenzene	3.34
Acetone	175
Benzene	28.7
Carbon Disulfide	2.3
Carbon Tetrachloride	0.44
Chloroform	1.95
cis-1,2-Dichloroethene	90.7
Cyclohexane	1.75
Dichlorodifluromethane	2.72
Ethanol	23.9
Ethyl Acetate	3.42
Ethylbenzene	6.6
Heptane	4.38
Hexane	2.11
Isopropylalcohol	28.5
Xylene (m&p)	21.4
Methyl Ethyl Ketone	4.98
Methylene Chloride	1.01
Xylene (o)	8.85
Propylene	2.1
Tetrachloroethene	245
Toluene	28.7
trans-1,2-Dichloroethene	12.7
Trichloroethene	16.2
Trichlorofluoromethane	1.85

SG1

1,2,4-Trimethylbenzene	2.6
Acetone	85.7
Benzene	3.67
Carbon Disulfide	1.68
Carbon Tetrachloride	0.377
Cyclohexane	1.03
Dichlorodifluromethane	1.98
Ethanol	27.7
Ethyl Acetate	1.12
Ethylbenzene	4.56
Heptane	2.54
Hexane	2.11
Isopropylalcohol	30.5
Xylene (m&p)	15.5
Methyl Ethyl Ketone	1.8
Xylene (o)	5.47
Propylene	1.1
Tetrachloroethene	0.949
Toluene	13.3
Trichlorofluoromethane	1.12

SG2

1,1,1-Trichloroethane	3.27
1,2,4-Trimethylbenzene	2.6
Acetone	124
Benzene	1.63
Carbon Disulfide	3.17
Cyclohexane	2.79
Dichlorodifluromethane	1.93
Ethanol	20.9
Ethyl Acetate	2.09
Ethylbenzene	5.47
Heptane	5.86
Hexane	9.16
Isopropylalcohol	26.3
Xylene (m&p)	17.7
Methyl Ethyl Ketone	2.8
Methylene Chloride	3.54
Xylene (o)	6.29
Propylene	3.11
Tetrachloroethene	46.3
Toluene	19.6
Trichloroethene	7.63

SG3

1,1,1-Trichloroethane	2.62
1,2,4-Trimethylbenzene	2.31
Benzene	260
Carbon Disulfide	5.79
Carbon Tetrachloride	2.07
Cyclohexane	332
Dichlorodifluromethane	2.12
Ethanol	16.5
Ethylbenzene	4.34
Heptane	3130
Hexane	1550
Isopropylalcohol	22.2
Xylene (m&p)	14.9
Methylene Chloride	4.34
Xylene (o)	6.16
Tetrachloroethene	37.1
Toluene	29.2
Trichloroethene	1.18

SG8

1,1,1-Trichloroethane	24.8
1,2,4-Trimethylbenzene	2.16
Acetone	198
Benzene	3.58
Carbon Disulfide	23
Carbon Tetrachloride	0.251
Cyclohexane	3.30
Dichlorodifluromethane	1.78
Ethanol	20.1
Ethylbenzene	4.04
Heptane	5.65
Hexane	4.02
Isopropylalcohol	23.8
Xylene (m&p)	14.0
Methyl Ethyl Ketone	12.5
Xylene (o)	5.38
Tetrachloroethene	119
Toluene	17.1
Trichloroethene	2.31

SG4

1,1,1-Trichloroethane	105
1,2,4-Trimethylbenzene	2.11
Acetone	153
Benzene	8.24
Carbon Disulfide	1.77
Chloroform	3.02
Cyclohexane	3.75
Dichlorodifluromethane	1.88
Ethanol	78.5
Ethyl Acetate	2.34
Ethylbenzene	4.64
Heptane	11.3
Hexane	12.6
Xylene (m&p)	15.4
Methyl Ethyl Ketone	3.83
Xylene (o)	6.16
Tetrachloroethene	151
Toluene	22.8
Trichloroethene	16.7

SG9

1,1,1-Trichloroethane	1.85
1,2,4-Trimethylbenzene	4.52
1,3,5-Trimethylbenzene	1.28
4-Ethyltoluene	1.18
Acetone	180
Benzene	27.7
Carbon Disulfide	20.5
Carbon Tetrachloride	0.503
Dichlorodifluromethane	2.82
Ethanol	72.1
Ethylbenzene	10.6
Heptane	378
Hexane	986
Isopropylalcohol	38.8
Xylene (m&p)	32.2
Xylene (o)	11.8
Tetrachloroethene	68.5
Toluene	93.8
Trichlorofluoromethane	1.91

SG5

1,1,1-Trichloroethane	284
1,2,4-Trimethylbenzene	2.36
Benzene	1.4
Carbon Disulfide	6.53
Chloroform	1.07
Cyclohexane	5.78
Dichlorodifluromethane	1.33
Ethanol	16.2
Ethylbenzene	4.69
Heptane	27.6
Hexane	108
Isopropylalcohol	20.4
Xylene (m&p)	16.1
Methylene Chloride	1.08
Xylene (o)	6.38
Tetrachloroethene	88.8
Toluene	6.44
Trichloroethene	15.3

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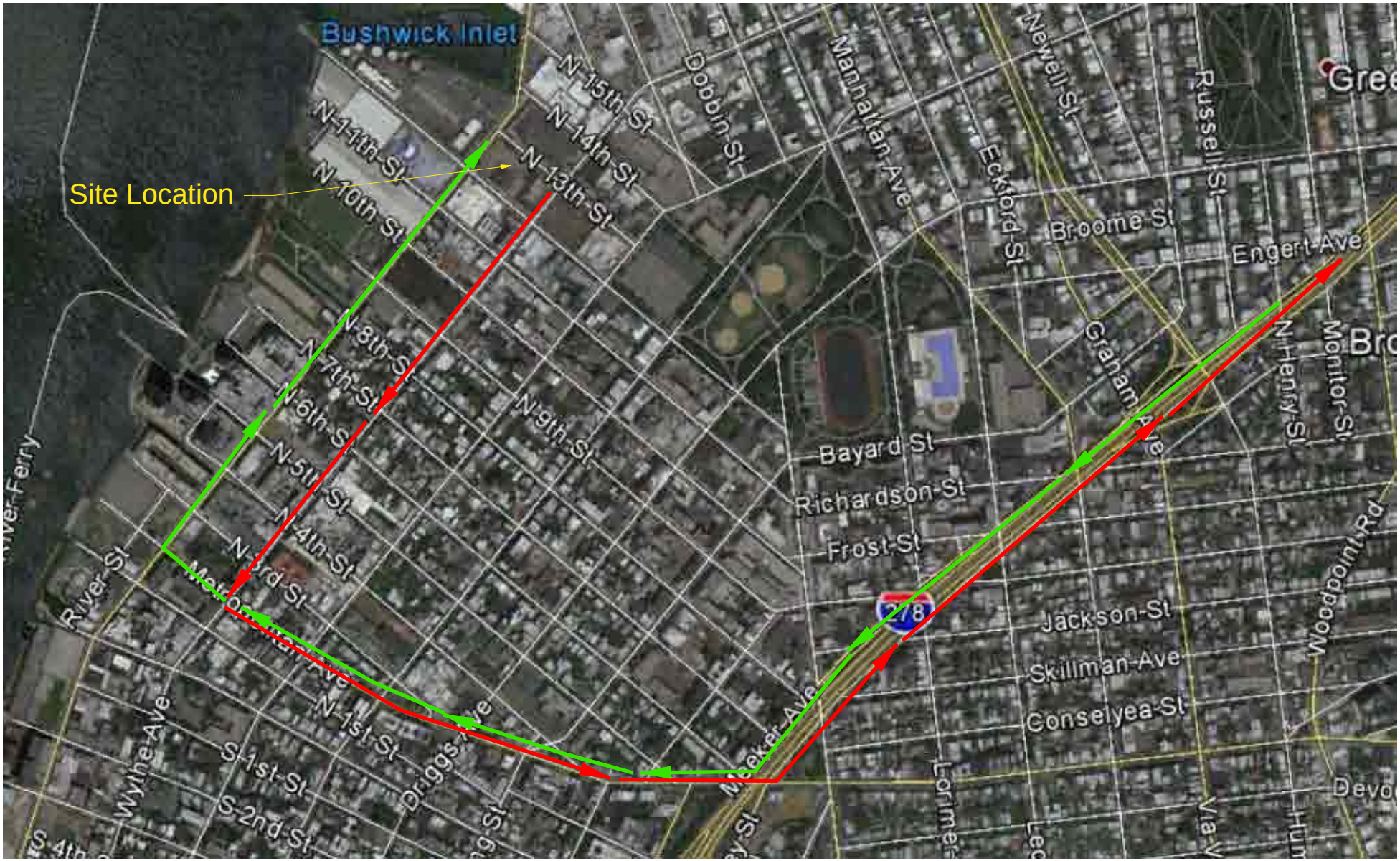
Figure No. 9

Site Name: FORMER SUNBELT EQUIPMENT
Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249
Drawing Title: Soil Vapor Detections



Inbound Truck Route

Outbound Truck Route

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Figure No. 10

Site Name: Former Sunbelt Equipment Site

Site Address: 25 Kent Avenue, Brooklyn, NY 11249

Drawing Title: Truck Routes

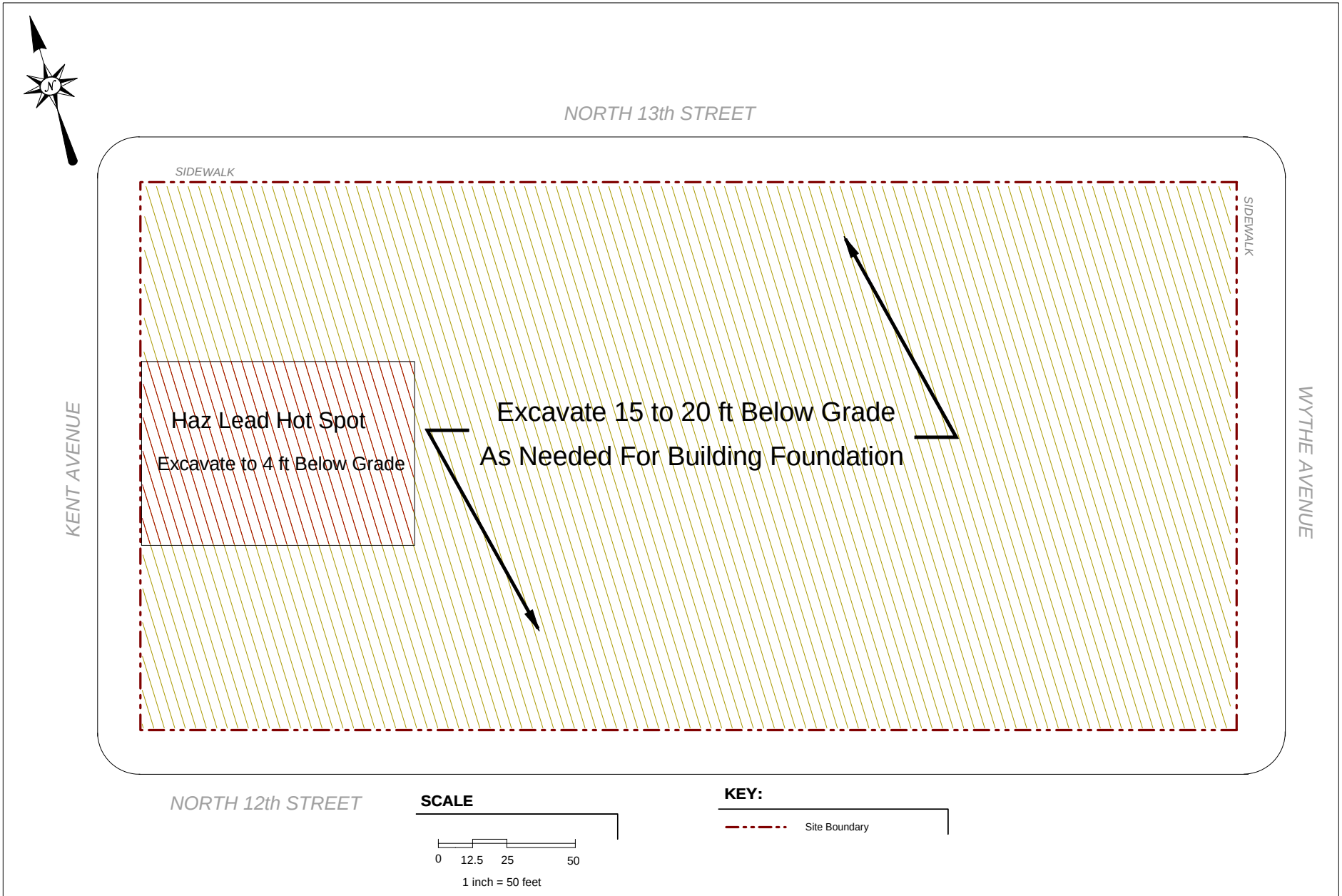

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Figure No. 11

Site Name: Sunbelt Rentals
Site Address: 25 Kent Avenue, Brooklyn, NY 11249
Drawing Title: Excavation Plan

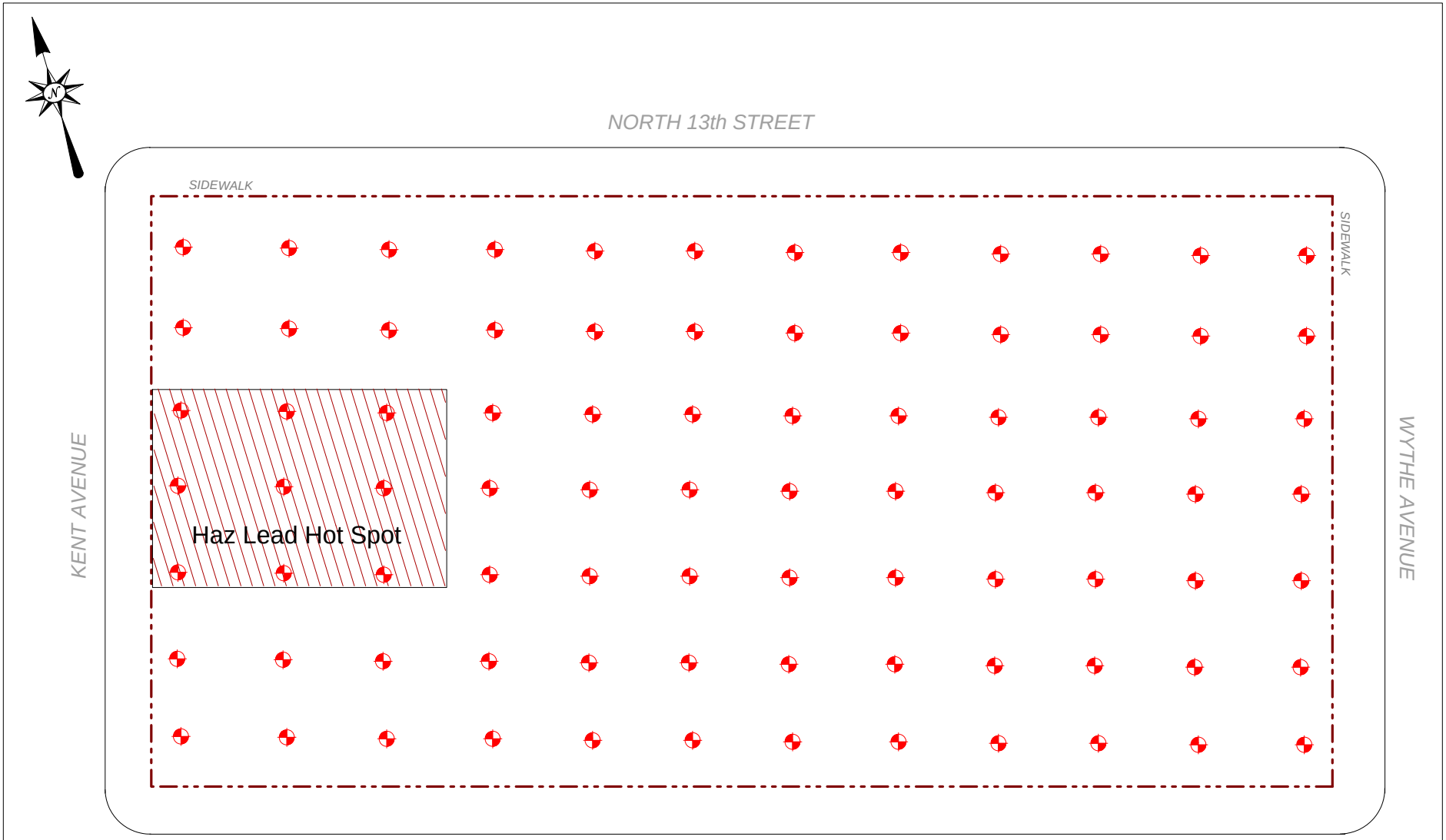

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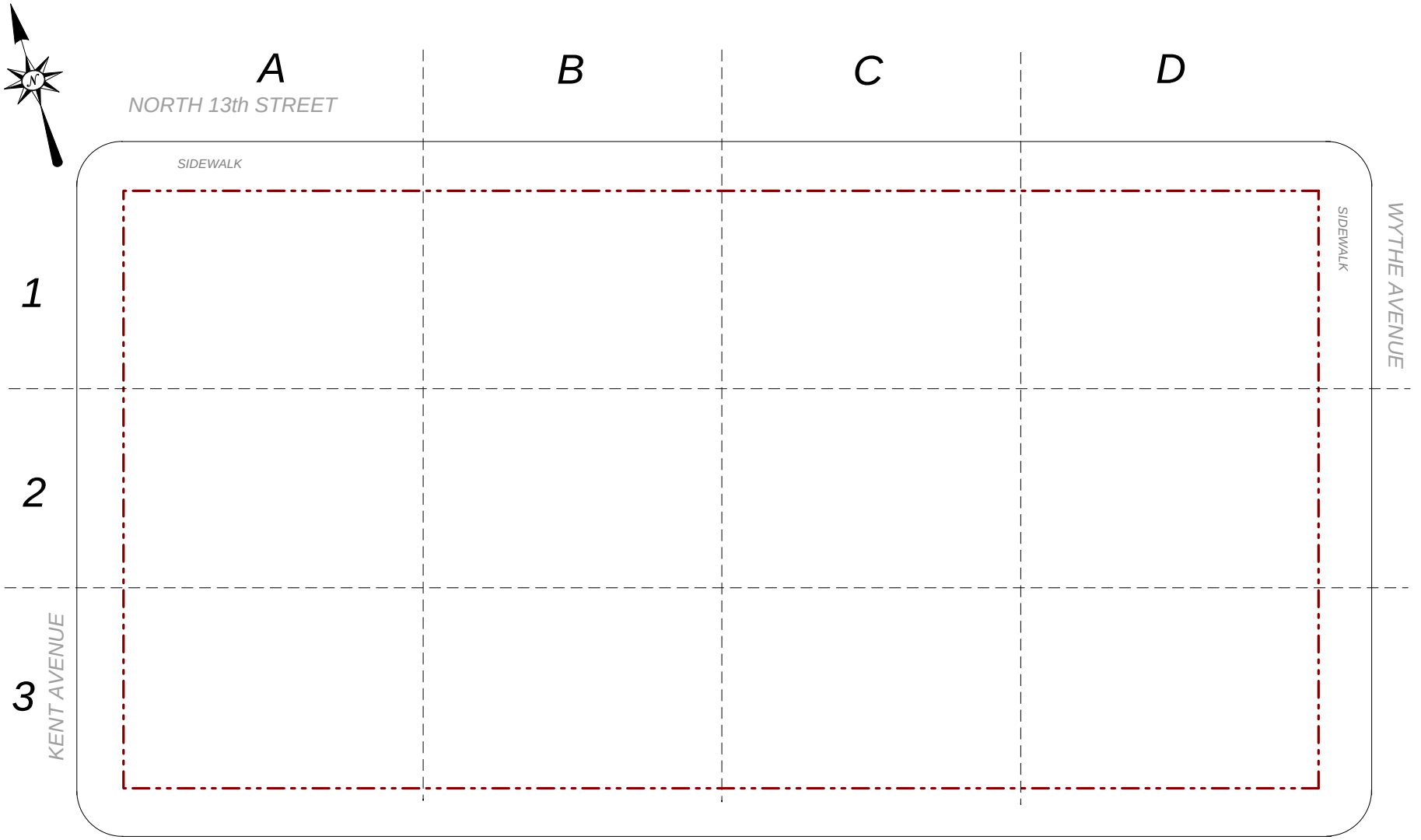
Figure No. 12

Site Name: SUNBELT RENTALS
Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249
Drawing Title: ENDPOINT SAMPLING PLAN PLAN



SCALE

0 12.5 25 50

1 inch = 50 feet

KEY:

Site Boundary

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Figure No. 13

Site Name: FORMER SUNBUILT EQUIPMENT

Site Address: 25 KENT AVENUE, BROOKLYN, NY 11249

Drawing Title: ALPHA-NUMERIC GRID MAP

ATTACHMENT A
Metes and Bounds Description of Property

SCHEDULE "A" LEGAL DESCRIPTION

Parcel I:
ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of North 12th Street and the easterly side of Kent Avenue:

RUNNING THENCE northerly along the easterly side of Kent Avenue, 200 feet to the corner formed by the intersection of the easterly side of Kent Avenue and the southerly side of North 13th Street;

THENCE easterly along the southerly side of North 13th Street, 250 feet;

THENCE southerly parallel with Kent Avenue, 100 feet;

THENCE westerly parallel with North 13th Street, 150 feet;

THENCE southerly parallel with Kent Avenue, 100 feet to the northerly side of North 12th Street; and

THENCE westerly along the northerly side of North 12th Street, 100 feet to the point or place of BEGINNING.

Note: Address, Block & Lot shown for informational purposes only

Designated as Block 2282 Lot 1 and also known as 19 Kent Avenue.

Parcel II:
ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at a point on the Northeasterly side of North 12th Street, distant 240 feet 3 1/2 inches Northwesterly from the corner formed by the intersection of the Northeasterly side of North 12th Street with the Northwesterly side of Wythe Avenue;

RUNNING THENCE Northeasterly parallel with Wythe Avenue, 73 feet 3 inches;

THENCE Southeasterly parallel with North 12th Street, 6 inches;

THENCE Northeasterly at right angles to North 12th Street, 26 feet 9 inches to the center line of the block;

THENCE Northwesterly along the center line of the block and parallel with North 12th Street, 60 feet 2 1/2 inches;

THENCE Southwesterly parallel with Wythe Avenue, 100 feet to the Northeasterly side of North 12th Street;
THENCE Southeasterly along the Northeasterly side of North 12th Street, 59 feet 8 1/2 inches to the

point or place of BEGINNING.

Note: Address, Block & Lot shown for informational purposes only

Designated as Block 2282 Lot 34 and also known as 77 North 12th Street.

Parcel III and IV:
ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the westerly side of Wythe Avenue and the southerly side of North 13th Street;

RUNNING THENCE in a westerly direction along the southerly side of North 13th Street, a distance of 150 feet. Said point being distant 250 feet easterly from the intersection formed by the intersection of the southerly side of North 13th Street and the easterly side of Kent Avenue;

THENCE in a southerly direction from said point and parallel with the easterly side of Kent Avenue and the westerly side of Wythe Avenue, a distance of 100 feet to the center line of the block between North 13th Street and North 12th Street;

THENCE westerly along the said center line of the block, a distance of 89 feet 9 1/2 inches more or less;

THENCE southerly 26 feet 9 inches;

THENCE westerly and parallel with the northerly side of North 12th Street, a distance of 6 inches;

THENCE southerly from said point a distance of 73 feet 3 inches to the northerly side of North 12th Street to a point thereon westerly, a distance of 240 feet 3 1/2 inches from the intersection of the westerly side of Wythe Avenue and the northerly side of North 12th Street;

THENCE easterly along the northerly side of North 12th Street, a distance of 240 feet 3 1/2 inches to the corner formed by the intersection of the westerly side of Wythe Avenue and the northerly side of North 12th Street;

THENCE northerly along the westerly side of Wythe Avenue, a distance of 200 feet to the corner formed by the intersection of the westerly side of Wythe Avenue and the southerly side of North 13th Street, the point or place of BEGINNING.

Note: Address, Block & Lot shown for informational purposes only

Designated as Block 2282 Lot 28 and 15 and also known as 83 North 12th Street and 77 North 13th Street.

ATTACHMENT B
Health and Safety Plan

FORMER SUNBELT EQUIPMENT

25 KENT AVENUE
BROOKLYN, NEW YORK
Block 2312 Lot 1

CONSTRUCTION HEALTH AND SAFETY PLAN

NYCDEP PROJECT NO. 13DEPTECH077K
CEQR NO. 13BSA097K

DECEMBER 2014

Prepared for:
19 Kent Development LLC
199 Lee Avenue # 693
Brooklyn, NY 11211

Prepared by:

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 Middle Country Road
Ridge, NY 11961

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FIGURES

APPENDICES

STATEMENT OF COMMITMENT

This Construction Health and Safety Plan (CHASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Remedial Action at 25 Avenue, Brooklyn, NY.

This CHASP, which applies to persons present at the site actually or potentially exposed to hazardous materials, describes emergency response procedures for actual and potential chemical hazards. This CHASP is also intended to inform and guide personnel entering the work area or exclusion zone. 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.

1.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for the planned Remedial Action at 25 Kent Avenue, Brooklyn, NY to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during remedial activities. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response Final rule, this CHASP, including the attachments, addresses safety and health hazards related to excavation, loading and other soil disturbance activities and is based on the best information available. The CHASP may be revised by EBC at the request of the developer and/or a regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by EBC's project manager, site safety officer and/or the EBC health and safety consultant.

1.1 Training Requirements

Personnel entering the exclusion zone or decontamination zone are required to be certified in health and safety practices for hazardous waste site operations as specified in the Federal OSHA Regulations CFR 1910.120e (revised 3/6/90).

Paragraph (e - 3) of the above referenced regulations requires that all on-site management personnel directly responsible for or who supervise employees engaged in hazardous waste operations, must initially receive 8 hours of supervisor training related to managing hazardous waste work.

Paragraph (e - 8) of the above referenced regulations requires that workers and supervisors receive 8 hours of refresher training annually on the items specified in Paragraph (e-1) and/or (e-3).

Additionally all on-site personnel must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.
- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

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Health and Safety meetings will be conducted on a daily basis and will cover protective clothing and other equipment to be used that day, potential and chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

1.2 Medical Monitoring Requirements

Field personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f) if respirators or other breathing related PPE is needed. 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.

1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (EBC employees and/or owner or owners representatives) entering the 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 CHASP. Amendments to the HASP are acknowledged by completing forms included in **Appendix B**.

1.4 Key Personnel - Roles and Responsibilities

Personnel responsible for implementing this Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Mr. Kevin Brussee	EBC – Project Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Ms. Chawinie Miller	Health & Safety Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Mr. Kevin Waters	Site Safety Officer	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000

The project manager is responsible for overall project administration and, with guidance from the site safety officer, for supervising the implementation of this CHASP. 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 site safety officer is also responsible for coordinating health and safety activities related to hazardous material exposure on-site. The site safety officer is responsible for the following:

1. Educating personnel about information in this CHASP 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 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 CHASP.

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.

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2.0 SITE BACKGROUND AND SCOPE OF WORK

The address for the subject property 25 Kent Avenue, NY. The Site is comprised of a single tax parcel covering 80,000 square feet (1.83 acres). The subject property is located in the City of New York and Borough of Brooklyn (Kings County) and is identified as Block 2282 Lot 1 on the NY City tax map.. The lot encompasses the entire block with approximately 200 ft of street frontage on Kent and Wythe Avenues and 400 feet of street frontage on N. 12th and N. 13th Streets. Currently the property is vacant but was most recently occupied by Sunbelt Equipment, a construction equipment rental company.

The Site had been improved with two groups of interconnected structures, identified as the East and West Buildings. The West Building was situated at the south-central portion of the Site and is comprised of one (1) one-story structure and two (2) one and partial two-story structures, each of which fronts along North 12th Street. These structures have an approximate footprint of 10,500 s.f. The Eastern Building is an "L"-shaped structure comprised of two (2) interconnected two-story buildings, with a partial basement (boiler room). The buildings have an approximate footprint of 11,375 s.f., and run west along North 12th Street from Wythe Avenue, before turning north, and continuing to the northern property boundary along North 13th Street. The buildings are vacant/unoccupied and undergoing demolition. As of the date of this report only a single building remains intact (See Figure 2 - Site Plan).

Remaining portions of the Site consist of asphalt and concrete paved yard areas, except for a small unpaved area at the northeastern portion of the Site. The perimeter of the Site, not bounded by buildings, is enclosed with chain-link, corrugated metal and/or plywood fencing approximately 10 feet tall, with a sidewalk shed located along portions of North 12th Street and roll-up access gates located on the north, south and east sides of the property.

Historically the site has been used as a petroleum works, a cooperage, a varnish works, a manufacturing facility, lumber storage and equipment maintenance and storage facility.

2.1 Previous Investigations

2.1.1 Remedial Investigation Report (EBC Decembber 2014)

A Remedial Investigation was completed at the Site in November 2014 through December 2014 and documented in a Remedial Investigation Report dated December 2014. The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development of a Remedial Work Plan to address the contamination.

Activities completed under the RI:

- Sampling for non-petroleum contaminants such as pesticides, PCBs and metals in soil and groundwater including the analysis of soil and groundwater samples
- Soil sampling and analysis for petroleum compounds in soil samples from test pit locations;
- The installation of groundwater monitoring wells

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- The collection and analysis of groundwater samples for petroleum compounds;
- The collection of analysis of soil gas and indoor air samples for VOCs from soil gas sampling locations.

The results of sampling performed during this RI, identified petroleum VOC and SVOC contamination throughout much of the property. The historic use of the Site as a petroleum works, equipment storage / maintenance yard facility has resulted in discharges of gasoline and diesel fuel / fuel oil contaminating most of the site with high levels of VOC and SVOCs. Releases have likely occurred from multiple sources including subsurface releases from underground storage tanks (USTs) and piping, and from surface spills related to fueling operations, equipment maintenance, fuel transfer and damaged and leaking heavy equipment. In this way the source areas compromise the majority of the Site.

Elevated levels of metals including arsenic, barium, copper, mercury, selenium, zinc and lead classified as hazardous, are present in the historic fill materials throughout the Site.

Groundwater is impacted with petroleum VOCs in the western third of the site with the greatest impact occurring in MW 1 located in the south west corner or the site. Total VOCs in this area of the site ranged from 82 ug/L in MW2 to 3,472 ug/L in MW1. SVOCs in groundwater were generally limited to napthalene which was present at a concentration of 20 ug/L in MW1. There were other reported exceedances for SVOCs in groundwater however these were in the parts per trillion range and more a function of the precision of the laboratory than actual contamination.

Soil gas sampling identified generally low levels of petroleum related volatile organic compounds (BTEX) though elevated levels of light end petroleum compounds including heptane, hexane and cyclo hexane were reported in several locations. Chlorinated VOCs (CVOCs) were reported in almost all of the soil gas samples and in some cases were present at levels above that which monitoring and possibly mitigation would be required to prevent vapor intrusion. There is no evidence that the CVOCs are Site related and are unlikely to be related to off-gassing from impacted groundwater. They appear to be migrating onto the property in vapor form from an off-site source.

The Report recommended excavation and disposal of petroleum contaminated soil within the source area along with proper handling and disposal of all soils excavated for structural elements of the new building. This work would be performed under an approved Remedial Action Work Plan which includes a Soil Management Plan, a Construction Health and Safety Plan and a Community Air Monitoring Plan.

Potential soil vapor impact should be re-evaluated following the completion of remedial activities to determine if conditions improve to the point where active mitigation is unnecessary. Further evaluation of vapor intrusion can also be performed following implementation of the RAWP to determine if the design elements of a subslab depressurization system should then be incorporated into the Remedial Action Work Plan for the Site as a contingency, should the potential for vapor intrusion remain following the removal of the impacted soils.

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2.2 Redevelopment Plans

The site is to be redeveloped through the new construction of a 10-story commercial building which will cover the entire Site. Plans include a 2-level cellar parking garage requiring excavation of the entire Site to a depth of 25 ft below grade. With groundwater present at 12 feet below grade, dewatering will be required during construction of the building's foundation.

The project includes retail space on the first floor, a health care facility on floors 2 through 9 and office space on the 10th floor. The basement levels will be used for parking and meter rooms.

2.3 Description of Remedial Action

Site activities included within the Remedial Action that are included within the scope of this HASP include the following:

1. Excavation of soil/fill exceeding Track 1 unrestricted use SCOs to depths as great as 12 feet below grade;
2. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
3. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs;
4. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
5. Dewatering and treatment of petroleum impacted groundwater before discharging to the NYC sewer system under a NYCDEP sewer discharge permit.
6. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications, (2) all Federal, State and local rules and regulations for handling and transport of material.
7. If Track 1 SCOs are not achieved, a composite cover system consisting of the concrete building slab will be constructed.
8. .If Track 1 cleanup is not achieved, implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
9. If Track 1 cleanup is not achieved, an Environmental Easement will be filed against the Site to ensure implementation of the SMP.

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3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, 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.

3.1 Physical Hazards

3.1.1 Tripping Hazards

An area of risk associated with on-site activities are presented by uneven ground, concrete, curbstones or equipment which may be present at the site thereby creating a potential tripping hazard. During intrusive work, care should be taken to mark or remove any obstacles within the exclusion zone.

3.1.2 Climbing Hazards

During site activities, workers may have to work on excavating equipment by climbing. The excavating contractor will conform with any applicable NIOSH and OSHA requirements or climbing activities.

3.1.3 Cuts and Lacerations

Field activities that involve excavating activities usually involve contact with various types of machinery. A first aid kit approved by the American Red Cross will be available during all intrusive activities.

3.1.4 Lifting Hazards

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the excavation program may be required to lift heavy objects. Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

3.1.5 Utility Hazards

Before conducting any excavation, the excavation contractor will be responsible for locating and verifying all existing utilities at each excavation.

3.1.6 Traffic Hazards

All traffic, vehicular and pedestrian, shall be maintained and protected at all times consistent with local, state and federal agency regulations regarding such traffic and in accordance with NYCDOT guidelines. The excavation contractor shall carry on his operations without undue interference or delays to traffic. The excavation contractor shall furnish all labor, materials, guards, barricades, signs, lights, and anything else necessary to maintain traffic and to protect his work and the public, during operations.

3.2 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.

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3.2.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel, which limits the dissipation of body heat and moisture, can cause heat stress.

The following prevention, recognition and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress and to apply the appropriate treatment.

1. Prevention
    a. Provide plenty of fluids. Available in the support zone will be a 50% solution of fruit punch and water or plain water.
    b. Work in Pairs. Individuals should avoid undertaking any activity alone.
    c. Provide cooling devices. A spray hose and a source of water will be provided to reduce body temperature, cool protective clothing and/or act as a quick-drench shower in case of an exposure incident.
    d. Adjustment of the work schedule. As is practical, the most labor-intensive tasks should be carried out during the coolest part of the day.

2. Recognition and Treatment
    a Heat Rash (or prickly heat):
        Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.
        Symptoms: Eruption of red pimples around sweat ducts accompanied by intense itching and tingling.
        Treatment: Remove source or irritation and cool skin with water or wet cloths.

    b. Heat Cramps (or heat prostration)
        Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.
        Symptoms: Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.
        Treatment: Perform the following while making arrangement for transport to a medical facility. Remove the worker to a contamination reduction zone. Remove protective clothing. Lie worker down on back in a cool place and raise feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of salt-water solution, using one teaspoon of salt in 12 ounces of water. Transport to a medical facility.
    c. Heat Stroke
        Cause: Same as heat exhaustion. This is also an extremely serious condition.
        Symptoms: Dry hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.
        Treatment: Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

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3.2.2 Cold Exposure

Exposure to cold weather, wet conditions and extreme wind-chill factors may result in excessive loss of body heat (hypothermia) and /or frostbite. To guard against cold exposure and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be readily available, rest periods should be adjusted as needed, and the physical conditions of on-site field personnel should be closely monitored. Personnel and supervisors working on-site will be made aware of the signs and symptoms of frost bite and hypothermia such as shivering, reduced blood pressure, reduced coordination, drowsiness, impaired judgment, fatigue, pupils dilated but reactive to light and numbing of the toes and fingers.

3.3 Chemical Hazards

"Urban fill" materials, present throughout the New York City area typically contain elevated levels of semi-volatile organic compounds and metals. These "contaminants" are not related to a chemical release occurring on the site, but are inherent in the reworked fill material in the area which contains ash and bits of tar and asphalt. Considering the previous sampling results and the past and present use of the site, the following compounds are considered for the site as potential contaminants: petroleum volatile organic compounds (VOCs), petroleum semi-volatile organic compounds (SVOCs), and heavy metals including arsenic, barium, cadmium, copper, lead, magnesium, mercury, selenium and zinc.

The primary routes of exposure to these contaminants are inhalation, ingestion and absorption.

Appendix C includes information sheets for suspected chemicals that may be encountered at the site.

3.3.1 Respirable Dust

Dust may be generated from vehicular traffic and/or excavation 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 or groundwater will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

3.3.2 Dust Control and Monitoring During Earthwork

Dust generated during excavation activities or other earthwork may contain contaminants identified in soils at the site. Dust will be controlled by wetting the working surface with water. Calcium chloride may be used if the problem cannot be controlled with water. Air monitoring and dust control techniques are specified in a site specific Dust Control Plan (if applicable). Site workers will not be required to wear APR's unless dust concentrations are consistently over 150 $\mu g/m^3$ over site-specific background in the breathing zone as measured by a dust monitor unless

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the site safety officer directs workers to wear APRs. The site safety officer will use visible dust as an indicator to implement the dust control plan.

3.3.3 Organic Vapors

Elevated levels of VOCs were detected in both soil and soil vapor samples collected during previous investigations at the site. Therefore, excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will periodically monitor organic vapors with a Photoionization Detector (PID) during excavation activities to determine whether organic vapor concentrations exceed action levels shown in Section 5 and/or the Community Air Monitoring Plan.

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4.0 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. **It is anticipated that work will be performed in Level D PPE.**

4.1 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;
- hard hat;
- gloves, as needed;
- safety glasses;
- hearing protection;
- equipment replacements are available as needed.

4.2 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 OVA, 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 workboots;
- chemical resistant overboots 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; and,
- 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.

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- chemical resistant coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves;
- disposable outer gloves;
- hard hat; and,
- ankles/wrists taped.

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

4.3 Activity-Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 4.0) and properties of identified or expected contaminants. **It is expected that 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 drilling locations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

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5.0 AIR MONITORING AND ACTION LEVELS

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

5.1 Air Monitoring Requirements

If excavation work is performed, air will be monitored for VOCs with a portable ION Science 3000EX photoionization detector, or the equivalent. If necessary, Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor. Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work.

The designated site safety officer will record air monitoring data and ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. Monitoring results will be recorded in a field notebook and will be transferred to instrument reading logs.

5.2 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage are exceeded:

1 The SSO will be consulted immediately
2 All personnel (except as necessary for continued monitoring and contaminant migration, if applicable) will be cleared from the work area (eg from the exclusion zone).
3 Monitoring will be continued until intrusive work resumes.

5.3 Action Levels During Excavation Activities

Instrument readings will be taken in the breathing zone above the excavation pit unless otherwise noted. Each action level is independent of all other action levels in determining responses.

Organic Vapors (PID)	LEL %	Responses
0-1 ppm above background	0%	• Continue excavating • Level D protection • Continue monitoring every 10 minutes

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1-5 ppm Above Background, Sustained Reading	1-10%	• Continue excavating • Go to Level C protection or employ engineering controls • Continue monitoring every 10 minutes
5-25 ppm Above Background, Sustaineed Reading	10-20%	• Discontinue excavating, unless PID is only action level exceeded. • Level C protection or employ engineering controls • Continue monitoring for organic vapors 200 ft downwind • Continuous monitoring for LEL at excavation pit
>25 ppm Above Background, Sustained Reading	>20%	• Discontinue excavating • Withdraw from area, shut off all engine ignition sources. • Allow pit to vent • Continuous monitoring for organic vapors 200 ft downwind.

Notes: Air monitoring will occur in the breathing zone 30 inches above the excavation pit. Readings may also be taken in the excavation pit but will not be used for action levels.

If action levels for any one of the monitoring parameters are exceeded, the appropriate responses listed in the right hand column should be taken. If instrument readings do not return to acceptable levels after the excavation pit has been vented for a period of greater than one-half hour, a decision will then be made whether or not to seal the pit with suppressant foam.

If, during excavation activities, downwind monitoring PID readings are greater than 5 ppm above background for more than one-half hour, excavation will stop until sustained levels are less then 5 ppm (see Community Air Monitoring Plan).

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6.0 SITE CONTROL

6.1 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.

Due to the dimensions of the Site and the work area, it is expected that an exclusion zone will include the entire fenced area with the exception of the construction entrance area, which will serve as the decontamination zone. A support zone if needed will be located outside of the fenced area. All onsite workers engaged in the excavation of hazardous or contaminated materials must provide evidence of OSHA 24 or 40-hour Hazardous Waste Operations and Emergency Response Operations training to conduct work within the exclusion zone established by the site safety officer. 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.

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7.0 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 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.

7.1 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 superintendent or site safety officer.

7.2 Emergency Telephone Numbers

General Emergencies	911
New York City Police	911
Woodhull Medical Center	1-718-963-8000
Brooklyn Hospital Center	1-718-250-8000
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYCDEP	1-718-699-9811
NYC Department of Health	1-212-788-4711
NYC Fire Department	911
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
Site Safety Officer	1-631-504-6000
Alternate Site Safety Officer	1-631-504-6000

7.3 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 key personnel are planned for this project:

- Project Manager — Mr. Kevin Brussee (631) 504-6000
- Construction Superintendent — To be added
- Site Safety Officer — Mr. Kevin Waters (631) 504-6000

7.4 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 D**) 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 (**Appendix D**).and information on the chemical(s) to which they may have been exposed (**Appendix C**).

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

7.6 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.

7.7 Spill Control Procedures

Spills associated with site activities may be attributed to project 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.

7.8 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 ACKNOWLEDGEMENT FORM

DAILY BREIFING SIGN-IN SHEET

Date:_____ Person Conducting Briefing:_____

Project Name and Location:_____

1. AWARENESS (topics discussed, special safety concerns, recent incidents, etc…):

_____

_____

_____

_____

2. OTHER ISSUES (HASP changes, attendee comments, etc…):

_____

_____

_____

3. ATTENDEES (Print Name):

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

APPENDIX B

SITE SAFETY PLAN AMENDMENTS

SITE SAFETY PLAN AMENDMENT FORM

Site Safety Plan Amendment #: _____

Site Name: _____

Reason for Amendment: _____

_____

_____

_____

Alternative Procedures: _____

_____

_____

_____

Required Changes in PPE: _____

_____

_____

_____

_____ _____

Project Superintendent (signature) **Date**

_____ _____

Health and Safety Consultant (signature) **Date**

_____ _____

Site Safety Officer (signature) **Date**

APPENDIX C

CHEMICAL HAZARDS

CHEMICAL HAZARDS

The attached International Chemical Safety Cards are provided for contaminants of concern that have been identified in soils and/or groundwater at the site.

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

Pseudocumene

C_9H_{12}

Molecular mass: 120,2

ICSC # 1433
CAS # 95-63-6
RTECS # DC3325000
UN # 1993
EC # 601-043-00-3
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 44°C explosive vapour/air mixtures may be formed.	Above 44°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Xn symbol N symbol R: 10-20-36/37/38-51/53 S: 2-26-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1433

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as mixed isomers) 25 ppm as TWA (ACGIH 2004). MAK: (as mixed isomers) 20 ppm 100 mg/m³ Peak limitation category: II(2) Pregnancy risk group: C (DFG 2004). OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure , resulting in chronic bronchitis The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 169°C Melting point: -44°C Relative density (water = 1): 0.88 Solubility in water: very poor Relative vapour density (air = 1): 4.1	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 44°C c.c. Auto-ignition temperature: 500°C Explosive limits, vol% in air: 0.9-6.4 Octanol/water partition coefficient as log Pow: 3.8
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. See also ICSC 1155 1,3,5-Trimethylbenzene (Mesitylene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers). 1,3,5-Trimethylbenzene (Mesitylene) is classified as a marine pollutant.

Transport Emergency Card: TEC (R)-30GF1-III
NFPA Code: H0; F2; R0;

ADDITIONAL INFORMATION

International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

Mesitylene
C_9H_{12}
Molecular mass: 120.2

ICSC # 1155
CAS # 108-67-8
RTECS # OX6825000
UN # 2325
EC # 601-025-00-5
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 50°C explosive vapour/air mixtures may be formed.	Above 50°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Marine pollutant. Xi symbol N symbol R: 10-37-51/53 S: 2-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes. Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV (as mixed isomers): 25 ppm; (ACGIH 2001). MAK (all isomers): 20 ppm; 100 mg/m^3; class II 1 © (2001) OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure, resulting in chronic bronchitis. The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 165°C Melting point: -45°C Relative density (water = 1): 0.86 Solubility in water: very poor Vapour pressure, kPa at 20°C: 0.25	Relative vapour density (air = 1): 4.1 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 50°C (c.c.) Auto-ignition temperature: 550°C Octanol/water partition coefficient as log Pow: 3.42
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. See ICSC 1433 1,2,4-Trimethylbenzene (Pseudocumene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers).

Transport Emergency Card: TEC (R)-30S2325
NFPA Code: H0; F2; R0

ADDITIONAL INFORMATION

International Chemical Safety Cards

1,2-DICHLOROETHANE

ICSC: 0250

Ethylene dichloride
1,2-Ethylene dichloride
Ethane dichloride
$ClCH_2CH_2Cl$ / $C_2H_4Cl_2$
Molecular mass: 98.96

ICSC # 0250
CAS # 107-06-2
RTECS # KI0525000
UN # 1184
EC # 602-012-00-7
March 13, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Water spray, foam, powder, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Abdominal pain. Cough. Dizziness. Drowsiness. Headache. Nausea. Sore throat. Unconsciousness. Vomiting. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•EYES	Redness. Pain. Blurred vision.	Safety goggles face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal cramps. Diarrhoea. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Give nothing to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from strong oxidants, food and feedstuffs , and other incompatible materials . See Chemical Dangers. Cool. Dry.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Marine pollutant. Note: E F symbol T symbol R: 45-11-22-36/37/38

		S: 53-45 UN Hazard Class: 3 UN Subsidiary Risks: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0250

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

1,2-DICHLOROETHANE

ICSC: 0250

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS VISCOUS LIQUID , WITH CHARACTERISTIC ODOUR. TURNS DARK ON EXPOSURE TO AIR, MOISTURE AND LIGHT.

PHYSICAL DANGERS:
The vapour is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
The substance decomposes on heating and on burning producing toxic and corrosive fumes including hydrogen chloride (ICSC 0163) and phosgene (ICSC 0007). Reacts violently with aluminium, alkali metals, alkali amides, ammonia, bases, strong oxidants. Attacks many metals in presence of water. Attacks plastic.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 10 ppm as TWA; A4 (not classifiable as a human carcinogen); (ACGIH 2004).
MAK: skin absorption (H);
Carcinogen category: 2;
(DFG 2004).
OSHA PEL†: TWA 50 ppm C 100 ppm 200 ppm 5-minute maximum peak in any 3 hours
NIOSH REL: Ca TWA 1 ppm (4 mg/m^3) ST 2 ppm (8 mg/m^3) See Appendix A See Appendix C (Chloroethanes)

NIOSH IDLH: Ca 50 ppm See: 107062

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The vapour is irritating to the eyes , the skin and the respiratory tract . Inhalation of the vapour may cause lung oedema (see Notes). The substance may cause effects on the central nervous system, kidneys, liver , resulting in impaired functions.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 83.5°C
Melting point: -35.7°C
Relative density (water = 1): 1.235
Solubility in water, g/100 ml: 0.87
Vapour pressure, kPa at 20°C: 8.7
Relative vapour density (air = 1): 3.42
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2
Flash point: 13°C c.c.
Auto-ignition temperature: 413°C
Explosive limits, vol% in air: 6.2-16
Octanol/water partition coefficient as log Pow: 1.48

ENVIRONMENTAL DATA

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor or a person authorized by him/her, should be considered. Card has been partly updated in October 2005. See sections Occupational Exposure Limits, Emergency Response.

Transport Emergency Card: TEC (R)-30GTF1-II

NFPA Code: H 2; F 3; R 0;

International Chemical Safety Cards

ACETONE

ICSC: 0087

2-Propanone
Dimethyl ketone
Methyl ketone
C_3H_6O / CH_3COCH_3
Molecular mass: 58.1

ICSC # 0087
CAS # 67-64-1
RTECS # AL3150000
UN # 1090
EC # 606-001-00-8
April 22, 1994 Validated
Fi, review at IHE: 10/09/89

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, alcohol-resistant foam, water in large amounts, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•INHALATION	Sore throat. Cough. Confusion. Headache. Dizziness. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain. Blurred vision. Possible corneal damage.	Safety spectacles or face shield . Contact lenses should not be worn.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Nausea. Vomiting. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Then wash away with plenty of water.	Fireproof. Separated from strong oxidants. Store in an area without drain or sewer access.	F symbol Xi symbol R: 11-36-66-67 S: 2-9-16-26 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0087

International Chemical Safety Cards

ACETONE

ICSC: 0087

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air and may travel along the ground; distant ignition possible.

CHEMICAL DANGERS:
The substance can form explosive peroxides on contact with strong oxidants such as acetic acid, nitric acid, hydrogen peroxide. Reacts with chloroform and bromoform under basic conditions, causing fire and explosion hazard. Attacks plastic.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 500 ppm as TWA, 750 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued; (ACGIH 2004).
MAK: 500 ppm 1200 mg/m³
Peak limitation category: I(2); Pregnancy risk group: D; (DFG 2006).
OSHA PEL†: TWA 1000 ppm (2400 mg/m^3)
NIOSH REL: TWA 250 ppm (590 mg/m^3)
NIOSH IDLH: 2500 ppm 10%LEL See: 67641

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and through the skin.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

EFFECTS OF SHORT-TERM EXPOSURE:
The vapour irritates the eyes and the respiratory tract. The substance may cause effects on the central nervous system , liver , kidneys and gastrointestinal tract .

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the blood and bone marrow .

PHYSICAL PROPERTIES

Boiling point: 56°C
Melting point: -95°C
Relative density (water = 1): 0.8
Solubility in water:
miscible
Vapour pressure, kPa at 20°C: 24

Relative vapour density (air = 1): 2.0
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2
Flash point: -18°C c.c.
Auto-ignition temperature: 465°C
Explosive limits, vol% in air: 2.2-13
Octanol/water partition coefficient as log Pow: -0.24

ENVIRONMENTAL DATA

N O T E S

Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1090

NFPA Code: H 1; F 3; R 0;
Card has been partially updated in July 2007: see Occupational Exposure Limits.
Card has been partially updated in January 2008: see Storage.

ADDITIONAL INFORMATION

[EN - FI - FR - HU - IT - JA - PL]

METHYL ETHYL KETONE

ICSC: 0179

Peer-Review Status: 25.03.1998 Validated

Ethyl methyl ketone
2-Butanone
MEK
Methyl acetone

CAS #: 78-93-3 RTECS #: EL6475000
UN #: 1193
EC #: 606-002-00-3
EINECS #: 201-159-0

Formula: C_4H_8O / $CH_3COCH_2CH_3$
Molecular mass: 72.1

TYPES OF HAZARD / EXPOSURE	ACUTE HAZARDS / SYMPTOMS	PREVENTION	FIRST AID / FIRE-FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks and NO smoking.	Use powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
Inhalation	Cough. Dizziness. Drowsiness. Headache. Nausea. Vomiting.	Use ventilation, local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness. Pain.	Wear safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.
Ingestion	Unconsciousness. Further see Inhalation.	Do not eat, drink, or smoke	Rinse mouth. Give one or two glasses of water to drink. Refer

		during work.	for medical attention .

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Personal protection: self-contained breathing apparatus. Do NOT wash away into sewer. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.	**EC Classification** Symbol: F, Xi; R: 11-36-66-67; S: (2)-9-16; Note: 6 **UN Classification** UN Hazard Class: 3; UN Pack Group: II **GHS Classification**

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-30S1193. NFPA Code: H1; F3; R0.	Fireproof. Separated from strong oxidants and strong acids. Cool. Well closed.

IMPORTANT DATA

Physical State; Appearance
COLOURLESS LIQUID WITH CHARACTERISTIC ODOUR.

Physical dangers
The vapour is heavier than air and may travel along the ground; distant ignition possible.

Chemical dangers
Reacts violently with strong oxidants and inorganic acids. This generates fire and explosion hazard. Attacks some plastics.

Occupational exposure limits
TLV: 200 ppm as TWA; 300 ppm as STEL; BEI issued; (ACGIH 2004).
MAK: 200 ppm, 600 mg/m³; Peak limitation category: I(1); Pregnancy risk group: C; Skin absorption (H); (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation and by ingestion.

Inhalation risk
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

Effects of short-term exposure
The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above the OEL could cause unconsciousness.

Effects of long-term or repeated exposure
The substance defats the skin, which may cause dryness or cracking. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

PHYSICAL PROPERTIES	ENVIRONMENTAL DATA
Boiling point: 80°C Melting point: -86°C Relative density (water = 1): 0.8 Solubility in water, g/100ml at 20°C: 29 Vapour pressure, kPa at 20°C: 10.5 Relative vapour density (air = 1): 2.41 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.1 Flash point: -9°C c.c. Auto-ignition temperature: 505°C Explosive limits, vol% in air: 1.8-11.5 Octanol/water partition coefficient as log Pow: 0.29	

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

Ethylbenzol
Phenylethane
EB
C_8H_{10} / $C_6H_5C_2H_5$
Molecular mass: 106.2

ICSC # 0268
CAS # 100-41-4
RTECS # DA0700000
UN # 1175
EC # 601-023-00-4
March 13, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•**INHALATION**	Cough. Dizziness. Drowsiness. Headache.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain. Blurred vision.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	(Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking liquid in covered containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Personal protection: A filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-20 S: 2-16-24/25-29 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH AROMATIC ODOUR. **PHYSICAL DANGERS:** The vapour mixes well with air, explosive mixtures are easily formed. **CHEMICAL DANGERS:** Reacts with strong oxidants. Attacks plastic and rubber. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 125 ppm as STEL A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 3A; (DFG 2004). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3) NIOSH IDLH: 800 ppm 10%LEL See: 100414	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system Exposure far above the OEL could cause lowering of consciousness. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis.
PHYSICAL PROPERTIES	Boiling point: 136°C Melting point: -95°C Relative density (water = 1): 0.9 Solubility in water, g/100 ml at 20°C: 0.015 Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 18°C c.c. Auto-ignition temperature: 432°C Explosive limits, vol% in air: 1.0-6.7 Octanol/water partition coefficient as log Pow: 3.2
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. 	

N O T E S

The odour warning when the exposure limit value is exceeded is insufficient.

Transport Emergency Card: TEC (R)-30S1175 or 30GF1-I+II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DICHLOROMETHANE

ICSC: 0058

Methylene chloride
DCM
CH_2Cl_2
Molecular mass: 84.9

ICSC # 0058
CAS # 75-09-2
RTECS # PA8050000
UN # 1593
EC # 602-004-00-3
December 04, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Risk of fire and explosion (see Chemical Dangers).	Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness. Death.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness. Burning sensation.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain. Severe deep burns.	Safety goggles , face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place.	Separated from metals (see Chemical Dangers), food and feedstuffs . Cool. Ventilation along the floor.	Do not transport with food and feedstuffs. Xn symbol R: 40 S: (2-)23-24/25-36/37 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0058

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DICHLOROMETHANE

ICSC: 0058

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes. Reacts violently with metals such as aluminium powder and magnesium powder, strong bases and strong oxidants causing fire and explosion hazard. Attacks some forms of plastic rubber and coatings.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004).
MAK:
Carcinogen category: 3A;
(DFG 2004).
OSHA PEL: 1910.1052 TWA 25 ppm ST 125 ppm
NIOSH REL: Ca See Appendix A
NIOSH IDLH: Ca 2300 ppm See: 75092

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract . Exposure could cause lowering of consciousness. Exposure could cause the formation of methaemoglobin.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the central nervous system and liver . This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 40°C
Melting point: -95.1°C
Relative density (water = 1): 1.3
Solubility in water, g/100 ml at 20°C: 1.3
Vapour pressure, kPa at 20°C: 47.4
Relative vapour density (air = 1): 2.9
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.9
Auto-ignition temperature: 556°C
Explosive limits, vol% in air: 12-25
Octanol/water partition coefficient as log Pow: 1.25

ENVIRONMENTAL DATA

This substance may be hazardous in the environment; special attention should be given to ground water contamination.

N O T E S

Addition of small amounts of a flammable substance or an increase in the oxygen content of the air strongly enhances combustibility. Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. R30 is a trade name. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-61S1593

NFPA Code: H2; F1; R0;

ADDITIONAL INFORMATION

ICSC: 0058 **DICHLOROMETHANE**

Material Safety Data Sheet

Normal-Butylbenzene, 99+%

ACC# 55434

Section 1 - Chemical Product and Company Identification

MSDS Name: Normal-Butylbenzene, 99+%
Catalog Numbers: AC107850000, AC107850050, AC107850250, AC107850500, AC107851000, AC107852500 AC107852500
Synonyms: 1-Phenylbutane
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
104-51-8	n-Butylbenzene	>99	203-209-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 59 deg C.
Warning! Flammable liquid and vapor. May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.
Target Organs: Liver, nervous system.

Potential Health Effects

Eye: May cause eye irritation. The toxicological properties of this material have not been fully investigated.
Skin: May cause skin irritation. The toxicological properties of this material have not been fully investigated.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. The toxicological properties of this substance have not been fully investigated.
Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. Vapors may cause dizziness or suffocation.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Use agent most appropriate to extinguish fire. Do NOT use straight streams of water.
Flash Point: 59 deg C (138.20 deg F)
Autoignition Temperature: 412 deg C (773.60 deg F)
Explosion Limits, Lower:.80 vol %
Upper: 5.80 vol %
NFPA Rating: (estimated) Health: 1; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
n-Butylbenzene	none listed	none listed	none listed

OSHA Vacated PELs: n-Butylbenzene: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions. Follow the OSHA respirator regulations found in 29

CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: None reported.
pH: Not available.
Vapor Pressure: 1.33 hPa @ 23 C
Vapor Density: 4.6
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 183 deg C @ 760.00mm Hg
Freezing/Melting Point:-88 deg C
Decomposition Temperature:> 183 deg C
Solubility: insoluble
Specific Gravity/Density:.8600g/cm3
Molecular Formula:C10H14
Molecular Weight:134.22

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials: Oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 104-51-8: CY9070000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 104-51-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Rapidly volatilizes into the atmosphere where it is photochemically degraded by hydroxyl radicals.

Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	BUTYL BENZENES	No information available.
Hazard Class:	3	
UN Number:	UN2709	
Packing Group:	III	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 104-51-8 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 104-51-8: Effective 6/1/87, Sunset 12/19/95
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 104-51-8: immediate, fire.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 104-51-8 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European / International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

R 10 Flammable.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 24/25 Avoid contact with skin and eyes.
S 33 Take precautionary measures against static discharges.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 9 Keep container in a well-ventilated place.
S 28A After contact with skin, wash immediately with plenty of water
.

WGK (Water Danger / Protection)

CAS# 104-51-8: 1

Canada - DSL / NDSL

CAS# 104-51-8 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 4/15/1998
Revision #4 Date: 3/16/2007

Material Safety Data Sheet

Version 4.0
Revision Date 07/28/2010
Print Date 12/07/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Propylbenzene
Product Number	:	P52407
Brand	:	Aldrich
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid

Target Organs

Lungs, Eyes, Kidney

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H335	May cause respiratory irritation.
H401	Toxic to aquatic life.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P331	Do NOT induce vomiting.

HMIS Classification

Health hazard:	0
Chronic Health Hazard:	*
Flammability:	2
Physical hazards:	0

NFPA Rating

Health hazard:	1
Fire:	2
Reactivity Hazard:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Ingestion Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1-Phenylpropane

Formula : C_9H_{12}
Molecular Weight : 120.19 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Propylbenzene			
103-65-1	203-132-9	601-024-00-X	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
For prolonged or repeated contact use protective gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	-99 °C (-146 °F) - lit.
Boiling point	159 °C (318 °F) - lit.
Flash point	42.0 °C (107.6 °F) - closed cup
Ignition temperature	450 °C (842 °F)
Lower explosion limit	0.8 %(V)
Upper explosion limit	6 %(V)
Density	0.862 g/cm3 at 25 °C (77 °F)
Water solubility	slightly soluble

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat - 6,040 mg/kg
Remarks: Behavioral:Somnolence (general depressed activity).

LC50 Inhalation - rat - 2 h - 65000 ppm

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
May be fatal if swallowed and enters airways.

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Damage to the lungs., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: DA8750000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 1.55 mg/l - 96.0 h

Toxicity to daphnia and other aquatic invertebrates.	Immobilization EC50 - Daphnia magna (Water flea) - 2 mg/l - 24 h

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 2364 Class: 3 Packing group: III
Proper shipping name: n-Propyl benzene
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 2364 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: PROPYLBENZENE
Marine pollutant: No

IATA
UN-Number: 2364 Class: 3 Packing group: III
Proper shipping name: n-Propylbenzene

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Propylbenzene	103-65-1	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Propylbenzene	103-65-1	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Propylbenzene	103-65-1	2007-03-01

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Material Safety Data Sheet

Version 4.0
Revision Date 07/24/2010
Print Date 12/07/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	*sec*-Butylbenzene
Product Number	:	B90408
Brand	:	Aldrich
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid, Irritant

GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)

H226	Flammable liquid and vapour.
H315 + H320	Causes skin and eye irritation.
H401	Toxic to aquatic life.

Precautionary statement(s)

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard:	2
Flammability:	2
Physical hazards:	0

NFPA Rating

Health hazard:	2
Fire:	2
Reactivity Hazard:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 2-Phenylbutane

Formula	:	$C_{10}H_{14}$
Molecular Weight	:	134.22 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
sec-Butylbenzene			
135-98-8	205-227-0	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	75.5 °C (167.9 °F) - lit.
Boiling point	173 - 174 °C (343 - 345 °F) - lit.
Flash point	52.0 °C (125.6 °F) - closed cup
Ignition temperature	418 °C (784 °F)
Lower explosion limit	0.8 %(V)
Density	0.863 g/mL at 25 °C (77 °F)
Water solubility	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Dermal - rabbit - > 13,792 mg/kg

Skin corrosion/irritation
Skin - rabbit - irritating - 24 h

Serious eye damage/eye irritation
Eyes - rabbit - Mild eye irritation - 24 h

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: CY9100000

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 2709 Class: 3 Packing group: III
Proper shipping name: Butyl benzenes
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 2709 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: BUTYLBENZENES
Marine pollutant: No

IATA
UN-Number: 2709 Class: 3 Packing group: III
Proper shipping name: Butylbenzenes

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Irritant

DSL Status
This product contains the following components that are not on the Canadian DSL nor NDSL lists.

	CAS-No.
sec-Butylbenzene	135-98-8

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
sec-Butylbenzene	135-98-8	

New Jersey Right To Know Components

	CAS-No.	Revision Date
sec-Butylbenzene	135-98-8	

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

SIGMA-ALDRICH

Material Safety Data Sheet

Version 3.0
Revision Date 08/21/2009
Print Date 12/07/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : *tert*-Butylbenzene

Product Number : B90602
Brand : Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 2-Methyl-2-phenylpropane

Formula : $C_{10}H_{14}$
Molecular Weight : 134.22 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
tert-Butylbenzene			
98-06-6	202-632-4	-	-

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable Liquid, Irritant

HMIS Classification
Health Hazard: 2
Flammability: 3
Physical hazards: 0

NFPA Rating
Health Hazard: 2
Fire: 3
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be harmful if swallowed.

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	34.0 °C (93.2 °F) - closed cup
Ignition temperature	450 °C (842 °F)

Suitable extinguishing media
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods for cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	-58 °C (-72 °F) - lit.
Boiling point	169 °C (336 °F) - lit.
Flash point	34.0 °C (93.2 °F) - closed cup
Ignition temperature	450 °C (842 °F)
Lower explosion limit	0.8 %(V)
Density	0.867 g/mL at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 3.80

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Hazardous reactions
Vapours may form explosive mixture with air.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - 3,045 mg/kg
Remarks: Behavioral:Somnolence (general depressed activity). Behavioral:Tremor. Gastrointestinal:Changes in structure or function of salivary glands.

Irritation and corrosion

no data available

Sensitisation

no data available

Chronic exposure

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.

Additional Information
RTECS: CY9120000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

Toxicity to fish	LC0 - Leuciscus idus (Golden orfe) - 44 mg/l - 48 h
	LC50 - Leuciscus idus (Golden orfe) - 65 mg/l - 48 h
Toxicity to daphnia and other aquatic	LC50 - Daphnia magna (Water flea) - 41 mg/l - 24 h

invertebrates.

Further information on ecology

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 2709 Class: 3 Packing group: III
Proper shipping name: Butyl benzenes
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 2709 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: BUTYLBENZENES
Marine pollutant: No

IATA
UN-Number: 2709 Class: 3 Packing group: III
Proper shipping name: Butylbenzenes

15. REGULATORY INFORMATION

OSHA Hazards
Flammable Liquid, Irritant

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
tert-Butylbenzene	98-06-6	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
tert-Butylbenzene	98-06-6	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
tert-Butylbenzene	98-06-6	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

Methylbenzene
Toluol
Phenylmethane
$C_6H_5CH_3$ / C_7H_8
Molecular mass: 92.1

ICSC # 0078
CAS # 108-88-3
RTECS # XS5250000
UN # 1294
EC # 601-021-00-3
October 10, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•**INHALATION**	Cough. Sore throat. Dizziness. Drowsiness. Headache. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•**EYES**	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area in large spill! Consult an expert in large spill! Remove all ignition sources. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: self-contained breathing apparatus	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-38-48/20-63-65-67 S: 2-36/37-46-62 UN Hazard Class: 3 UN Packing Group: II

ICSC: 0078

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour mixes well with air, explosive mixtures are formed easily. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts violently with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA (skin) A4 BEI issued (ACGIH 2004).
MAK: 50 ppm 190 mg/m³ H
Peak limitation category: II(4) Pregnancy risk group: C (DFG 2004).
OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)
NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
NIOSH IDLH: 500 ppm See: 108883

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the respiratory tract The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure at high levels may result in cardiac dysrhythmiaandunconsciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 111°C
Melting point: -95°C
Relative density (water = 1): 0.87
Solubility in water: none
Vapour pressure, kPa at 25°C: 3.8
Relative vapour density (air = 1): 3.1
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01
Flash point: 4°C c.c.
Auto-ignition temperature: 480°C
Explosive limits, vol% in air: 1.1-7.1
Octanol/water partition coefficient as log Pow: 2.69

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1294
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

International Chemical Safety Cards

o-XYLENE

ICSC: 0084

ortho-Xylene
1,2-Dimethylbenzene
o-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0084
CAS # 95-47-6
RTECS # ZE2450000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 32°C explosive vapour/air mixtures may be formed.	Above 32°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0084

International Chemical Safety Cards

o-XYLENE

ICSC: 0084

I M P O R T A N T D A T A	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** As a result of flow, agitation, etc., electrostatic charges can be generated. **CHEMICAL DANGERS:** Reacts with strong acids strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) NIOSH IDLH: 900 ppm See: 95476 **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. The substance may have effects on the central nervous system. Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.
PHYSICAL PROPERTIES	Boiling point: 144°C Melting point: -25°C Relative density (water = 1): 0.88 Solubility in water: none Vapour pressure, kPa at 20°C: 0.7 Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 32°C c.c. Auto-ignition temperature: 463°C Explosive limits, vol% in air: 0.9-6.7 Octanol/water partition coefficient as log Pow: 3.12
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. 

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0086 p-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

ICSC: 0084 **o-XYLENE**

International Chemical Safety Cards

p-XYLENE

ICSC: 0086

para-Xylene
1,4-Dimethylbenzene
p-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0086
CAS # 106-42-3
RTECS # ZE2625000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants, strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0086

International Chemical Safety Cards

p-XYLENE

ICSC: 0086

I M P O R T A N T D A T A	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** As a result of flow, agitation, etc., electrostatic charges can be generated. **CHEMICAL DANGERS:** Reacts with strong acids strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3) NIOSH IDLH: 900 ppm See: 95476 **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. The substance may have effects on the central nervous system. Animal tests show that this substance possibly causes toxicity to human reproduction or development.
PHYSICAL PROPERTIES	Boiling point: 138°C Melting point: 13°C Relative density (water = 1): 0.86 Solubility in water: none Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 27°C c.c. Auto-ignition temperature: 528°C Explosive limits, vol% in air: 1.1-7.0 Octanol/water partition coefficient as log Pow: 3.15
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. 

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

ICSC: 0086 **p-XYLENE**

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

meta-Xylene
1,3-Dimethylbenzene
m-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0085
CAS # 108-38-3
RTECS # ZE2275000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0085

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts with strong acids strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001).
MAK: 100 ppm 440 mg/m³
Peak limitation category: II(2)
skin absorption (H);
Pregnancy risk group: D
(DFG 2005).
EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000).
OSHA PEL†: TWA 100 ppm (435 mg/m^3)
NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3)
NIOSH IDLH: 900 ppm See: 95476

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 139°C
Melting point: -48°C
Relative density (water = 1): 0.86
Solubility in water:
none
Vapour pressure, kPa at 20°C: 0.8

Relative vapour density (air = 1): 3.7
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02
Flash point: 27°C c.c.
Auto-ignition temperature: 527°C
Explosive limits, vol% in air: 1.1-7.0
Octanol/water partition coefficient as log Pow: 3.20

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0086 p-Xylene.

NFPA Code: H 2; F 3; R 0;
Transport Emergency Card: TEC (R)-30S1307-III

ADDITIONAL INFORMATION

ICSC: 0085 **m-XYLENE**

International Chemical Safety Cards

ACENAPHTHENE

ICSC: 1674

1,2-Dihydroacenaphthylene
1,8-Ethylenenaphthalene
$C_{12}H_{10}$
Molecular mass: 154.2

ICSC # 1674
CAS # 83-32-9
RTECS # AB1000000
UN # 3077
October 12, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray. Dry powder. Foam. Carbon dioxide.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See NOTES.	PREVENT DISPERSION OF DUST!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: P2 filter respirator for harmful particles. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants . Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.	UN Hazard Class: 9 UN Packing Group: III Signal: Warning Enviro Very toxic to aquatic life with long lasting effects

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1674

International Chemical Safety Cards

ACENAPHTHENE

ICSC: 1674

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
WHITE TO BEIGE CRYSTALS

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On combustion, forms toxic gases including carbon monoxide. Reacts with strong oxidants .

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established.
MAK not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed .

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
See Notes.

PHYSICAL PROPERTIES

Boiling point: 279°C
Melting point: 95°C
Density: 1.2
g/cm³
Solubility in water, g/100 ml at 25°C: 0.0004

Vapour pressure, Pa at 25°C: 0.3
Relative vapour density (air = 1): 5.3
Flash point: 135°C o.c.
Auto-ignition temperature: >450 °C
Octanol/water partition coefficient as log Pow: 3.9 - 4.5

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment. It is strongly advised that this substance does not enter the environment.

NOTES

Acenaphthene occurs as a pure substance and also as a component of polyaromatic hydrocarbon (PAH) mixtures. Human population studies have associated PAH's exposure with cancer and cardiovascular diseases. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

Transport Emergency Card: TEC (R)-90GM7-III

ADDITIONAL INFORMATION

Material Safety Data Sheet

Version 4.0
Revision Date 07/24/2010
Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Acenaphthylene
Product Number	:	416703
Brand	:	Aldrich
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Carcinogen

GHS Label elements, including precautionary statements

Pictogram

Signal word: Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	1
Physical hazards:	0

NFPA Rating

Health hazard:	2
Fire:	1
Reactivity Hazard:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula	:	$C_{12}H_8$
Molecular Weight	:	152.19 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Acenaphthylene			
208-96-8	205-917-1	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	solid

Safety data

pH	no data available
Melting point	78 - 82 °C (172 - 180 °F) - lit.
Boiling point	280 °C (536 °F) - lit.
Flash point	122.0 °C (251.6 °F) - closed cup
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Density	0.899 g/mL at 25 °C (77 °F)
Water solubility	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
no data available

Materials to avoid
Oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - mouse - 1,760 mg/kg
Remarks: Autonomic Nervous System:Other (direct) parasympathomimetic. Respiratory disorder Blood: Hemorrhage.

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: AB1254000

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Acenaphthylene)
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards
Carcinogen

DSL Status
This product contains the following components that are not on the Canadian DSL nor NDSL lists.

	CAS-No.
Acenaphthylene	208-96-8

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Acenaphthylene	208-96-8	

New Jersey Right To Know Components

	CAS-No.	Revision Date
Acenaphthylene	208-96-8	

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

ANTHRACENE

ICSC: 0825

Anthracin
Paranaphthalene
$C_{14}H_{10}$ / $(C_6H_4CH)_2$
Molecular mass: 178.2

ICSC # 0825
CAS # 120-12-7
RTECS # CA9350000
March 24, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. Sore throat.	Ventilation (not if powder), local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles, face shield, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain.	Do not eat, drink, or smoke during work.	Rinse mouth. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place Do NOT let this chemical enter the environment. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from strong oxidants. Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0825

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ANTHRACENE

ICSC: 0825

I **M**	**PHYSICAL STATE; APPEARANCE:** WHITE CRYSTALS OR FLAKES.	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by

P O R T A N T D A T A	**PHYSICAL DANGERS:** Dust explosion possible if in powder or granular form, mixed with air. **CHEMICAL DANGERS:** The substance decomposes on heating, under influence of strong oxidants producing acrid, toxic fume , causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. inhalation. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance slightly irritates the skin and the respiratory tract. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis under the influence of UV light.
PHYSICAL PROPERTIES	Boiling point: 342°C Melting point: 218°C Density: 1.25-1.28 g/cm3 Solubility in water, g/100 ml at 20 °C: 0.00013 Vapour pressure, Pa at 25°C: 0.08 Relative vapour density (air = 1): 6.15 Flash point: 121°C Auto-ignition temperature: 538°C Explosive limits, vol% in air: 0.6-? Octanol/water partition coefficient as log Pow: 4.5 (calculated)
ENVIRONMENTAL DATA	The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment. 

N O T E S

Green oil, Tetra-olive N2G are trade names.

NFPA Code: H0; F1; R;

ADDITIONAL INFORMATION

ICSC: 0825 **ANTHRACENE**

International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385

1,2-Benzoanthracene
Benzo(a)anthracene
2,3-Benzphenanthrene
Naphthanthracene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 0385
CAS # 56-55-3
RTECS # CV9275000
EC # 601-033-00-9
October 23, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0385

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ICSC: 0385

BENZ(a)ANTHRACENE

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO YELLOW BROWN FLUORESCENT FLAKES OR POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A2 (suspected human carcinogen); (ACGIH 2004).
MAK:
Carcinogen category: 2 (as pyrolysis product of organic materials)
(DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Sublimation point: 435°C
Melting point: 162°C
Relative density (water = 1): 1.274
Solubility in water:
none

Vapour pressure, Pa at 20°C: 292
Octanol/water partition coefficient as log Pow: 5.61

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

N O T E S

This substance is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. Tetraphene is a common name. Card has been partly updated in October 2005 and August 2006: see sections Occupational Exposure Limits, EU classification.

ADDITIONAL INFORMATION

ICSC: 0385 **BENZ(a)ANTHRACENE**

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

Benz(a)pyrene
3,4-Benzopyrene
Benzo(d,e,f)chrysene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0104
CAS # 50-32-8
RTECS # DJ3675000
EC # 601-032-00-3
October 17, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, foam, powder, carbon dioxide.
EXPLOSION			
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants.	T symbol N symbol R: 45-46-60-61-43-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0104

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
PALE-YELLOW CRYSTALS

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Reacts with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: Exposure by all routes should be carefully controlled to levels as low as possible A2 (suspected human carcinogen); (ACGIH 2005).
MAK:
Carcinogen category: 2; Germ cell mutagen group: 2; (DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 496°C
Melting point: 178.1°C
Density: 1.4
g/cm³

Solubility in water: none (<0.1 g/100 ml)
Vapour pressure :
negligible
Octanol/water partition coefficient as log Pow: 6.04

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish, in plants and in molluscs. The substance may cause long-term effects in the aquatic environment.

NOTES

Do NOT take working clothes home. Benzo(a)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAHs) in the environment, usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.

ADDITIONAL INFORMATION

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

Benz(e)acephenanthrylene
2,3-Benzofluoroanthene
Benzo(e)fluoranthene
3,4-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0720
CAS # 205-99-2
RTECS # CU1400000
EC # 601-034-00-4
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0720

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

I	**PHYSICAL STATE; APPEARANCE:** COLOURLESS CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation

IMPORTANT DATA	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2; (DFG 2004). of its aerosol and through the skin. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans. May cause genetic damage in humans.
PHYSICAL PROPERTIES	Boiling point: 481°C Melting point: 168°C Solubility in water: none Octanol/water partition coefficient as log Pow: 6.12
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. 

N O T E S

Benzo(b)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(b)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0720 **BENZO(b)FLUORANTHENE**

[EN - FI - FR - HU - IT - JA - PL]

BENZO(ghi)PERYLENE

ICSC: 0739

Peer-Review Status: 18.10.1999 Validated

1,12-Benzoperylene
1,12-Benzperylene

CAS #: 191-24-2 RTECS #: DI6200500
EINECS #: 205-883-8

Formula: $C_{22}H_{12}$
Molecular mass: 276.3

TYPES OF HAZARD / EXPOSURE	ACUTE HAZARDS / SYMPTOMS	PREVENTION	FIRST AID / FIRE-FIGHTING
FIRE	Combustible under specific conditions.	NO open flames.	In case of fire in the surroundings, use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		**PREVENT DISPERSION OF DUST!**	
Inhalation		Use local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Wear safety spectacles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention .

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into covered containers. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.	**EC Classification** **UN Classification** **GHS Classification**

EMERGENCY RESPONSE	SAFE STORAGE
	Well closed.

IMPORTANT DATA

Physical State; Appearance
PALE YELLOW-GREEN CRYSTALS.

Physical dangers

Chemical dangers
Upon heating, toxic fumes are formed. Decomposes on heating. This produces toxic fumes.

Occupational exposure limits
TLV (NOT-ESTABLISHED):.

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

Inhalation risk
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of short-term exposure

Effects of long-term or repeated exposure

PHYSICAL PROPERTIES	ENVIRONMENTAL DATA
Boiling point: 550°C Melting point: 278°C Density: 1.3 g/cm³ Solubility in water: none Octanol/water partition coefficient as log Pow: 6.58	This substance may be hazardous to the environment. Special attention should be given to air quality and water quality.

NOTES

Benzo(ghi)perylene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.
Data are insufficiently available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

Dibenzo(b,jk)fluorene
8,9-Benzofluoranthene
11,12-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0721
CAS # 207-08-9
RTECS # DF6350000
EC # 601-036-00-5
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0721

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

I **M**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

P O R T A N T D A T A	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004). **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 480°C Melting point: 217°C Solubility in water: none Octanol/water partition coefficient as log Pow: 6.84
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in crustacea and in fish. 

N O T E S

Benzo(k)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(k)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0721 **BENZO(k)FLUORANTHENE**

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

Benzoaphenanthrene
1,2-Benzophenanthrene
1,2,5,6-Dibenzonaphthalene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 1672
CAS # 218-01-9
RTECS # GC0700000
UN # 3077
EC # 601-048-00-0
October 12, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray. Dry powder. Foam. Carbon dioxide.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: P3 filter respirator for toxic particles. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants, Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.	T symbol N symbol R: 45-68-50/53 S: 53-45-60-61 UN Hazard Class: 9 UN Packing Group: III Signal: Warning Aqua-Cancer Suspected of causing cancer Very toxic to aquatic life with long lasting effects Very toxic to aquatic life

SEE IMPORTANT INFORMATION ON BACK

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO BEIGE CRYSTALS OR POWDER

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
The substance decomposes on burning producing toxic fumes Reacts violently with strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2006).
MAK not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 448°C
Melting point: 254 - 256°C
Density: 1.3 g/cm³

Solubility in water:
very poor
Octanol/water partition coefficient as log Pow: 5.9

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in seafood. It is strongly advised that this substance does not enter the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. This substance does not usually occur as a pure substance but as a component of polyaromatic hydrocarbon (PAH) mixtures. Human population studies have associated PAH's exposure with cancer and cardiovascular diseases.

Transport Emergency Card: TEC (R)-90GM7-III

ADDITIONAL INFORMATION

Material Safety Data Sheet

Version 3.1
Revision Date 03/22/2010
Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Dibenzofuran

Product Number : 236373
Brand : Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Toxic by ingestion

HMIS Classification
Health hazard: 2
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 2
Fire: 1
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Diphenylene oxide

Formula : $C_{12}H_8O$
Molecular Weight : 168.19 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Dibenzofuran			
132-64-9	205-071-3	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Face shield and safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	crystalline
Colour	white, beige

Safety data

pH	no data available
Melting point	80 - 82 °C (176 - 180 °F) - lit.
Boiling point	154 - 155 °C (309 - 311 °F) at 27 hPa (20 mmHg) - lit.
Flash point	130.0 °C (266.0 °F) - closed cup
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 3.77

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (GHS)
no data available

Specific target organ toxicity - repeated exposure (GHS)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	Toxic if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: HP4430000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	NOEC - Cyprinodon variegatus (sheepshead minnow) - 1 mg/l - 96.0 h
	LC50 - Pimephales promelas (fathead minnow) - 1.05 mg/l - 96.0 h

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Dibenzofuran)
Reportable Quantity (RQ): 100 lbs
Marine pollutant: Marine pollutant
Poison Inhalation Hazard: No

IMDG

UN-Number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Dibenzofuran)
Marine pollutant: Marine pollutant

IATA
UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Dibenzofuran)

15. REGULATORY INFORMATION

OSHA Hazards
Toxic by ingestion

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

1,25,6-Dibenzanthracene
$C_{22}H_{14}$
Molecular mass: 278.4

ICSC # 0431
CAS # 53-70-3
RTECS # HN2625000
EC # 601-041-00-2
October 23, 1995 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, powder.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	Redness. Swelling. Itching.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0431

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

I

M

P

O

PHYSICAL STATE; APPEARANCE:
COLOURLESS CRYSTALLINE POWDER.

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration

R T A N T D A T A	**CHEMICAL DANGERS:** **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established.	of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The substance may have effects on the skin , resulting in photosensitization. This substance is probably carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 524°C Melting point: 267°C Relative density (water = 1): 1.28	Solubility in water: none Octanol/water partition coefficient as log Pow: 6.5
ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in seafood. 	

N O T E S

This is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. DBA is a commonly used name. This substance is one of many polycyclic aromatic hydrocarbons (PAH).

ADDITIONAL INFORMATION

ICSC: 0431 **DIBENZO(a,h)ANTHRACENE**

Material Safety Data Sheet

Version 4.2
Revision Date 05/19/2011
Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Fluoranthene
Product Number	:	423947
Brand	:	Aldrich
Supplier	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone # (For both supplier and manufacturer)	:	(314) 776-6555
Preparation Information	:	Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Harmful by ingestion., Carcinogen

GHS Classification
Acute toxicity, Oral (Category 4)
Acute toxicity, Dermal (Category 5)
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)

H302	Harmful if swallowed.
H313	May be harmful in contact with skin.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273	Avoid release to the environment.
P501	Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification

Health hazard:	1
Chronic Health Hazard:	*
Flammability:	1
Physical hazards:	0

NFPA Rating

Health hazard:	1
Fire:	1
Reactivity Hazard:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	Harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.
Ingestion	Harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Benzo[*j*,*k*]fluorene

Formula : $C_{16}H_{10}$

Molecular Weight : 202.25 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Fluoranthene			
206-44-0	205-912-4	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	solid
Colour	no data available

Safety data

pH	no data available
Melting point/freezing point	Melting point/range: 105 - 110 °C (221 - 230 °F) - lit.
Boiling point	384 °C (723 °F) - lit.
Flash point	198.0 °C (388.4 °F) - closed cup
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available

Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
LD50 Oral - rat - 2,000 mg/kg

Inhalation LC50
no data available

Dermal LD50
LD50 Dermal - rabbit - 3,180 mg/kg

Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
Laboratory experiments have shown mutagenic effects.

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (Fluoranthene)
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	Reasonably anticipated to be human carcinogens. (Fluoranthene)
	Reasonably anticipated to be a human carcinogen (Fluoranthene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	Harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: LL4025000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.0077 mg/l - 96 h
	NOEC - Cyprinodon variegatus (sheepshead minnow) - 560 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates.	Immobilization EC50 - Daphnia magna (Water flea) - > 0.005 - < 0.01 mg/l - 3 d
	Immobilization EC50 - Daphnia magna (Water flea) - 0.78 mg/l - 20 h
	NOEC - Daphnia magna (Water flea) - 0.085 mg/l - 48 h

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Fluoranthene)
Reportable Quantity (RQ): 100 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards
Harmful by ingestion., Carcinogen

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Fluoranthene	206-44-0	2007-03-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Fluoranthene	206-44-0	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Fluoranthene	206-44-0	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Fluoranthene	206-44-0	2007-03-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. Fluoranthene	206-44-0	1990-01-01

16. OTHER INFORMATION

Further information

Material Safety Data Sheet

Version 3.1
Revision Date 10/15/2010
Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Fluorene

Product Number : 46880
Brand : Aldrich
Product Use : For laboratory research purposes.

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Manufacturer : Sigma-Aldrich Corporation
3050 Spruce St.
St. Louis, Missouri 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
No known OSHA hazards

GHS Classification
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P273 Avoid release to the environment.
P501 Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification
Health hazard: 1
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 1
Fire: 1
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.

Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $C_{13}H_{10}$
Molecular Weight : 166.22 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Fluorene			
86-73-7	201-695-5	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	crystalline
Colour	white

Safety data

pH	no data available
Melting/freezing point	Melting point/range: 113 - 115 °C (235 - 239 °F)
	Melting point/range: 111 - 114 °C (232 - 237 °F) - lit.
Boiling point	298 °C (568 °F) - lit.
Flash point	151.0 °C (303.8 °F) - closed cup
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available

Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
Inhalation LC50
no data available

Dermal LD50
no data available

Other information on acute toxicity
LD50 Intraperitoneal - mouse - > 2.0 mg/kg

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (Fluorene)
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: LL5670000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Fish - 0.82 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates.	Remarks: no data available
Toxicity to algae	EC50 - Algae - 3.4 mg/l - 96 h

Persistence and degradability

Bioaccumulative potential

Bioaccumulation	Oncorhynchus mykiss (rainbow trout) - 24 h Bioconcentration factor (BCF): 512

Mobility in soil
Adsorbs on soil.

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

no data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
UN-Number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Fluorene)
Marine pollutant: Marine pollutant

IATA
UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Fluorene)

Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION

OSHA Hazards
No known OSHA hazards

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Fluorene	86-73-7	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Fluorene	86-73-7	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Fluorene	86-73-7	2007-03-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

o-Phenylenepyrene
2,3-Phenylenepyrene
$C_{22}H_{12}$
Molecular mass: 276.3

ICSC # 0730
CAS # 193-39-5
RTECS # NK9300000
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0730

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

I **M** **P**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS **PHYSICAL DANGERS:**	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin. **INHALATION RISK:**

O R T A N T D A T A	**CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004).	Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 536°C Melting point: 164°C Solubility in water: none	Octanol/water partition coefficient as log Pow: 6.58
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0730 **INDENO(1,2,3-cd)PYRENE**

International Chemical Safety Cards

NAPHTHALENE

ICSC: 0667

Naphthene
$C_{10}H_8$
Molecular mass: 128.18

ICSC # 0667
CAS # 91-20-3
RTECS # QJ0525000
UN # 1334 (solid); 2304 (molten)
EC # 601-052-00-2
April 21, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 80°C explosive vapour/air mixtures may be formed. Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Headache. Weakness. Nausea. Vomiting. Sweating. Confusion. Jaundice. Dark urine.	Ventilation (not if powder), local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	MAY BE ABSORBED! (Further see Inhalation).	Protective gloves.	Rinse skin with plenty of water or shower.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Diarrhoea. Convulsions. Unconsciousness. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants, food and feedstuffs Store in an area without drain or sewer access.	Do not transport with food and feedstuffs. Marine pollutant. Xn symbol N symbol R: 22-40-50/53 S: 2-36/37-46-60-61 UN Hazard Class: 4.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0667

International Chemical Safety Cards

NAPHTHALENE

ICSC: 0667

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
WHITE SOLID IN VARIOUS FORMS , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On combustion, forms irritating and toxic gases. Reacts with strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 10 ppm as TWA 15 ppm as STEL (skin) A4 (not classifiable as a human carcinogen); (ACGIH 2005).
MAK: skin absorption (H);
Carcinogen category: 2; Germ cell mutagen group: 3B; (DFG 2004).
OSHA PEL†: TWA 10 ppm (50 mg/m^3)
NIOSH REL: TWA 10 ppm (50 mg/m^3) ST 15 ppm (75 mg/m^3)
NIOSH IDLH: 250 ppm See: 91203

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. See Notes.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance may cause effects on the blood , resulting in lesions of blood cells (haemolysis) See Notes. The effects may be delayed. Exposure by ingestion may result in death. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood , resulting in chronic haemolytic anaemia. The substance may have effects on the eyes , resulting in the development of cataract. This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 218°C
Sublimation slowly at room temperature
Melting point: 80°C
Density: 1.16
g/cm3
Solubility in water, g/100 ml at 25°C:
none

Vapour pressure, Pa at 25°C: 11
Relative vapour density (air = 1): 4.42
Flash point:
80°C c.c.
Auto-ignition temperature: 540°C
Explosive limits, vol% in air: 0.9-5.9
Octanol/water partition coefficient as log Pow: 3.3

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Some individuals may be more sensitive to the effect of naphthalene on blood cells.

Transport Emergency Card: TEC (R)-41S1334 (solid); 41GF1-II+III (solid); 41S2304 (molten)
NFPA Code: H2; F2; R0;

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:

Material Safety Data Sheet

Version 4.0
Revision Date 07/24/2010
Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Phenanthrene
Product Number	:	695114
Brand	:	Aldrich
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Harmful by ingestion., Irritant

Other hazards which do not result in classification
Photosensitizer.

GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
H413	May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273	Avoid release to the environment.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard:	2
Flammability:	0
Physical hazards:	0

NFPA Rating

Health hazard:	2
Fire:	0
Reactivity Hazard:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.

Eyes	Causes eye irritation.
Ingestion	Harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $C_{14}H_{10}$
Molecular Weight : 178.23 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Phenanthrene			
85-01-8	201-581-5	-	-

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

Handle and store under inert gas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control	Update	Basis

			parameters		
Phenanthrene	85-01-8	TWA	0.2 mg/m3	1993-06-30	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	0.2 mg/m3	1989-03-01	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Safety glasses with side-shields conforming to EN166

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	solid

Safety data

pH	no data available
Melting point	98 - 100 °C (208 - 212 °F)
Boiling point	340 °C (644 °F)
Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Density	1.063 g/mL at 25 °C (77 °F)
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 4.57

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
no data available

Materials to avoid
Oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - mouse - 700.0 mg/kg

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
Causes photosensitivity. Exposure to light can result in allergic reactions resulting in dermatologic lesions, which can vary from sunburnlike responses to edematous, vesiculated lesions, or bullae

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (Phenanthrene)
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 3.2 mg/l - 96.0 h
	LC100 - other fish - 1.5 mg/l - 1.0 h
Toxicity to daphnia	EC50 - Daphnia magna (Water flea) - 0.86 mg/l - 24 h

and other aquatic invertebrates.

EC50 - Daphnia magna (Water flea) - 0.38 mg/l - 48 h

Toxicity to algae EC50 - Chlorella vulgaris (Fresh water algae) - 1.20 mg/l - 3 h

Persistence and degradability

Biodegradability Result: 55 - 95 % - Partially biodegradable.

Bioaccumulative potential

Bioaccumulation Pimephales promelas (fathead minnow) - 28 d
Bioconcentration factor (BCF): 5,100

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Phenanthrene)
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN-Number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenanthrene)
Marine pollutant: No

IATA

UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Phenanthrene)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

15. REGULATORY INFORMATION

OSHA Hazards

Harmful by ingestion., Irritant

DSL Status

All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

	CAS-No.	Revision Date
Phenanthrene	85-01-8	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Phenanthrene	85-01-8	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Phenanthrene	85-01-8	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Phenanthrene	85-01-8	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. Phenanthrene	85-01-8	1990-01-01

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

PYRENE

ICSC: 1474

Benzo (d,e,f) phenanthrene
beta-Pyrene
$C_{16}H_{10}$
Molecular mass: 202.26

ICSC # 1474
CAS # 129-00-0
RTECS # UR2450000
November 27, 2003 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Water spray, carbon dioxide, dry powder, alcohol-resistant foam, foam.
EXPLOSION			
EXPOSURE			
•INHALATION		Avoid inhalation of dust	Fresh air, rest.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Do NOT induce vomiting. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder Do NOT let this chemical enter the environment. (Extra personal protection: P2 filter respirator for harmful particles.)	Separated from strong oxidants. Keep in a well-ventilated room.	Do not transport with food and feedstuffs. R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1474

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

PYRENE

ICSC: 1474

I **M**	**PHYSICAL STATE; APPEARANCE:** YELLOW COLOURLESS SOLID IN VARIOUS FORMS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation through the skin and by ingestion

P O R T A N T D A T A	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on heating producing irritating fumes **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK not established. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed. **EFFECTS OF SHORT-TERM EXPOSURE:** Exposure to sun may provoke an irritating effect of pyrene on skin and lead to chronic skin discoloration. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:**

PHYSICAL PROPERTIES	Boiling point: 404°C Melting point: 151°C Density: 1.27 g/cm3	Solubility in water: 0.135 mg/l at 25°C Vapour pressure, Pa at °C: 0.08 Octanol/water partition coefficient as log Pow: 4.88
ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in crustacea,in fish,in milk,in algae andin molluscs. It is strongly advised that this substance does not enter the environment. 	

N O T E S

Pyrene is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, pyrene may be encountered as a laboratory chemical in its pure form. Health effects of exposure to the substance have not been investigated adequately. See ICSC 1415 Coal-tar pitch.

ADDITIONAL INFORMATION

ICSC: 1474 **PYRENE**

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

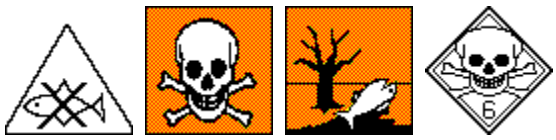
International Chemical Safety Cards

ARSENIC

ICSC: 0013

Grey arsenic
As
Atomic mass: 74.9

ICSC # 0013
CAS # 7440-38-2
RTECS # CG0525000
UN # 1558
EC # 033-001-00-X
October 18, 1999 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight when exposed to hot surfaces or flames in the form of fine powder or dust.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Cough. Sore throat. Shortness of breath. Weakness. See Ingestion.	Closed system and ventilation.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Diarrhoea. Nausea. Vomiting. Burning sensation in the throat and chest. Shock or collapse. Unconsciousness.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment.	Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed.	Do not transport with food and feedstuffs. Marine pollutant. T symbol N symbol R: 23/25-50/53 S: 1/2-20/21-28-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0013

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ARSENIC

ICSC: 0013

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. Reacts violently with strong oxidants and halogens, causing fire and explosion hazard. Reacts with acids to produce

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.01 mg/m³ as TWA A1 (confirmed human carcinogen); BEI issued (ACGIH 2004).
MAK:
Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).
OSHA PEL: 1910.1018 TWA 0.010 mg/m^3
NIOSH REL: Ca C 0.002 mg/m^3 15-minute See Appendix A
NIOSH IDLH: Ca 5 mg/m^3 (as As) See: 7440382

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes the skin and the respiratory tract. The substance may cause effects on the gastrointestinal tract cardiovascular system central nervous system kidneys , resulting in severe gastroenteritis, loss of fluid, and electrolytes, cardiac disorders shock convulsions and kidney impairment Exposure above the OEL may result in death. The effects may be delayed. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the mucous membranes, skin, peripheral nervous system liver bone marrow , resulting in pigmentation disorders, hyperkeratosis, perforation of nasal septum, neuropathy, liver impairment anaemia This substance is carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Sublimation point: 613°C
Density: 5.7 g/cm³

Solubility in water:
none

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms. It is strongly advised that this substance does not enter the environment.

N O T E S

The substance is combustible but no flash point is available in literature. Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. Refer also to cards for specific arsenic compounds, e.g., Arsenic pentoxide (ICSC 0377), Arsenic trichloride (ICSC 0221), Arsenic trioxide (ICSC 0378), Arsine (ICSC 0222).

Transport Emergency Card: TEC (R)-61GT5-II

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

Barium sulphate
Blanc fixe
Artificial barite
$BaSO_4$
Molecular mass: 233.43

ICSC # 0827
CAS # 7727-43-7
RTECS # CR0600000
October 20, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P1 filter respirator for inert particles.		R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0827

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** ODOURLESS TASTELESS, WHITE OR YELLOWISH CRYSTALS OR POWDER. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Reacts violently with aluminium powder. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 10 mg/m³ as TWA; (ACGIH 2004). MAK: (Inhalable fraction) 4 mg/m³; (Respirable fraction) 1.5 mg/m³; (DFG 2004). OSHA PEL†: TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp) NIOSH REL: TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp) NIOSH IDLH: N.D. See: IDLH INDEX **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol. **INHALATION RISK:** Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Lungs may be affected by repeated or prolonged exposure to dust particles , resulting in baritosis (a form of benign pneumoconiosis).
PHYSICAL PROPERTIES	Melting point (decomposes): 1600°C Density: 4.5 g/cm³ Solubility in water: none
ENVIRONMENTAL DATA	

NOTES

Occurs in nature as the mineral barite; also as barytes, heavy spar. Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CADMIUM

ICSC: 0020

Cd
Atomic mass: 112.4

ICSC # 0020
CAS # 7440-43-9
RTECS # EU9800000
UN # 2570
EC # 048-002-00-0
April 22, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable in powder form and spontaneously combustible in pyrophoric form. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with heat or acid(s).	Dry sand. Special powder. NO other agents.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•**INHALATION**	Cough. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain.	Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. Diarrhoea. Headache. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Personal protection: chemical protection suit including self-contained breathing apparatus. Remove all ignition sources. Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place.	Fireproof. Dry. Keep under inert gas. Separated from igntion sources, oxidants acids, food and feedstuffs	Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Note: E T+ symbol N symbol R: 45-26-48/23/25-62-63-68-50/53 S: 53-45-60-61 UN Hazard Class: 6.1

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0020

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CADMIUM

ICSC: 0020

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
SOFT BLUE-WHITE METAL LUMPS OR GREY POWDER. MALLEABLE. TURNS BRITTLE ON EXPOSURE TO 80°C AND TARNISHES ON EXPOSURE TO MOIST AIR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
Reacts with acids forming flammable/explosive gas (hydrogen - see ICSC0001.) Dust reacts with oxidants, hydrogen azide, zinc, selenium or tellurium , causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: (Total dust) 0.01 mg/m³
(Respirable fraction)
0.002 mg/m³ as TWA A2 (suspected human carcinogen); BEI issued (ACGIH 2005).
MAK: skin absorption (H);
Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).
OSHA PEL*: 1910.1027 TWA 0.005 mg/m^3 *Note: The PEL applies to all Cadmium compounds (as Cd).
NIOSH REL*: Ca See Appendix A *Note: The REL applies to all Cadmium compounds (as Cd).
NIOSH IDLH: Ca 9 mg/m^3 (as Cd) See: IDLH INDEX

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

EFFECTS OF SHORT-TERM EXPOSURE:
The fume is irritating to the respiratory tract Inhalation of fume may cause lung oedema (see Notes). Inhalation of fumes may cause metal fume fever. The effects may be delayed. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Lungs may be affected by repeated or prolonged exposure to dust particles. The substance may have effects on the kidneys , resulting in kidney impairment This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 765°C
Melting point: 321°C
Density: 8.6
g/cm3

Solubility in water: none
Auto-ignition temperature: (cadmium metal dust) 250°C

ENVIRONMENTAL DATA

N O T E S

Reacts violently with fire extinguishing agents such as water,foam,carbon dioxideand halons. Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Do NOT take working clothes home. Cadmium also exists in a pyrophoric form (EC No. 048-011-00-X), which bears the additional EU labelling symbol F, R phrase 17, and S phrases 7/8 and 43. UN numbers and packing group will vary according to the physical form of the substance.

ADDITIONAL INFORMATION

International Chemical Safety Cards

COPPER

ICSC: 0240

Cu
(powder)

ICSC # 0240
CAS # 7440-50-8
RTECS # GL5325000
September 24, 1993 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. Headache. Shortness of breath. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from - See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0240

International Chemical Safety Cards

COPPER

ICSC: 0240

I

M

P

PHYSICAL STATE; APPEARANCE:
RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.

PHYSICAL DANGERS:

CHEMICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

O **R** **T** **A** **N** **T** **D** **A** **T** **A**	Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 0.2 mg/m³ fume (ACGIH 1992-1993). TLV (as Cu, dusts & mists): 1 mg/m³ (ACGIH 1992-1993). Intended change 0.1 mg/m³ Inhal., A4 (not classifiable as a human carcinogen); MAK: 0.1 mg/m³ (Inhalable fraction) Peak limitation category: II(2) Pregnancy risk group: D (DFG 2005). OSHA PEL*: TWA 1 mg/m^3 *Note: The PEL also applies to other copper compounds (as Cu) except copper fume. NIOSH REL*: TWA 1 mg/m^3 *Note: The REL also applies to other copper compounds (as Cu) except Copper fume. NIOSH IDLH: 100 mg/m^3 (as Cu) See: 7440508	**EFFECTS OF SHORT-TERM EXPOSURE:** Inhalation of fumes may cause metal fume fever. See Notes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact may cause skin sensitization.

PHYSICAL PROPERTIES	Boiling point: 2595°C Melting point: 1083°C Relative density (water = 1): 8.9	Solubility in water: none
ENVIRONMENTAL DATA		

N O T E S

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

ICSC: 0240 **COPPER**

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

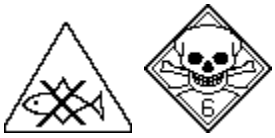
International Chemical Safety Cards

IRON (III)-o-ARSENITE, PENTAHYDRATE

ICSC: 1241

Ferric arsenite
$As_2Fe_2O_6 \cdot Fe_2O_3 \cdot 5H_2O$
Molecular mass: 607.3

ICSC # 1241
CAS # 63989-69-5
RTECS # NO4600000
UN # 1607
EC # 033-002-00-5
October 27, 1994 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Cough. Shortness of breath. Sore throat. Weakness. See Ingestion.	Avoid inhalation of fine dust and mist. Closed system and ventilation.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Redness. Burning sensation.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Burning sensation. Diarrhoea. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Vacuum spilled material. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	Separated from food and feedstuffs .	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Marine pollutant. Note: A, 1 T symbol N symbol R: 23/25-50/53 S: 1/2-20/21-28-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1241

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

IRON (III)-o-ARSENITE, PENTAHYDRATE

ICSC: 1241

I M P O R T A N T D A T A	**PHYSICAL STATE; APPEARANCE:** BROWN POWDER. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on heating or on burning producing toxic fumes of arsenic and iron. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as As) 0.01 mg/m³ as TWA; A1 (confirmed human carcinogen); BEI issued; (ACGIH 2004). MAK: Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and by ingestion. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes , the skin and the respiratory tract . The substance may cause effects on the nervous system, liver, skin, kidneys and gastrointestinal tract , resulting in kidney impairment, neuropathy, severe gastroenteritis, degenerative liver damage and dermatitis. Exposure may result in death. The effects may be delayed. Medical observation is indicated. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis, grey skin and hyperkeratosis. The substance may have effects on the nervous system,liver,cardiovascular system and respiratory tract , resulting in neuropathy, gangrene, degenerative liver damage and perforation of nasal septum. This substance is carcinogenic to humans.
PHYSICAL PROPERTIES	Solubility in water: none	
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to plants, air quality and water quality. It is strongly advised that this substance does not enter the environment. 	

N O T E S

Do NOT take working clothes home. See also ICSC0013 Arsenic. Card has been partly updated in April and October 2005. See sections Occupational Exposure Limits, EU classification, Emergency Response.

Transport Emergency Card: TEC (R)-61GT5-II

ADDITIONAL INFORMATION

ICSC: 1241 **IRON (III)-o-ARSENITE, PENTAHYDRATE**

International Chemical Safety Cards

LEAD

ICSC: 0052

Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)

ICSC # 0052
CAS # 7439-92-1
RTECS # OF7525000
October 08, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	Separated from food and feedstuffs incompatible materials See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

LEAD

ICSC: 0052

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On heating, toxic fumes are formed. Reacts with oxidants. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric acid and sulfuric acid. Attacked by pure water and by weak organic acids in the presence of oxygen.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.05 mg/m³ A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2004).
MAK:
Carcinogen category: 3B; Germ cell mutagen group: 3A; (DFG 2004).
EU OEL: as TWA 0.15 mg/m³ (EU 2002).
OSHA PEL*: 1910.1025 TWA 0.050 mg/m^3 See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH IDLH: 100 mg/m^3 (as Pb) See: 7439921

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood bone marrow central nervous system peripheral nervous system kidneys , resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES		
	Boiling point: 1740°C	Density: 11.34 g/cm3
	Melting point: 327.5°C	Solubility in water: none

ENVIRONMENTAL DATA	
	Bioaccumulation of this chemical may occur in plants and in mammals. It is strongly advised that this substance does not enter the environment. 

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.

Transport Emergency Card: TEC (R)-51S1872

ADDITIONAL INFORMATION

ICSC: 0052 **LEAD**

International Chemical Safety Cards

MAGNESIUM (POWDER)

ICSC: 0289

Mg
Atomic mass: 24.30

ICSC # 0289
CAS # 7439-95-4
RTECS # OM2100000
UN # 1418
EC # 012-001-00-3 (pyrophoric)
April 12, 2000 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with moisture, acids, halogens and many other substances.	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Do NOT expose to friction or shock. Prevent build-up of electrostatic charges (e.g., by grounding).	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. Laboured breathing. Headache. Dullness. Weakness. Fever or elevated body temperature.		
•SKIN			
•EYES	Redness. Pain.	Safety goggles.	
•INGESTION	Abdominal pain. Diarrhoea.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Do NOT wash away into sewer. Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place. Personal protection: P2 filter respirator for harmful particles.	Fireproof. Separated from strong oxidants, acids. Dry.	Airtight. F symbol R: 15-17 S: 2-7/8-43 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2 UN Packing Group: ll

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0289

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

MAGNESIUM (POWDER)

ICSC: 0289

I **M**	**PHYSICAL STATE; APPEARANCE:** GREY POWDER	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation.

P O R T A N T D A T A	**PHYSICAL DANGERS:** Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc. **CHEMICAL DANGERS:** The substance may spontaneously ignite on contact with air or moisture producing irritating or toxic fumes Reacts violently with strong oxidants. Reacts violently with many substances causing fire and explosion hazard. Reacts with acids and water forming flammable/explosive gas (hydrogen - see ICSC0001) causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK not established.	**INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** Inhalation of fumes may cause metal fume fever. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:**
PHYSICAL PROPERTIES	Boiling point: 1100°C Melting point: 651°C Density: 1.7 g/cm³	Solubility in water: none Auto-ignition temperature: 473°C Explosive limits, vol% in air: see Notes
ENVIRONMENTAL DATA		

N O T E S

Burns with an intense flame. In order to prevent eye injury do not look directly at magnesium fires. Reacts violently with fire extinguishing agents such as water, carbon dioxide and powder. Explosive limits, vol% in air: (LEL) 0.03 kg/m^3.

Transport Emergency Card: TEC (R)-43GWS-II+III
NFPA Code: H0; F1; R2;

ADDITIONAL INFORMATION

ICSC: 0289 **MAGNESIUM (POWDER)**

International Chemical Safety Cards

SELENIUM

ICSC: 0072

Se
Atomic mass: 79.0
(powder)

ICSC # 0072
CAS # 7782-49-2
RTECS # VS7700000
EC # 034-001-00-2
April 26, 1993 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with oxidants.	Powder, AFFF, foam, carbon dioxide. NO water
EXPLOSION	Risk of fire and explosion on contact with oxidants.		
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
•INHALATION	Irritation of nose. Cough. Dizziness. Headache. Laboured breathing. Nausea. Sore throat. Vomiting. Weakness. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Skin burns. Pain. Discolouration.	Protective gloves. Protective clothing.	Rinse skin with plenty of water or shower. Refer for medical attention. Remove and isolate contaminated clothes.
•EYES	Redness. Pain. Blurred vision.	Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Metallic taste. Diarrhoea. Chills. Fever. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Do NOT wash away into sewer. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	Fireproof. Separated from strong oxidants, strong acids, food and feedstuffs Dry.	Airtight. Do not transport with food and feedstuffs. T symbol R: 23/25-33-53 S: 1/2-20/21-28-45-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0072

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

SELENIUM

ICSC: 0072

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
ODOURLESS SOLID IN VARIOUS FORMS. DARK RED-BROWN TO BLUISH-BLACK AMORPHOUS SOLID OR RED TRANSPARENT CRYSTALS OR METALLIC GREY TO BLACK CRYSTALS.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. Reacts violently with oxidants strong acids Reacts withwater at 50°C forming flammable/explosive gas (hydrogen - see ICSC0001) and selenious acids. Reacts with incandescence on gentle heating with phosphorous and metals such as nickel, zinc, sodium, potassium, platinum.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.2 mg/m³ as TWA (ACGIH 2004).
MAK: (Inhalable fraction) 0.05 mg/m³
Peak limitation category: II(4); Carcinogen category: 3B; Pregnancy risk group: C;
(DFG 2004).
OSHA PEL*: TWA 0.2 mg/m^3 *Note: The PEL also applies to other selenium compounds (as Se) except Selenium hexafluoride.
NIOSH REL*: TWA 0.2 mg/m^3 *Note: The REL also applies to other selenium compounds (as Se) except Selenium hexafluoride.
NIOSH IDLH: 1 mg/m^3 (as Se) See: 7782492

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the respiratory tract Inhalation of dust may cause lung oedema (see Notes). Inhalation of fume may cause symptoms of asphyxiation, chills and fever and bronchitis. The effects may be delayed.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the respiratory tract, gastrointestinal tract, and skin , resulting in nausea, vomiting, cough, yellowish skin discolouration, loss of nails, garlic breath and bad teeth.

PHYSICAL PROPERTIES

Boiling point: 685°C
Melting point: 170-217°C
Relative density (water = 1): 4.8

Solubility in water:
none
Vapour pressure, Pa at 20°C: 0.1

ENVIRONMENTAL DATA

NOTES

Do NOT take working clothes home.

ADDITIONAL INFORMATION

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

Blue powder
Merrillite
Zn
Atomic mass: 65.4
(powder)

ICSC # 1205
CAS # 7440-66-6
RTECS # ZG8600000
UN # 1436 (zinc powder or dust)
EC # 030-001-00-1
October 24, 1994 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with acid(s), base (s) and incompatible substances (see Chemical Dangers).	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Risk of fire and explosion on contact with acid(s), base(s), water and incompatible substances.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Prevent deposition of dust.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
•**INHALATION**	Metallic taste and metal fume fever. Symptoms may be delayed (see Notes).	Local exhaust.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin.	Protective gloves.	Rinse and then wash skin with water and soap.
•**EYES**		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Extinguish or remove all ignition sources. Do NOT wash away into sewer. Sweep spilled substance into containers. then remove to safe place. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from acids, bases oxidants Dry.	Airtight. F symbol N symbol R: 15-17-50/53 S: 2-7/8-43-46-60-61 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
ODOURLESS GREY TO BLUE POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc.

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. The substance is a strong reducing agent and reacts violently with oxidants. Reacts with water and reacts violently with acids and bases forming flammable/explosive gas (hydrogen - see ICSC0001) Reacts violently with sulfur, halogenated hydrocarbons and many other substances causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
Inhalation of fumes may cause metal fume fever. The effects may be delayed.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis.

PHYSICAL PROPERTIES

Boiling point: 907°C
Melting point: 419°C
Relative density (water = 1): 7.14
Solubility in water: reaction
Vapour pressure, kPa at 487°C: 0.1
Auto-ignition temperature: 460°C

ENVIRONMENTAL DATA

N O T E S

Zinc may contain trace amounts of arsenic, when forming hydrogen, may also form toxic gas arsine (see ICSC 0001 and ICSC 0222). Reacts violently with fire extinguishing agents such as water, halons, foam and carbon dioxide. The symptoms of metal fume fever do not become manifest until several hours later. Rinse contaminated clothes (fire hazard) with plenty of water.

Transport Emergency Card: TEC (R)-43GWS-II+III
NFPA Code: H0; F1; R1;

ADDITIONAL INFORMATION

ICSC: 1205 **ZINC POWDER**

APPENDIX D

HOSPITAL INFORMATION AND MAP

FIELD ACCIDENT REPORT

FIELD ACCIDENT REPORT

This report is to be filled out by the designated Site Safety Officer after EVERY accident.

PROJECT NAME _____ PROJECT. NO._____

Date of Accident _____ Time _____ Report By _____

Type of Accident (Check One):

( ) Vehicular ( ) Personal ( ) Property

Name of Injured _____ DOB or Age _____

How Long Employed _____

Names of Witnesses _____

_____

Description of Accident _____

_____

_____

Action Taken _____

_____

_____

Did the Injured Lose Any Time? _____ How Much (Days/Hrs.)? _____

Was Safety Equipment in Use at the Time of the Accident (Hard Hat, Safety Glasses, Gloves, Safety Shoes, etc.)? _____

_____

(If not, it is the EMPLOYEE'S sole responsibility to process his/her claim through his/her Health and Welfare Fund.)

INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

HOSPITAL INFORMATION AND MAP

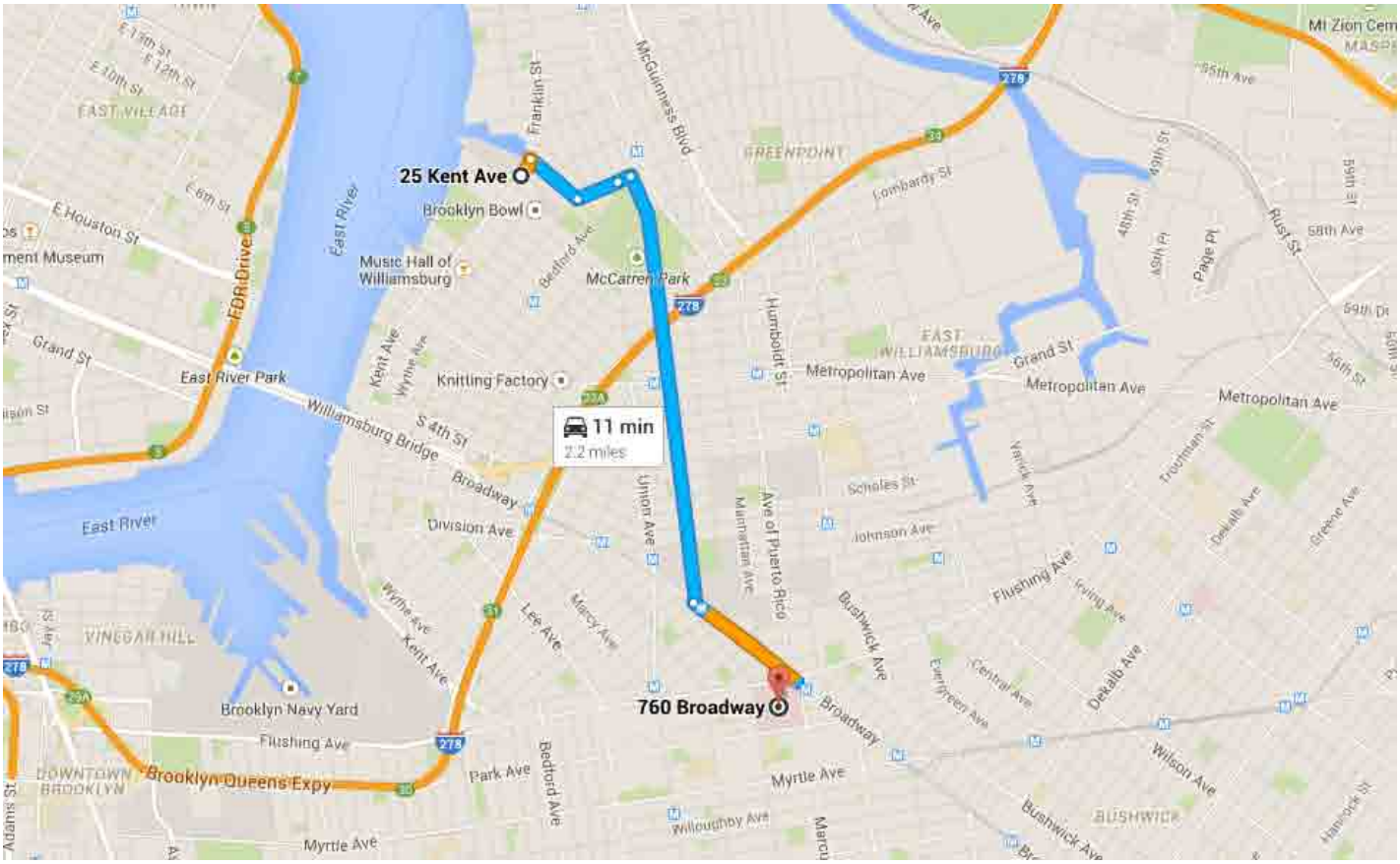
The hospital nearest the site is:

WOODHUL MEDICAL CENTER
760 Broadway, Brooklyn, New York 11206
718-963-8000
2.2 Miles – About 11 Minutes

25 Kent Ave
Brooklyn, NY 11249

1. Head **northeast** on **Kent Ave** toward **N 13th St** — 338 ft
2. Take the 2nd **right** onto **N 14th St** — 0.2 mi
3. **N 14th St** turns **left** and becomes **Nassau Ave** — 0.1 mi
4. Keep **left** to stay on **Nassau Ave** — 240 ft
5. Turn **right** onto **Lorimer St** — 1.4 mi
6. Turn **left** onto **Broadway** — 0.4 mi
   Destination will be on the right

760 Broadway
Brooklyn, NY 11206

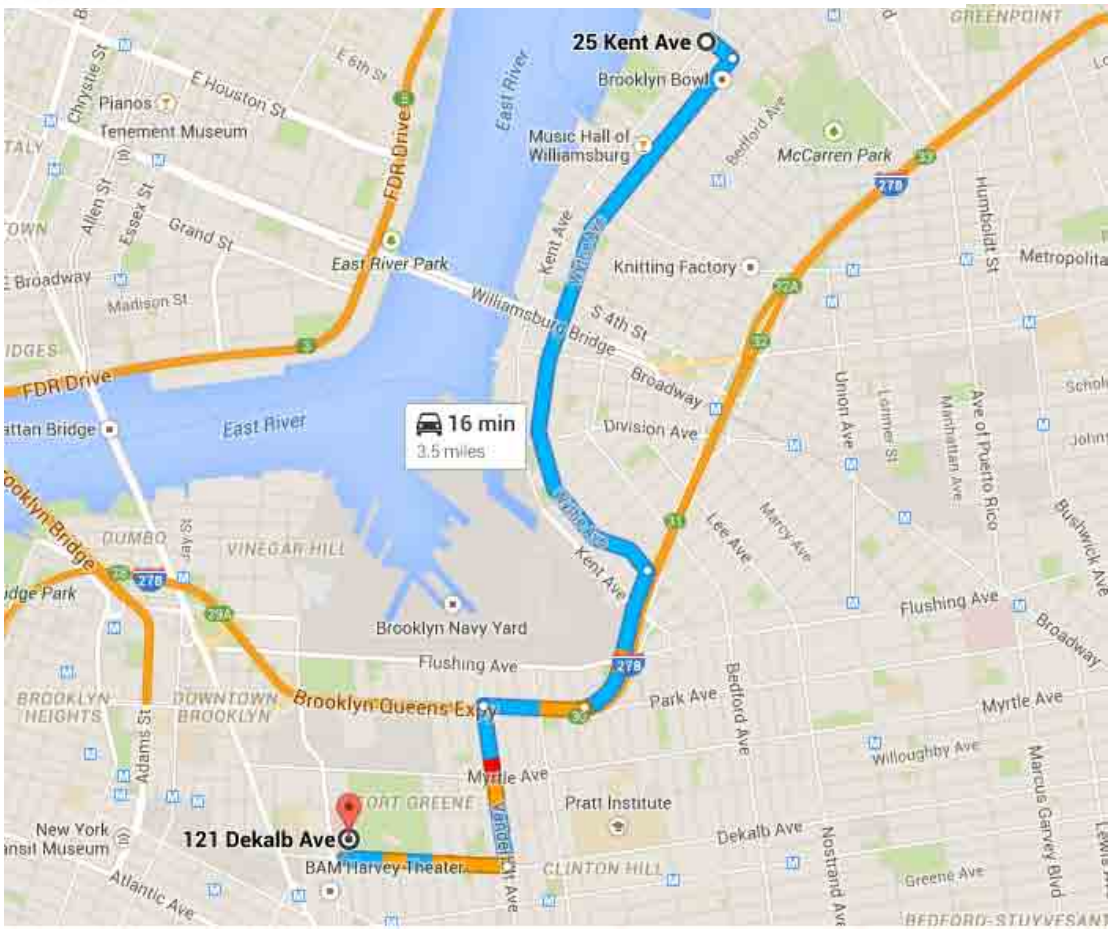


The alternate hospital nearest the site is:

BROOKLYN HOSPITAL CENTER
121 DeKalb Avenue, Brooklyn, New York 11205
718-250-8000
3.5 Miles – About 16 Minutes

1. Head **northeast** on **Kent Ave** toward **N 13th St** — 66 ft
2. Take the 1st **right** onto **N 13th St** — 453 ft
3. Take the 1st **right** onto **Wythe Ave** — 1.8 mi
4. Turn **right** onto **Williamsburg St W** — 0.4 mi
5. Merge onto **Park Ave** — 0.3 mi
6. Turn **left** onto **Vanderbilt Ave** — 0.5 mi
7. Turn **right** at the 3rd cross street onto **Dekalb Ave**
   Destination will be on the right — 0.5 mi

121 Dekalb Ave
Brooklyn, NY 11201



ATTACHMENT C
Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN
Former Sunbelt Equipment Site
25 Kent Avenue, Brooklyn, NY

Prepared on behalf of:

19 Kent Development LLC
199 Lee Avenue # 693
Brooklyn, NY 11211

Prepared by:

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961

TABLE OF CONTENTS

QUALITY ASSURANCE PROJECT PLAN
Former Sunbelt Equipment Site
25 Kent Avenue, Bronx, NY

TABLES

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared in accordance with DER-10 to detail procedures to be followed during the course of the sampling and analytical portion of the project, as required by the approved work plan.

To ensure the successful completion of the project each individual responsible for a given component of the project must be aware of the quality assurance objectives of his / her particular work and of the overall project. The EBC Project Director, Charles Sosik will be directly responsible to the client for the overall project conduct and quality assurance/quality control (QA/QC) for the project. The Project Director will be responsible for overseeing all technical and administrative aspects of the project and for directing QA/QC activities. Ms. Chawinie Miller will serve as the Quality Assurance Officer (QAO) and in this role may conduct:

- conduct periodic field and sampling audits;
- interface with the analytical laboratory to resolve problems; and
- interface with the data validator and/or the preparer of the DUSR to resolve problems.

Kevin Brussee will serve as the Project Manager and will be responsible for implementation of the Remedial Action Workplan and coordination with field sampling crews and subcontractors. Reporting directly to the Project Manager will be the Field Operations Officer, Kevin Waters; who will serve as the on-Site qualified environmental professional who will record observations, direct the drilling crew and be responsible for the collection and handling of all samples.

1.1 Organization

Project QA will be maintained under the direction of the Project Manager, in accordance with this QAPP. QC for specific tasks will be the responsibility of the individuals and organizations listed below, under the direction and coordination of the Project Manager

.

GENERAL RESPONSIBILITY	SCOPE OF WORK	RESPONSIBILITY OF QUALITY CONTROL
Field Operations	Supervision of Field Crew, sample collection and handling	K. Waters, EBC
Project Manager	Implementation of the RAWP.	Kevin Brussee, EBC
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3rd party validation

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2.0 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative Statements that specify the quality of the data required to support decisions; DQOs, as described in this section, are based on the end uses of the data as described in the work plan.

In this plan, Quality Assurance and Quality Control are defined as follows:

- Quality Assurance - The overall integrated program for assuring reliability of monitoring and measurement data.

- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

2.2 QA / QC Requirements for Analytical Laboratory

Samples will be analyzed by a New York State Department of Health (NYSDOH) certified laboratory, certified in the appropriate categories. Data generated from the laboratory will be used to evaluate contaminants such as metals and semi-volatile organic compounds (SVOCs) in both historic fills and hot-spot areas, chlorinated volatile organic compounds (VOCs) in soil, soil gas and groundwater and SVOCs in groundwater. The QA requirements for all subcontracted analytical laboratory work performed on this project are described below. QA elements to be evaluated include accuracy, precision, sensitivity, representativeness, and completeness. The data generated by the analytical laboratory for this project are required to be sensitive enough to achieve detection levels low enough to meet required quantification limits as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP, 07/2005). The analytical results meeting the required quantification limits will provide data sensitive enough to meet the data quality objectives of this remedial program as described in the work plan. Reporting of the data must be clear, concise, and comprehensive. The QC elements that are important to this project are completeness of field data, sample custody, sample holding times, sample preservation, sample storage, instrument calibration and blank contamination.

2.2.1 Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in NYSDEC ASP 07/2005.

2.2.2 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hrs by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

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2.2.3 Method Blanks

Method blank or preparation blank is prepared from an analyte·free matrix which includes the same reagents, internal standards and surrogate standards as me related samples. II is carried through the entire sample preparation and analytical procedure. A method blank analysis will be performed once for each 12 hr period during the analysis of samples for volatiles. An acceptable method blank will contain less than two (2) times the CRQL of methylene chloride, acetone and 2-butanone. For all other target compounds, the method blank must contain less than or equal to the CRQL of any single target compound. For non-target peaks in the method blank, the peak area must be less than 10 percent of the nearest internal standard. The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

2.2.4 Trip Blanks.

Trip blanks consist of a single set of sample containers filled at the laboratory with deionized. laboratory-grade water. The water used will be from the same source as that used for the laboratory method blank. The containers will be carried into the field and handled and transported in the same way as the samples collected that day. Analysis of the trip blank for VOCs is used to identify contamination from the air, shipping containers, or from other items coming in contact with the sample bottles. (The bottles holding the trip blanks will be not opened during this procedure.) A complete set of trip blanks will be provided with each shipment of samples to the certified laboratory.

2.2.5 Surrogate Spike Analysis

For organic analyses, all samples and blanks will be spiked with surrogate compounds before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the NYSDEC ASP protocols for samples falling within the quantification limits without dilution.

2.2.6 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank (MS/MSDIMSB) Analysis

MS, MSD and MSB analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS / MSD / MSB samples will be analyzed for each group of samples of a similar matrix at a rate of one for every 20 field samples. The RPD will be calculated from the difference between the MS and MSD. Matrix spike blank analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.3 Accuracy

Accuracy is defined as the nearness of a real or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery and is expressed as percent recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike percent recovery (% REC) is calculated by the following equation:

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

Where:

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SSR = spike sample results
SR = sample results
SA = spike added from spiking mix

2.4 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without a Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses.

Analytical precision is expressed in terms of RPD. The RPD is calculated using the following formula:

$$RPD = \frac{D^1 - D^2}{(D^1 + D^2)/2} \times 100$$

Where:
RPD = relative percent difference
D^1 = first sample value
D^2 = second sample value (duplicate)

2.5 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve quantification levels low enough to meet the required detection limits specified by NYSDEC ASP and to meet all site-specific standards, criteria and guidance values (SGCs) established for this project.

2.6 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of that site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on site. The representativeness of samples is assured by adherence to sampling procedures described in the Remedial Investigation Work Plan.

2.7 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers, and should be between 70 and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data, and raw analytical data. The laboratory will be required to submit data packages that follow NYSDEC ASP reporting format which, at a minimum, will include the following components:

1. All sample chain-of-custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analytes in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).

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6. Matrix spike/matrix spike duplicate/matrix spike blank results.
7. QC check sample and standard recovery results
8. Blank results (field, trip, and method).
9. Internal standard area and RT summary.

2.8 Laboratory Custody Procedures

The following elements are important for maintaining the field custody of samples:

- Sample identification
- Sample labels
- Custody records
- Shipping records
- Packaging procedures

Sample labels will be attached to all sampling bottles before field activities begin; each label will contain an identifying number. Each number will have a suffix that identifies the site and where the sample was taken. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample, and sample identification will be entered into the field logbook. A chain-of-custody form, initiated at the analytical laboratory will accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first received blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form that will include:

- Site name and address
- Samplers' names and signatures

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3.0 ANALYTICAL PROCEDURES

3.1 Laboratory Analysis

Samples will be analyzed by the NYSDEC ASP laboratory for one or more of the following parameters: VOCs in soil by USEPA Method 8260C, SVOCs in soil by USEPA Method 8270D, Target Analyte Metals 6010C in soil, pesticides and PCBs by USEPA Method 8081B/8082A. If any modifications or additions to the standard procedures are anticipated. and if any nonstandard sample preparation or analytical protocol is to be used, the modifications and the nonstandard protocol will be explicitly defined and documented. Prior approval by EBC's PM will be necessary for any nonstandard analytical or sample preparation protocol used by the laboratory, i.e., dilution of samples or extracts by greater than a factor of five (5).

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4.0 DATA REDUCTION, REVIEW, AND REPORTING

4.1 Overview

The process of data reduction, review, and reporting ensures the assessments or a conclusion based on the final data accurately reflects actual site conditions. This plan presents the specific procedures, methods, and format that will be employed for data reduction, review and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports, and work plans are proofed and checked for technical and numerical errors prior to final submission.

4.2 Data Reduction

Standard methods and references will be used as guidelines for data handling, reduction, validation, and reporting. All data for the project will be compiled and summarized with an independent verification at each step in the process to prevent transcription/typographical errors. Any computerized entry of data will also undergo verification review.

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Analytical results shall be presented on standard NYSDEC ASP-B forms or equivalents, and include the dates the samples were received and analyzed, and the actual methodology used. Note that waste characterization samples (if collected) will be in results only format and will not be evaluated in the DUSR.

Laboratory QA/QC information required by the method protocols will be compiled, including the application of data QA/QC qualifiers as appropriate. In addition, laboratory worksheets, laboratory notebooks, chains-of-custody, instrument logs, standards records, calibration records, and maintenance records, as applicable, will be provided in the laboratory data packages to determine the validity of data. Specifics on internal laboratory data reduction protocols are identified in the laboratory's SOPs.

Following receipt of the laboratory analytical results by EBC, the data results will be compiled and presented in an appropriate tabular form. Where appropriate, the impacts of QA/QC qualifiers resulting from laboratory or external validation reviews will be assessed in terms of data usability.

4.3 Laboratory Data Reporting

All sample data packages submitted by the analytical laboratory will be required to be reported in conformance to the NYSDEC ASP (7/2005), Category B data deliverable requirements as applicable to the method utilized. All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Note that waste characterization samples will be in results only format and will not be evaluated in the DUSR.

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5.0 CORRECTIVE ACTION

Review and implementation of systems and procedures may result in recommendations for corrective action. Any deviations from the specified procedures within approved project plans due to unexpected site-specific conditions shall warrant corrective action. All errors, deficiencies, or other problems shall be brought to the immediate attention of the EBC PM, who in turn shall contact the Quality Assurance/Data Quality Manager or his designee (if applicable).

Procedures have been established to ensure that conditions adverse to data quality are promptly investigated, evaluated and corrected. These procedures for review and implementation of a change are as follows:

- Define the problem.
- Investigate the cause of the problem.
- Develop a corrective action to eliminate the problem, in consultation with the personnel who defined the problem and who will implement the change.
- Complete the required form describing the change and its rationale (see below for form requirements).
- Obtain all required written approvals.
- Implement the corrective action.
- Verify that the change has eliminated the problem.

During the field investigation, all changes to the sampling program will be documented in field logs/sheets and the EBC PM advised.

If any problems occur with the laboratory or analyses, the laboratory must immediately notify the PM, who will consult with other project staff. All approved corrective actions shall be controlled and documented.

All corrective action documentation shall include an explanation of the problem and a proposed solution which will be maintained in the project file or associated logs. Each report must be approved by the necessary personnel (e.g., the PM) before implementation of the change occurs. The PM shall be responsible for controlling, tracking, implementing and distributing identified changes.

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TABLE 1
SUMMARY OF
SAMPLING PROGRAM RATIONALE AND ANALYSIS

Matrix	Location	Approximate Number of Samples	Frequency	Rationale for Sampling	Laboratory Analysis	Duplicates	Matrix Spikes	Spike Duplicates	Trip Blanks
Soil	Excavation Bottom	16	1 per 900 square feet	Endpoint verification	VOCs / SVOCs by 8260C / 8270D, pesticides by 8081, PCBs by 8082 and TAL Metals 6010C	1 per day	1 per 20 samples	1 per 20 samples	1 per trip

TABLE 2
SAMPLE COLLECTION AND ANALYSIS PROTOCOLS

Sample Type	Matrix	Sampling Device	Parameter	Sample Container	Sample Preservation	Analytical Method#	CRQL / MDLH	Holding Time
Soil	Soil	Scoop Direct into Jar	VOCs	(1) 2 oz Jar	Cool to 4^{o} C	EPA Method 8260C	Compound specific (1-5 ug/kg)	14 days*
			SVOCs	(1) 8 oz jar	Cool to 4^{o} C	EPA Method 8270D	Compound specific (1-5 ug/kg)	14 day ext/40 days*
			Pest/PCBs	from 8oz jar above	Cool to 4^{o} C	EPA Method 8081B/8082A	Compound specific (1-5 ug/kg)	14 day ext/40 days*
			Metals	from above	Cool to 4^{o} C	TAL Metals 6010C	Compound specific (01-1 mg/kg)	6 months*

Notes:
All holding times listed are from Verified Time of Sample Receipt (VTSR) unless noted otherwise. * Holding time listed is from time of sample collection.
The number in parentheses in the "Sample Container" column denotes the number of containers needed.
Triple volume required when collected MS/MSD samples
The number of trip blanks are estimated.
CRQL / MDL = Contract Required Quantitation Limit / Method Detection Limit.
MCAWW = Methods for Chemical Analysis of Water and Wastes.
NA = Not available or not applicable.
* = all collection and holding times will be as be the ASP

ATTACHMENT D
Community and Environmental Response Plan

FORMER SUNBELT EQUIPMENT

25 KENT AVENUE
BROOKLYN, NEW YORK
Block 2312 Lot 1

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

June 2015

Prepared for:
19 Kent Development LLC
199 Lee Avenue # 693
Brooklyn, NY 11211

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
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Ridge, NY 11961

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Community and Environmental Response Plan
Former Sunbelt Equipment

APPENDICES

1.0 INTRODUCTION

1.1 Project Background

This Community and Environmental Response Plan (CERP) was prepared on behalf of 19 Kent Development LLC to summarize the procedures and practices to be implemented at the former Sunbelt Equipment Site located at 25 Kent Avenue in the borough of Brooklyn, New York during the remediation of the Site. The purpose of this CERP is to provide a summary of the controls, monitoring and work practices and how they will be used to provide the required protections to the public and the environment. Additional details regarding these items are provided in the Remedial Action Work Plan (AMC 12/14) prepared for the Site.

The Site is known to be contaminated with petroleum from underground storage tanks and with metals from fill materials. The property is being remediated under the New York State Brownfield Cleanup Program (BCP). Remedial activities will include the excavation of the entire Site to a depth of 15-20 ft below grade and dewatering / treatment during construction of the new building's foundation.

1.2 Site Location and Description

The subject property is located at 25 Kent Avenue, in the Williamsburg neighborhood of Brooklyn NY. The Site is comprised of a single tax parcel covering 80,000 square feet (1.83 acres). The subject property is located in the City of New York and Borough of Brooklyn (Kings County) and is identified as Block 2282 Lot 1 on the NY City tax map. The lot encompasses the entire block with approximately 200 ft of street frontage on Kent and Wythe Avenues and 400 feet of street frontage on N. 12th and N. 13th Streets. Currently the property is vacant but was most recently occupied by Sunbelt Equipment, a construction equipment rental company.

The perimeter of the Site, is enclosed with chain-link, corrugated metal and/or plywood fencing approximately 10 feet tall, with a sidewalk shed located along portions of North 12th Street and roll-up access gates located on the north, south and east sides of the property.

The elevation of the Site is ranges from 11 to 15 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the west. The depth to groundwater beneath the Site is approximately 5-12 feet below grade. According to an investigation performed on the property in 2006, groundwater flows to the southeast. This flow direction was confirmed during the RI.

The area surrounding the property is highly urbanized and predominantly consists of older heavy industry properties along the waterfront east to Kent and Wythe Avenues. Many of these properties are being renovated and repurposed, such as the City park to the west or redeveloped with new commercial buildings such as hotels, office and retail space. The areas east of Wythe Avenue have been undergoing a transformation as former industrial properties are being redeveloped for residential use.

2.0 PUBLIC COMMUNICATION AND OUTREACH

2.1 Citizen Participation Plan

A Citizen Participation (CP) Plan has been prepared for this project to provide information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

CP Activities

The public is informed about CP activities through fact sheets and notices distributed at significant points during the program. 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. Document repositories allow the public to access and review project documents including investigation and cleanup work plans and final reports.

Major Issues of Public Concern

The major issues of concern to the public will be potential impacts of nuisance odors and dust during the removal of affected soil at the Site. Another example of a major issue of public concern would be the impact of increased truck traffic on the surrounding neighborhood. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP) are required components of the remedial program. Implementation of these plans will be under the direct oversight of the NYSDEC and the New York State Department of Health (NYSDOH).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-site air monitoring for worker protection;
- Perimeter air monitoring for community protection;
- The use of odor, vapor, and dust controls, such as water or foam sprays, as needed;
- Monitoring and control of soil, sediments, and water generated during remediation; and
- Truck routes which avoid residential streets.

The HASP and the CAMP were prepared as part of the Remedial Action Work Plan (RAWP) and will be available for public review at the document repository as identified in Section 2.2 below.

Furthermore, the Applicant has prepared a Scoping Sheet for Major Issues of Public Concern which will assist them in identifying any concerns. Experience from similar projects, 311 complaints and other construction projects in the area will help in identifying such issues.

2.2 Document Repositories

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library – Greenpoint Branch
107 Norman Ave
Brooklyn, NY 11222

Hours:

Monday	10:00 pm – 6:00 pm
Tuesday	1:00 pm – 6:00 pm
Wednesday	1:00 pm – 8:00 pm
Thursday	1:00 pm – 8:00 pm
Friday	10:00 am – 6:00 pm
Saturday	10:00 am – 5:00 pm
Sunday	Closed

NYSDEC - Region 2 Office
47-40 21st Street
Long Island City, NY 11101
(718) 482-4900

Hours:
By Appointment

2.3 Contact Information

New York State Department of Environmental Conservation (NYSDEC):

Henry Willems
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Address: 625 Broadway, Albany, NY 12233-7020
Tel: 518 402-9473
Email: henry.willems@dec.ny.gov

Thomas Panzone
Regional Citizen Participation Specialist
NYSDEC Region 2
Office of Communications Services
47-40 21st Street
Long Island City, NY 11101-5407
Tel: (718) 482-4953
Email: thomas.panzone(@dec.state.ny.gov

New York State Department of Health (NYSDOH):

To be named
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower Room 1787
Albany, New York 12237
Tel: (518) 402-7860
Email: BEEI@doh.state.ny.gov

3.0 COMMUNITY AIR MONITORING PLAN

The CAMP provides measures 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. When the excavation area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals and locations of ventilation system intakes for nearby structures (i.e apartment buildings) at the downwind location.

Three air quality / dust monitoring stations will be utilized at the Site including one located at the upwind property line and two located at the downwind property line. Air quality for VOCs will be monitored using photoionization detectors (PIDs). Dust will be monitored with a particulate dust meter. An anemometer / weather vane will be used to determine wind speed and direction during the day. This information will be used to position and reposition the air monitoring stations. Air monitoring stations will log 15 minute average readings which will be downloaded daily. In addition field personnel will visually inspect and keep a written record of instantaneous readings at each station at 30 minute intervals throughout the work day. PIDs will be calibrated daily. Calibration logs will be included in the daily reports submitted to the DEC.

The action levels specified require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-site through the air.

The primary concerns for this site are vapors, nuisance odors and dust particulates. The CAMP prepared for implementation of the RAWP is provided in **Appendix A**.

4.0 PUBLIC CORRECTION MEASURES

4.1 Warning Signs

The developer will place a sign at the project entrance indicating that the property is being remediated under the New York State Brownfield Cleanup Program. In addition signs will be placed at the gate indicating that the property is an active construction site and only authorized personnel are allowed to enter. The property will be secured through locked gates during non-working hours.

4.2 Street Closure

Street closures are not anticipated to be required during the remedial action at the Site. Flagmen will be present to direct truck traffic entering and exiting the Site.

4.3 Site Fencing

An 8-foot high temporary construction fence will be installed around the perimeter of the Site with entrance / exit gates located on Kent Avenue, Wythe Avenue, N. 12th Street and N. 13th Street. This fence will be properly secured at the end of the day and supplemented, as needed, by installing orange safety fencing around open excavations to ensure on-site worker safety.

5.0 ODOR, VAPOR AND DUST CONTROL

5.1 Odor and Vapor Control

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. Nuisance odors are defined as site-related odors perceived outside the Site. The Environmental Professional will walk the perimeter of the Site to monitor for nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. 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 Remedial Engineer.

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.

Odor control measures such as tarps and suppressant foams will be present on-ssite and fully operational prior to commencement of any intrusive activities.

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 the excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

5.2 Dust Control

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

- Dust suppression will be achieved though spraying water directly onto off-road areas including excavations and stockpiles.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water application.

6.0 CONSTRUCTION NOISE MITIGATION

Other potential impacts to the community such as construction-related noise, vibrations and traffic, will be controlled and regulated under the terms of the NYS Department of Buildings issued building permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit.

7.0 STORMWATER RUNOFF CONTROL

Erosion and sediment controls will be performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Typical measures that will be utilized at various stages of the project to limit the potential for erosion and migration of soil include the use of hay bales, temporary stabilized construction entrances/exits, placement of silt fencing and/or hay bales around soil stockpiles, and dust control measures.

Haybales and/or silt fence will be placed by the remedial contractor at locations surrounding excavation areas and within the perimeter fencing as needed, to control stormwater runoff and surface water from exiting the excavation. These control measures will be installed prior to initiating the soil excavation.

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.

8.0 WASTE MANAGEMENT

Lead hazardous soil, has been documented within the A2 grid (approx. 6,650 sf area) in the west central portion of the property. The vertical extent is limited to 3 feet below grade though over-excavation to 5 feet is anticipated to assure removal of hazardous soil. The impacted soil in this area will be removed prior to the excavation for the building foundation.

Excavated soil will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, pre-characterization samples may be collected to allow the soil to be loaded directly on to trucks for transport to the disposal facility. Soils excavated from lead hazardous hotspot, will be classified as hazardous.

The final determination on classification will be based on the results of waste characterization analysis and the NYSDEC.

Petroleum impacted soil has been documented throughout most of the Site. Historic fill material has been identified across the Site to depths as great as 12 feet below grade. The historic fill material contains metals above unrestricted and restricted use SCOs including high levels of arsenic, lead, copper and mercury. Historic fill material will be segregated from non-contaminated native soils and disposed of off-Site at a permitted disposal facility. Petroleum contaminated soil and historic fill soil with lead levels above 1,000 mg/kg and those with lead levels above 3,000 mg/kg will require further segregation for disposal at alternate facilities. Excavated historic fill materials will be secured and temporarily stored on-Site until arrangements can be made for off-Site disposal. The petroleum contaminant soil and historic fill material has been classified as non-hazardous material. It is anticipated that the excavation of historic fill material will be performed by the excavation contractor for the construction project using trained personnel (24 hr HAZWOPER).

9.0 WATER MANAGEMENT AND TREATMENT MEASURES

As the depth to groundwater at the site is approximately 10 to 15 feet above the planned excavation depth, dewatering operations will be employed during construction. 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 the 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.

10.0 TRANSPORTATION PLAN

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:

- ENTERING SITE - from the Brooklyn Queens Expressway heading south; take the Metropolitan Avenue Exit and turn right heading west on Metropolitan Avenue to Kent Avenue. Turn right, heading north on Kent Avenue to the Site entrance on the right (10 blocks).

- EXITING SITE – Turn right onto Wythe Avenue heading south to Metropolitan Avenue (10 blocks). Turn left onto Metropolitan Avenue heading east to the Brooklyn-Queens Expressway. Pass beneath the Brooklyn-Queens Expressway and turn left onto the Meeker Avenue and continue to the on-ramp (bearing left) Brooklyn-Queens Expressway.

These routes are shown in **Appendix B**.

These are the most appropriate routes to and from the Site and take 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. Material transported by trucks exiting the Site will be secured with tight-fitting covers. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be inspected, dry-brushed and / or, as needed, before leaving the site.

APPENDIX A
Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

FORMER SUNBELT EQUIPMENT SITE
25 KENT AVENUE
BROOKLYN, NY

DECEMBER - 2014

COMMUNITY AIR MONITORING PLAN
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APPENDICES

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the excavation and building activities to be performed under a Remedial Action Work Plan (RAWP) at the Former Sunbelt Equipment Site. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the investigation activities) from potential airborne contaminant releases resulting from investigative activities at the site.

Compliance with this CAMP is required during all activities associated with soil excavation that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include excavation of soils, stockpiling, loading, and backfilling. This CAMP has been prepared to ensure that soil disturbance activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of construction-related contaminants to offsite areas.

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 as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). 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;

- New York State Department of Environmental Conservation (NYSDEC) Technical and Guidance Memorandum (TAGM) #4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

VOCs, SVOCs and heavy metals and are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during soil disturbance activities is through real-time VOC and air particulate (dust) monitoring.

2.1 Meteorological Data

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

2.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. When the excavation area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals at the downwind location.

Fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor (or equivalent). Air will be monitored for VOCs with a portable Ionscience 3000 photoionization detector (PID), minirae 2000, or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The 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

3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present.

The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report, as shown in Appendix A, will be completed.

3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remedial activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- limiting the excavation size;
- backfilling the excavation;
- spraying water onto the excavation faces and equipment;
- covering soil stockpiles with 6-mil plastic sheeting;
- hauling waste materials in properly tarped containers; and/or
- applying vapor suppressant foam (BioSolve Pinkwater or similar).

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during excavation and loading activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM_{10}) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter ($\mu g/m_3$). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 $\mu g/m^3$ above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- 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 readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report as shown in **Appendix A** will be completed.

4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than 100 $\mu g/m^3$ at any time during remediation activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- limiting the excavation size;
- backfilling the excavation;
- spraying water onto the excavation faces and equipment;
- covering soil stockpiles with 8-mil plastic sheeting;
- hauling waste materials in properly tarped containers; and/or
- limiting vehicle speeds onsite.

Work may continue with dust suppression techniques provided that downwind PM_{10} levels are not more than 150 $\mu g/m^3$ greater than the upwind levels.

There may also be situations where the dust is generated by remediation activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below 150 $\mu g/m^3$, or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

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5.0 DATA QUALITY ASSURANCE

5.1 Calibration

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

5.2 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 SSO for reference.

5.3 Data Review

The SSO will interpret all monitoring data based the established criteria and his/her professional judgment. The SSO shall review the data with the PM 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 PM.

6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.

APPENDIX A
ACTION LIMIT REPORT

CAMP
ACTION LIMIT REPORT

Project Location: _____

Date: _____ Time: _____

Name: _____

Contaminant: _____ PM-10: _____ VOC: _____

Wind Speed: _____ Wind Direction: _____

Temperature: _____ Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: Location: _____ Level Reported: Level Reported: _____

ACTIONS TAKEN

_____
_____
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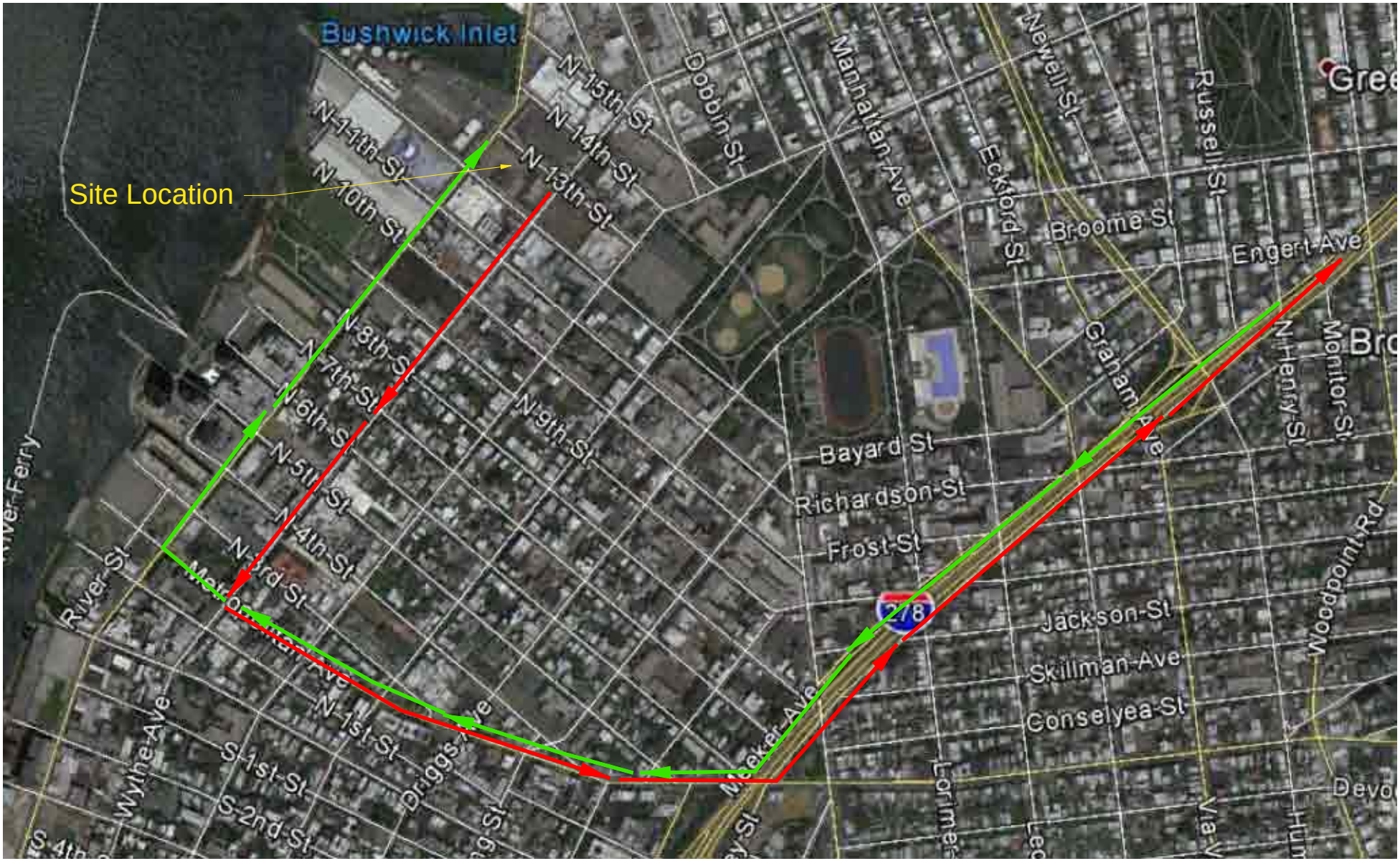
APPENDIX B
Transportation Route



Inbound Truck Route

Outbound Truck Route

EBC
Environmental Business Consultants
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 10

Site Name: Former Sunbelt Equipment Site

Site Address: 25 Kent Avenue, Brooklyn, NY 11249

Drawing Title: Truck Routes

ATTACHMENT E
Citizen Participation Plan

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

FORMER SUNBELT EQUIPMENT SITE

19 Kent Development LLC
199 Lee Avenue # 693
Brooklyn, NY 11211

January 2015

Contents

* * * * *

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

Applicant: **19 Kent Development LLC**
Site Name: Former Sunbelt Equipment **("Site")**
Site Address: **25 Kent Avenue**
Site County: **Kings**
Site Number: **Cxxxxxx**

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

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

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that Site's investigation and cleanup process;

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the Site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC 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; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the Site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

- **Document repositories** allow the public to access and review project documents including investigation and cleanup work plans and final reports.

The public is encouraged to contact project staff at any time during the Site's investigation and cleanup process with questions, comments, or requests for information. This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret

and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the citizen participation activities related to the Site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repositories	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process.

The major issues of concern to the public will be potential impacts of nuisance odors and dust during the removal of affected soil at the Site. Another example of a major issue of public concern would be the impact of increased truck traffic on the surrounding neighborhood. Construction safety issues will also be addressed.

This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP) are required components of the remedial program. Implementation of these plans will be under the direct oversight of the NYSDEC and the New York State Department of Health (NYSDOH).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-site air monitoring for worker protection;
- Perimeter air monitoring for community protection;
- The use of odor, vapor, and dust controls, such as water or foam sprays, as needed;
- Monitoring and control of soil, sediments, and water generated during remediation; and
- Truck routes which avoid residential streets.

The HASP and the CAMP will be prepared as part of the Remedial Action Work Plan (RAWP) and will be available for public review at the document repository as identified in Appendix A (page 11).

Furthermore, the Applicant has prepared a Scoping Sheet for Major Issues of Public Concern which will assist them in identifying any concerns. Experience from similar projects, 311 complaints and other construction projects in the area will help in identifying such issues.

4. Site Information

Appendix C contains a map identifying the location of the Site.

Site Description

The Site to be remediated and redeveloped is located in the Williamsburg section of Kings County and is comprised of a single tax parcel totaling 80,000 square feet (1.83 acres). The Site is located in the City of New York and Borough of Brooklyn. The lot encompasses the entire block with approximately 200 ft of street frontage on Kent and Wythe Avenues and 400 feet of street frontage

on N. 12th and N. 13th Streets. Currently the property is vacant but was most recently occupied by Sunbelt Equipment, a construction equipment rental company.

The Site had been improved with two groups of interconnected structures, identified as the East and West Buildings. The West Building is situated at the south-central portion of the Site and is comprised of one (1) one-story structure and two (2) one and partial two-story structures, each of which fronts along North 12th Street. These structures have an approximate footprint of 10,500 s.f. The Eastern Building is an "L"-shaped structure comprised of two (2) interconnected two-story buildings, with a partial basement (boiler room). The buildings have an approximate footprint of 11,375 s.f., and run west along North 12th Street from Wythe Avenue, before turning north, and continuing to the northern property boundary along North 13th Street. The buildings are vacant/unoccupied, and partially demolished (missing roofs and windows) related to recent asbestos abatement activities. Remaining portions of the Site consist of asphalt and concrete paved yard areas, except for a small unpaved area at the northeastern portion of the Site. The perimeter of the Site, not bounded by buildings, is enclosed with chain-link, corrugated metal and/or plywood fencing approximately 10 feet tall, with a sidewalk shed located along portions of North 12th Street and roll-up access gates located on the north, south and east sides of the property. Concrete block walls, approximately 2-3 feet tall also border portions of the northern, eastern and western property boundaries, topped by the aforementioned fencing.

The elevation of the Site is ranges from 11 to 15 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the west. The depth to groundwater beneath the Site is approximately 12 feet below grade. According to an investigation performed on the property in 2006, groundwater flows to the southeast. However this is in contradiction with the flow direction reported on the adjacent property to the east in which the flow direction was reported as north.
The land use in the immediate vicinity of the Site includes underutilized, or vacant, commercial properties to the west, single family residential homes and an underutilized former garage to the south, a health clinic and retail stores to the east and a self storage building to the north.

The area surrounding the property is highly urbanized and predominantly consists of older heavy industry properties along the waterfront east to Kent and Wythe Avenues. Many of these properties are being renovated and repurposed, such as the City park to the west or redeveloped with new commercial buildings such as hotels, office and retail space. The areas east of Wythe Avenue have been undergoing a transformation as former industrial properties are being redeveloped for residential use. This transformation was related to the upzoning of many commercial industrial properties to residential as part of the Greenpoint-Willamsburg Rezoning Action. The proposed project is compatible with the surrounding land use and will be in compliance with current zoning.

History of Site Use, Investigation, and Cleanup
The property is currently owned by 19 Kent Development LLC. The property is currently vacant.

A history dating back to 1887 was established. The Site was comprised of as up to seven separate tax parcels, each occupied by various commercial/retail and industrial uses, including the Pratt Manufacturing Co., a cooperage, a varnish manufacturing facility, two lime manufacturing facilities and several retail stores by at least 1888. By 1905, the Pratt Manufacturing facility was identified as the Standard Oil Co., with multiple aboveground petroleum tanks present. The two lime facilities

were replaced with an iron works storage yard by 1916. By 1941, the Standard Oil facility was demolished, with the northwestern and eastern portions of the Site shown as undeveloped. Central portions of the Site remain developed with a varnish works. By the early 1950s, the Site was occupied by metal and lumber storage yards and a paint manufacturer. Between the mid-1960s and late-1970s, the paint manufacturing building was converted to a warehouse and several of the other structures at the central portion of the Site were demolished. By the mid-1980s, the Site was occupied by an equipment rental facility and storage yard. The westernmost structure was demolished in 2012 and the Site was vacated sometime after April 2014.

A subsurface investigation performed at the Site in November and December 2014 identified elevated levels of petroleum contamination including volatile and semi-volatile organic compounds in soil and groundwater beneath the Site. Heavy metals including one or more of the following: arsenic, barium, copper, lead, mercury and zinc were reported in fill materials across the site to depths as great as 12 feet below grade. Lead was also found at leachable levels in the west central portion of the Site classifying this soil as hazardous.

5. Investigation and Cleanup Process

Application

The Applicant has applied for acceptance into New York's Brownfield Cleanup Program (BCP) as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the Site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination on-site, and must conduct a qualitative exposure assessment, (a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the Site).

The Applicant proposes that the Site will be used for the construction of a new 10-story commercial building which will cover the entire Site. Plans include a 2-level cellar parking garage requiring excavation of the entire Site to a depth of 25 ft below grade. With groundwater present at 12 feet below grade, dewatering will be required during construction of the building's foundation. The project includes retail space on the first floor, a health care facility on floors 2 through 9 and office space on the 10^{th} floor. The basement levels will be used for parking and meter rooms.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement (BCA) executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

The Applicant completed a Remedial Investigation before it applied to the BCP. The Applicant has submitted a Remedial Investigation Report and Remedial Action Work Plan to the NYSDEC for review. The NYSDEC will use the information in the investigation report to determine if the Site

poses a significant threat to public health or the environment. If the Site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the Site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

The Applicant has recommended in its investigation report that action needs to be taken to address site contamination and provided a cleanup plan, officially called a Remedial Work Plan, to the NYSDEC for approval. The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the Site.

The NYSDEC announced the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the FER. NYSDEC then will issue a COC to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan (SMP).

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 is pumping and treating 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):

To be named
New York State Department of Environmental Conservation
Division of Environmental Remediation
Address:
Tel:
Email:

Thomas Panzone
Regional Citizen Participation Specialist
NYSDEC Region 2
Office of Communications Services
47-40 21st Street
Long Island City, NY 11101-5407
Tel: (718) 482-4953
Email: thomas.panzone(@dec.state.ny.gov

New York State Department of Health (NYSDOH):
To be named
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower Room 1787
Albany, New York 12237
Tel: (518) 402-7860
Email:

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library – Greenpoint Branch
107 Norman Ave
Brooklyn, NY 11222

Hours:
Monday 10:00 pm – 6:00 pm
Tuesday 1:00 pm – 6:00 pm
Wednesday 1:00 pm – 8:00 pm
Thursday 1:00 pm – 8:00 pm
Friday 10:00 am – 6:00 pm
Saturday 10:00 am – 5:00 pm
Sunday Closed

Appendix B - Site Contact List

Local Government Contacts:

City of New York
William de Blasio
Mayor of New York City
City Hall
New York, NY 10007

Eric Adams
Brooklyn Borough President
209 Joralemon Street
New York, NY 11201

Ms. Dealice Fuller
Chair, Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY, 11211

Mr. Gerald Esposito
District Manager, Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY, 11211

Stephen Levin NYC Council Member
33rd District
410 Atlantic Avenue
Brooklyn, NY 11217

Carl Weisbrod
Chair of City Planning (Zoning)
22 Reade St.
Third Floor
New York, NY 10007

Dalila Hall
New York City Department of Transportation
Brooklyn Borough Commissioner
55 Water Street, 9th Floor
New York, NY 10041

Kings County Clerk's Office
Nancy Sunshine, County Clerk
360 Adams Street, Room 189
Brooklyn, NY 11201

Ms. Letitia James
Public Advocate
1 Centre Street, 15th Floor
New York, NY 10007
Email: kjfoy@pubadvocate.nyc.gov

Hon. Scott M. Stringer
Office of the Comptroller
1 Centre Street
New York, NY 10007
Email: intergov@comptroller.nyc.gov

Hon. Jose Peralta
NYS Senator
32-37 Junction Boulevard
East Elmhurst, NY 11369

Hon. Joan L. Millman
NYS Assembly Member
341 Smith Street
Brooklyn, NY 11231

Hon. Charles Schumer
U.S. Senator
757 Third Avenue, Suite 17-02
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

Hon. Nydia M. Velazquez
U.S. House of Representatives
266 Broadway, Suite 201
Brooklyn, NY 11211

John Wuthenow
Office of Environmental Planning & Assessment
NYC Dept. of Environmental Protection
96-05 Horace Harding Expressway
Flushing, NY 11373

Director
NYC Office of Environmental Coordination
100 Gold Street– 2nd Floor
New York, NY 10038

Daniel Walsh
NYC Department of Environmental Remediation
100 Gold Street
New York, NY 10038

Adjacent Property Owner / Occupant Contacts

Contact information for the identified owners, as listed in the New York City ACRIS Database, are as follows:

West

1. PARKS AND RECREATION (GENERAL)
   ARSENAL WEST
   16 W. 61ST ST.
   NEW YORK, NY 10023-7604

2. NORTH 12TH STREET PROPERTIES
   1776 SHORE PKWY.
   BROOKLYN, NY 11214-6546

   PREMIER TRUCK AND TANK
   1 N. 12TH STREET
   BROOKLYN, NY 11211

North

3. ALBEST METAL STAMPING CORP.
   9 KENT AVENUE
   BROOKLYN, NY 11249

East

4. FALSE ALARM LTD.
   816 AVENUE I
   BROOKLYN, NY 11230-2714

   OCCUPANT / TENANT
   29 WYTHE AVENUE
   BROOKLYN, NY 11211

5. WYTHE BERRY LLC
   266 BROADWAY STE 301
   BROOKLYN, NY 11211-6306

South

6. JOLEE CONSOLIDATORS INC
104 NORTH 12 STREET
BROOKLYN, NY 11249

7. KIMAQU CORPORATION
85 WATERMILL LN.
GREAT NECK, NY 11021-4234

OCCUPANT / TENANT
74 WYTHE AVENUE
BROOKLYN, NY 11211

8. DM. 144 INVESTORS, LLC
C/O MRS. IRENE GROSS
418 EAST 59TH STREET APA
NEW YORK, NY 10022

OCCUPANT / TENANT
94 N. 12TH STREET
BROOKLYN, NY 11211

9. NORTH 12TH ASSOCIATES LLC
C/O G4 DEVELOPMENT GROUP LLC
14 SKILLMAN ST.
ROSLYN, NY 11576-1183

OCCUPANT / TENANT
35 KENT AVENUE
BROOKLYN, NY 11211

4.3 Local News Media

The Brooklyn Paper
One Metrotech Center, Suite 1001
Brooklyn, NY 11201
(718) 260-4504

New York Times
620 Eighth Ave.
New York, NY 10018

New York Daily News
450 W. 33 Street
New York, NY 10001

New York Post
1211 Avenue of the Americas
New York, NY 10036-8790

4.4 Public Water Supplier

New York City Department of Environmental Protection
Bureau of Water Supply
1250 Broadway - 8th Floor
Manhattan, NY 10001
New York City Department of City Planning

4.5 Requested Contacts

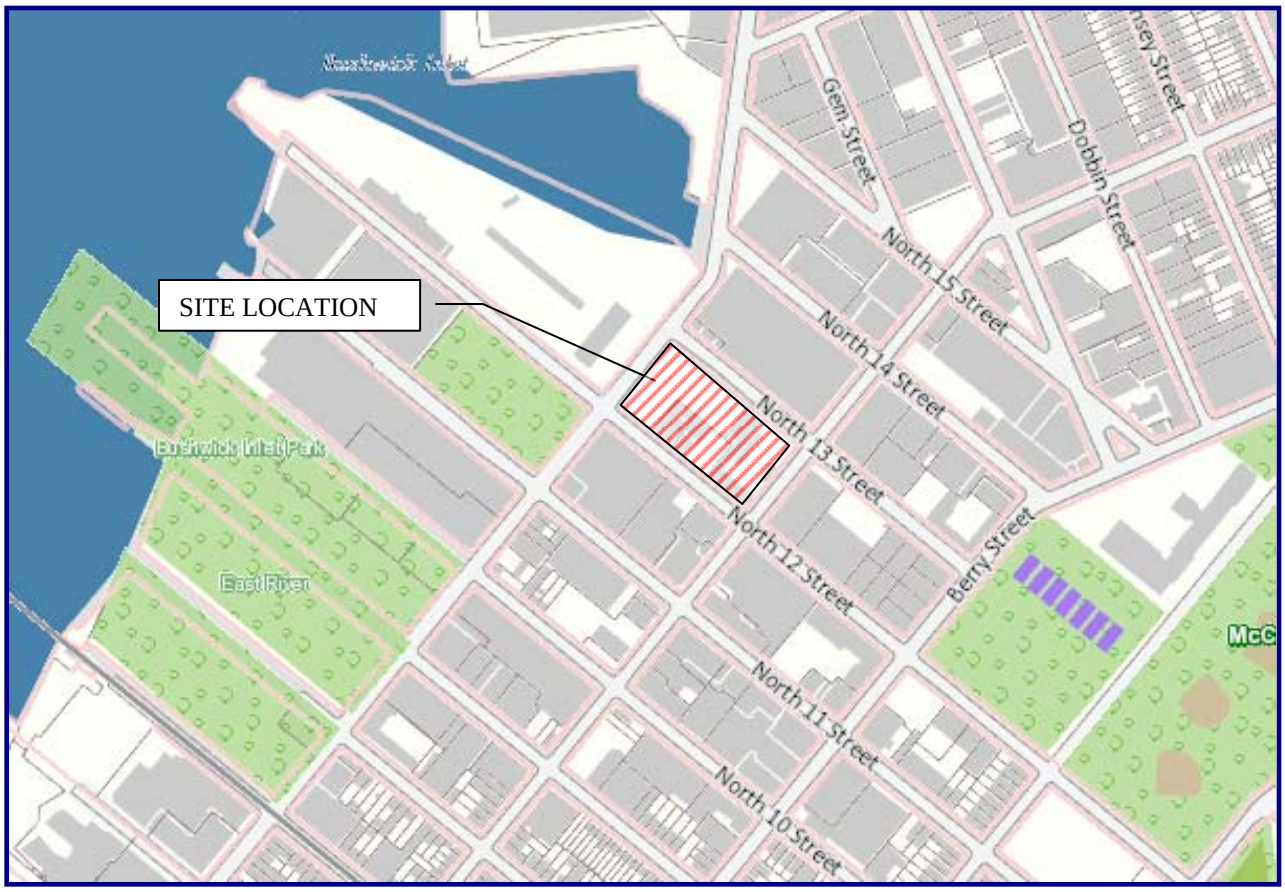
No requests have been made at this time.

4.6 Schools and Daycare Facilities

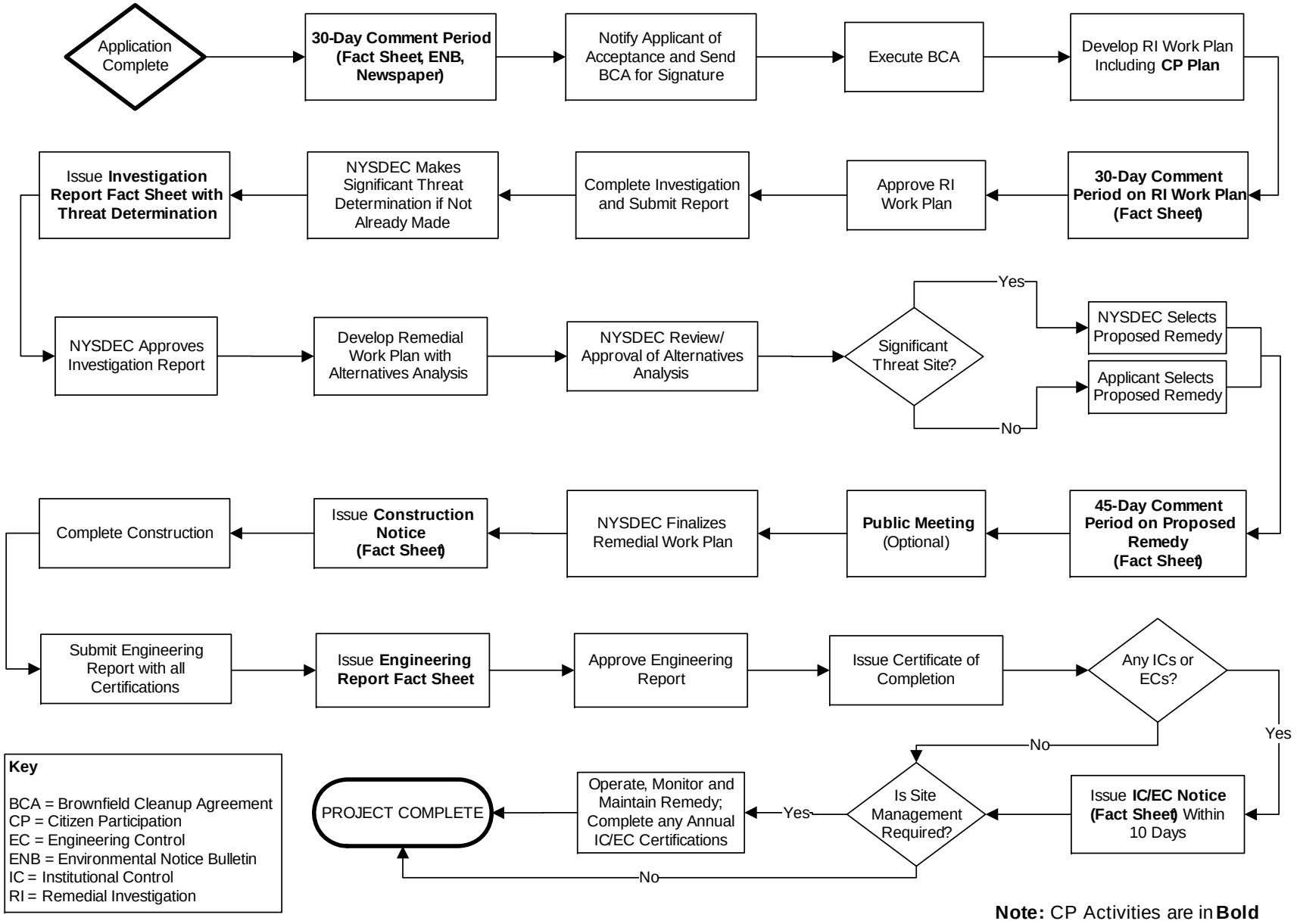
The following Schools and Daycare facilities were identified within a one-quarter mile radius of the project site:

1. Automotive High School
   50 Bedford Avenue
   Brooklyn, NY 11222
   (718) 218-9301
   Attn: Caterina Lafergola (Principle)

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

ATTACHMENT F
Resumes

AMC Engineering
99 Jericho Turnpike, Suite 300J
Jericho, NY 11590
Phone: (516) 417-8588

ARIEL CZEMERINSKI, P.E.

Mr. Czemerinski is a New York State Professional Engineer and CEO of AMC Engineering PLLC an EBC affiliate. Mr. Czemerinski has with 20 years of experience in the chemical and environmental areas. Areas of expertise include environmental compliance, permitting, remedial system design, process and plant safety, and management of a production facility. Mr. Czemerinski is a Registered Professional Engineer in NY, IN, IL, and MI.

Professional Experience
AMC: 14
Prior: 6 years

Education
Master of Science in Chemical Engineering, Columbia University, New York, NY, Feb. 1990. Bachelor of Science in Chemical Engineering, University Of Buenos Aires, Buenos Aires, Argentina, May 1987

Areas of Expertise

- Vapor Intrusion - Barrier and Sub Slab Venting System Design
- Environmental Assessment Statements and Environmental Impact Assessments under CEQR, ULURP
- Remedial Program Design and Management
- Environmental Compliance, Clean Water Act, Clean Air Act, Hazardous Materials
- Dewatering & Treatment System Design
- NYCDEP Sewer Discharge Permitting
- Transfer Station Permitting and Compliance
- Chemical Process Design and Optimization
- Wastewater Treatment Systems and Permitting, SPEDES, Air
- Zoning Regulations and Permitting
- Safety and Environmental Training
- Waste Management Plans

Professional Certifications

- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Charles B. Sosik, PG, PHG, Principal

Professional Experience

24 years

Education

MS, Hydrogeology, Adelphi University, NY
BS, Geology, Northern Arizona University, AZ

Areas of Expertise

- Brownfields Redevelopment
- Hazardous Waste Site Investigations
- Pre-purchase Site Evaluations and Support
- Regulatory Negotiations
- Remedial Planning and "Cost to Cure" Analysis
- Strategic Planning
- Real Estate Transactions
- NYC "E" Designations

Professional Certification

- Professional Geologist, NH
- Professional Geologist, Hydrogeologist, WA
- OSHA 40-hr HAZMAT
- OSHA 8-hr. Supervisor

Professional Affiliation / Committees

- NYS Council of Professional Geologists (NYSCPG)
- Association of Groundwater Scientists & Engineers (AGSE)
- NYS RBCA Advisory Committee
- Massachusetts LSP Association
- New Hampshire Association of Professional Geologists
- Interstate Technology Regulatory Council/MTBE Team
- Environmental Business Association, Brownfields Task Force
- Part 375 Working Group

PROFILE

Mr. Sosik has 24 years of experience in environmental consulting. He specializes in advising clients on managing environmental compliance with federal, state, and municipal agencies and has successfully directed numerous investigation and remediation projects involving petroleum, pesticides, chlorinated solvents, heavy metals and radiologically activated media. His work included extensive three-dimensional investigations on MTBE, which have been used effectively to help shape public policy. He also has experience in applying models to groundwater related problems and has completed several large-scale projects to determine fate and transport of contaminants, establish spill scenarios, and closure criteria. His experience and expertise in the area of contaminant hydrogeology has resulted in requests from environmental attorneys, property owners and New York State to serve as an expert witness and technical advisor on a variety of legal disputes.

For the past 10 years Mr. Sosik has been primarily engaged in providing environmental consulting to developers responding to the extensive re-zoning of former industrial and commercial properties, which is currently taking place throughout New York City. These services include everything from pre-purchase evaluations and contract negotiations to gaining acceptance in and moving projects through the NYS Brownfields Program. Mr. Sosik has taken a pro-active role in the continued development of the NYS Brownfields Program and related policy, by attending numerous working seminars, active participation in work groups and task forces and by providing commentary to draft versions of new guidance documents. Throughout his professional career, Mr. Sosik has remained committed to developing innovative cost- efficient solutions to environmental issues, specifically tailored to the needs of his clients.

SELECTED PROJECTS

Scavenger Waste Treatment Facility (SWTF), Suffolk County, NY

Water Treatment Plant EIS - Focused EIS - In response to requests from the Suffolk County Council on Environmental Quality and the Brookhaven Conservation Advisory Council, Mr. Sosik prepared a focused EIS to evaluate the potential impacts to an important surface water resource from the proposed facility including cumulative and synergistic effects with established contaminant plumes in the area.

Advanced Residential Communities, Rockville Centre, NY

Brownfield Project – As the senior project manager on this large scale, high profile redevelopment project, Mr. Sosik was asked to develop a plan to accelerate the regulatory process in the face of general community opposition. Through numerous discussions with the BCP management team, He was able to condense the schedule and review period, through the submission of supporting documents (Investigation Report, Remedial Work Plan) with the BCP application package. Community opposition, which focused on the environmental condition of the site as a means to block the project, was used to advantage in expediting approval of the aggressive interim remedial plan. This will allow the developer to begin remedial work approximately 5 months ahead of schedule.

Former Temco Uniform site, West Haverstraw, NY

Brownfield Project – Mr. Sosik took over management of this project from another consultant following transition of this VCP site to the BCP. Mr. Sosik used the opportunity to renegotiate and revise the scope of work to allow a more cost effective and focused investigation plan without re-writing or resubmitting the RIWP. During the NYSDEC's review of the transition package, he met with and coordinated changes with the NYSDEC Project Manager to gain approval. The result saved the client a significant amount of money, but perhaps more importantly in this case, did so without loss of time.

Grovick Properties, Jackson Heights, NY

Brownfield Project – This Brownfield property is somewhat unique in that it had been investigated and partially remediated by the NYSDEC through the petroleum spill fund. The client was interested in purchasing the property and redeveloping it as office and retail space. Mr. Sosik reviewed the NYSDEC investigation and developed a

supplemental plan to meet the requirements of an RI under the BCP program. By performing this limited amount of field work "up-front" he was able to complete an RI Report and Remedial Plan and submit both with the BCP application package. The NYSDEC and NYSDOH approved the RI Report and the Remedial Plan with minor changes. This cut 120 days from the review process and allowed the client to arrange financing and move his project forward knowing what the clean-up costs would be at the outset.

Metro Management, Bronx, NY

Brownfield Project – The site of a former gas station, the developer had planned to construct a 12-story affordable housing apartment complex with first floor retail space. Since the site was located in an Environmental zone, potential tax credits of 22% for site development, remediation and tangible property could be realized under the BCP. In a pre-application meeting with the NYSDEC, Mr. Sosik realized that the department did not believe the site was eligible for the BCP, since it had been previously investigated and closed under the spills program.

Mr. Sosik assisted the developer in securing financing, and due to the demands of an aggressive construction schedule developed an Interim Remedial Measure (IRM), based on chemical oxidation treatment. Working closely with the clients environmental counsel, Mr. Sosik was able to get the IRM approved without a public comment period. Implementation of the IRM is currently underway.

The project was awarded the 2009 NYC Brownfield Award for Innovation.

Brandt Airflex, NY

Technical Consulting Services - Mr. Sosik provided senior level technical advice and strategic planning in developing an off-site RI/FS for the site, in negotiating a tax reduction for the property due to the environmental condition and in preparing a cost to cure estimate for settlement between business partners. After achieving a favorable tax consideration and settlement agreement for his client

Allied Aviation Services, Dallas, Fort Worth, Airport, Dallas, TX

Jet Fuel Investigation - Mr. Sosik developed and managed an investigative plan to quickly identify the extent and source of jet fuel which was discharging from the Airport's storm drain system to a creek a mile away. Through the use of a refined conceptual model, accelerated investigative techniques and a flexible work plan, he was able to identify the source of the fuel and the migration route within a single week. He then identifled remedial options and successfully negotiated a risk based plan with the Texas regulatory agency that had issued a notice of enforcement action against the facility.

KeySpan – Former LILCO Facilities, Various NY Locations

Pesticide Impact Evaluation - Mr. Sosik developed, negotiated and implemented a site screening procedure to evaluate impact to public health and the environment as the result of past herbicide use at 211 utility sites. Using an unsaturated zone leaching model (PRZM) on a small subset of the sites, he was able to establish mass loading schedules for the remaining sites. This was combined with public well data in a GIS environment to perform queries with respect to mass loading, time transport and proximity to vunerable public supply wells. Using this approach Mr. Sosik was able to show that there were no concerns for future impact. This effort satisfied the public health and resource concerns of the state environmental agency and county health department in a reasonable amount of time and at a fraction of the cost of a full scale investigation.

Former Computer Circuits (Superfund) Site, Hauppauge, NY

CERCLA RI/FS - As Senior Project Manager for the site, he played a major role in regaining control of the investigation activites for the PRP. This action prevented the USEPA from initiating an extensive investigation at the site using a RAC II contractor allowing the client to perform a more efficient investigation. He was involved in all negotiations with EPA and was the project lead in developing a revised site characterization plan (work plan, field sampling plan, quality assurance plan, etc.). By carefully managing all phases of the investigation and continued interaction with each of the three regulatory agencies involved, Mr. Sosik was able to keep the project focused and incrementally reinforce the clients position. The estimated cost of the revised investigation is expected to save the client 1.5 to 2 million dollars.

Sun Oil, Seaford, NY

Remediation Consuliting Services & Project Management - Under an atmosphere of regulatory distrust, political pressure and mounting public hostility toward the client, Mr. Sosik conducted an off-site 3-D investigation to define the extent of contamination and the potential impact on public health. By designing and implementing an aggressive source area remediation program and personal interaction with the public and regulatory agencies, he was able to successfully negotiate a limited off-site remediation favorable to the client. Source area remediation was completed within 6 months and the project successfully closed without damage to the client's public image or working relationship with the regulatory agencies.

Con Edison, Various Locations, NY

Hydrogeologic Consulting Services - Under a general consulting contract, Mr. Sosik conducted detailed subsurface hydrogeologic investigations at five locations to assist in the development of groundwater contingency planning. He also developed and implemented work plans to investigate and remediate existing petroleum, cable fluid, and PCB releases at many of the generating facilities and substations. An important aspect of his role was in assisting the client in strategic planning and negotiations with the regulatory agency.

Keyspan - Tuthill Substation, Aqueboque, NY

Accelerated Site Characterization - Using accelerated site characterization techniques, Mr. Sosik presented the project as a case study in establishing the transport of an herbacide and its metobolites aplied at utility sites in the 1980's The results were then used to establish a screening method for evaluating 211 similar sites controlled by the client in a reasonable and eficient manner.

NYSDEC Spill, East Moriches, NY

Spill Release Analysis - With recognized expertise in the area of gasoline plume development on Long Island, Mr. Sosik was asked by

Charles B. Sosik, PG, PHG, Principal

the State to establish the release date (and principal responsible party) of an extensive petroleum spill, which impacted a residential neighborhood. He used multiple lines of evidence, and a new EPA model (HSSM), which he has helped to refine, to reconstruct the release scenario and spill date, in support of the State Attorney General's cost recovery effort from the PRP.

Minmilt Realty, Farmingdale, NY

Fate & Transport Modeling - He completed an RI/FS at this location for a PCE plume that had been in transit for over 30 years. Mr. Sosik applied a conservative model to evaluate time/concentration impacts under a variety of transport scenarios to a municipal wellfield located 13,000 feet away. Through the use of the model and careful interpretation of an extensive data set compiled from several sources, Mr. Sosik was able to propose a plan which was both acceptable to the regulator and favorable to the client.

Sebonack Golf Course Project, Town of Southampton, NY

IPM Pesticide Study - Provided professional hydrogeologic services in support of the EIS prepared for the development of the site. The proposed development included an 18-hole golf course, clubhouse, dormitory facility, cottages, associated structures, and a 6,000 square foot research station for Southampton College. Mr. Sosik performed an extensive evaluation (using a pesticide-leaching model) on the effects of pesticide and nitrogen loading to groundwater as part of the projects commitment to an Integrated Pest Management (IPM) approach.

NYSDEC, Spills Division, Regions 1 – 4

Petroleum Spills Investigation & Remediation - As a prime contractor/consultant for the NYSDEC in Regions 1-4, Mr. Sosik has managed the investigation and remediation of numerous petroleum spills throughout the State. Many of these projects required the development of innovative investigation and remediation techniques to achieve project goals. He was also involved in many pilot projects and research studies to evaluate innovative investigation techniques such as accelerated site characterization, and alternative approaches to remediation such as monitored natural attenuation and risk based corrective action.

Sun Oil, E. Meadow, NY

Exposure Assessment - Performed to seek closure of the spill file, despite the presence of contaminants above standards, Mr. Sosik determined after the extended assessment that the level of remaining contamination would not pose a future threat to human health or the environment. He used multiple lines of evidence, and a fate and transport model to show that degradation processes would achieve standards within a reasonable time.

Sand & Gravel Mine, NY

Property Development - As part of the development of a sand and gravel mine, Mr. Sosik provided environmental consulting services to assist in obtaining a mining permit, which would result in the construction of a 150-acre lake. Specifically, Mr. Sosik investigated if the proposed lake would reduce groundwater quantity to domestic and public well fields, and/or accelerate the migration of potential surface contaminants to the lower part of the aquifer. After assuming the lead role in negotiations with the regulatory agency, Mr. Sosik was able to obtain a permit for the client by adequately addressing water quality and quantity issues, and by preparing a monitoring plan and spill response plan, acceptable to all parties.

NYSDEC, Mamaroneck, NY

Site Characterization / Source Identification - In a complex hydrogeologic setting consisting of contaminant transport through fractured metomorphic bedrock and variable overburden materials, Mr. Sosik was able to develop and implement a sub-surface investigation to differentiate and separate the impact associated with each of two sources. The results of this investigation were successful in encouraging the spiller to accept responsibility for the release.

Riverhead Municipal Water District, NY

Site Characterization / Remedial Planning - Using accelerated characterization techniques, he implemented a 3-D site investigation to identify two service stations 4,000 ft. away as the source of contamination impacting a municipal wellfield. In accordance with the strict time table imposed by the need to return the wellfield to production by early spring, he designed and implemented a multi-point (9 RW, 6 IW) recovery and injection well system using a 3-d numerical flow model, and completed the project on time. Using a contaminant transport model, Mr. Sosik developed clean-up goals which were achieved in 9 months of operation, well below the projected 3 to 5 year project duration.

Montauk Fire Department, NY

Site Assessment - Mr. Sosik performed a limited investigation and used a 2-D flow model to demonstrate that the property could not have been the source of contamination which had impacted an adjacent wellfield as per the results of a previous investigation. This small focused effort successfully reversed a $500,000, and rising, claim against the department by the water district and the NYSDEC.

PREVIOUS EXPERIENCE

P.W. Grosser Consulting, Bohemia, NY
Senior Project Manager, 1999-2006

Environmental Assessment & Remediation, Patchogue, NY
Senior Project Manager, 1994-1999

Miller Environmental Group, Calverton, NY
Project Manager, 1989-1994

DuPont Biosystems, Aston, PA
Hydrogeologist, 1988-1989

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Charles B. Sosik, PG, PHG, Principal

EXPERT WITNESS TESTIMONY AND DEPOSITIONS

Fact Witness -Testimony on relative age of petroleum spill based on nature and extent of residual and dissolved components at the Delta Service Station in Uniondale, NY Fall/1999

Expert Witness / Expert Report for defendant in cost recovery case by NYS Attorney General regarding a Class II Inactive Hazardous Waste (State Superfund) project by the NYSDEC (October 2004 – present, Report: March 2005, Deposition: April 2005)

Expert Witness / Fact Witness for plaintiff seeking compensation for partial expenses incurred during the investigation and remediation of a USEPA CERCLA site due to the release and migration of contaminants from an "upgradient" industrial property. (Deposition May 2005, case settled April 2007).

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Holtzville, NY (Deposition April 2005 - case settled).

Expert Witness – Statement of opinion and expert testimony at trial for plaintiff seeking damages from a major oil corporation for contamination under a prior leasing agreement in Rego Park, NY. Case decided in favor of plaintiff. Trial July 2007, in favor of Plaintiff. Qualified as Expert Witness.

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Lindenhurst, NY (Trial date December 2009, in favor of plaintiff. Qualified as Expert Witness.

Expert Witness / Fact Witness for defendant with respect to cost recovery and third party responsibility for a NYSDEC petroleum spill site. (Expert Statement of Fact – October 2005).

Expert Witness for plaintiff seeking damages related to a petroleum spill from the previous owner/operator of a gas station in College Point, NY. Case settled 2009.

Expert Witness for plaintiff (municipal water supply purveyor) seeking damages from major oil companies and manufacturer of MTBE at various locations in Suffolk County, NY. Expert reports July 2007, August 2007 and October 2007, Case settled August, 2008.

Expert Witness - Deposition for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Sag Harbor, NY. August 2002

Expert Witness - for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Riverhead, NY. Case settled July 2008.

Expert Witness for defendant responding to a claim from adjacent commercial property owner on the origin of chlorinated solvents on plaintiff's property located in Cedarhurst, NY. Expert opinion submitted to lead counsel on March 6, 2009, case settled April 2009.

Expert Report - for Attorney General on modeling performed to determine the spill release scenario at a NYSDEC petroleum spill site in East Moriches, NY. June 2000.

MODELING EXPERIENCE (PARTIAL LISTING)

PROJECT	MODEL	APPLICATION
Riverhead Water District, Riverhead, NY	MODFLOW, MODPATH	Remediation system design to intercept MTBE plume and prevent continued impact to municipal well field.
NYSDEC - Region 1, Holbrook, NY	MODFLOW, MODPATH	Simulate transport of MTBE plume to predict future impact.
NYSDEC - Region 1, East Moriches, NY	HSSM	Evaluate release scenario and start date of petroleum spill in support of cost recovery by NYS AG office.
AMOCO, Deer Park, NY	HSSM	Estimate release amount, start date and spill scenario to evaluate the potential for mass unaccounted for
Keyspan Energy, Nassau/Suffolk Counties Substations	PRZM	Estimate mass load of simazine used at 211 electric substations and screen sites according to potential for human health and ecological impacts.
Saboneck Golf Club, Southampton NY	PRZM	Estimate mass load of proposed pesticides on new golf course to evaluate acceptability under an IPM program.
Suffolk County Department of Public Works (SCDPW) Scavenger Waste Treatment Plant, Yaphank, NY	DYNFLOW, DYNTRAC	Evaluate time-transport and nitrogen impact on local river system.
SCDPW SUNY Waste Water Treatment Plant, Stony Brook, NY	DYNFLOW, DYNTRAC	Determine outfall location and time-transport of nitrogen from proposed upgrades to an existing wastewater treatment plant
Water Authority of Great Neck North Great Neck, NY	MODFLOW, MODPATH, MT3D	Review of modeling study performed by EPA to evaluate potential future impact to Well field from PCE plume. Identified serious flaws in model construction and implementation, which invalidated conclusions

PUBLICATIONS / PROFESSIONAL PAPERS

Smart Pump & Treat Strategy for MTBE Impacting a Public Water Supply (14th Annual Conference on Contaminated Soils Proceedings, 1998)

Transport & Transformation of BTEX & MTBE in a Sand Aquifer (Groundwater Monitoring & Remediation 05/1998)

Characteristics of Gasoline Releases in the Water Table Aquifer of Long Island (Petroleum Hydrocarbons Conference Proceedings, 1999)

Field Applications of the Hydrocarbon Spill Screening Model (HSSM) (USEPA Interactive Modeling Web Course www.epa.gov/athens/software/training/webcourse Authored module on model application and applied use of calculators, 02/2000)

Comparative Evaluation of MTBE Sites on Long Island, US EPA Workshop on MTBE Bioremediation (Cincinnati, 02/2000)

Comparison of Four MTBE Plumes in the Upper Glacial Aquifer of Long Island (American Geophysical Union, San Francisco, 12/1996)

Analysis and Simulation of the Gasoline Spill at East Patchogue, New York (American Geophysical Union, San Francisco, 12/1998)

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kevin R. Brussee, Senior Project Manager

Professional Experience
EBC: January 2008
Prior: 6 years

Education
Bachelor of Science, Environmental Science, Plattsburgh State University, NY
Master of Science, Environmental Studies, University of Massachusetts, Lowell

Areas of Expertise
- Management of Site Investigations / Remedial Oversight NYC "E" Designation Sites
- Management of RI Investigations / RAWP Implementation NYS BCP Sites
- NYSDEC Spill Site Investigations
- Phase I / Phase II Property Assessments
- Waste Characterization / Soil Management

Professional Certification
- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

PROFILE

Mr. Brussee has 10 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Mr. Brussee has conducted Phase I, II and III Environmental Site Assessments for commercial, industrial, and residential properties in New York, New Jersey, Maryland and Delaware.

Mr. Brussee's field experience includes tank removal and installations, spill management and closure, soil and groundwater sampling, and both the oversight and operation of soil boring and well installation equipment. In addition, Mr. Brussee has performed project research, data reduction and evaluation, and has prepared reports for both regulatory and client use.

PREVIOUS EXPERIENCE

Eastern Environmental Solutions, Inc., Manorville, NY
Project Manager, 2006-2008

EA Engineering, Science & Technology
Hydrogeologist, 2005-2006

P.W. Grosser Consulting, Bohemia, NY
Field Hydrogeologist, 2002-2003

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kevin R. Brussee, Senior Project Manager

SELECT PROJECT EXPERIENCE

Project:	Former Dico G, Autio and Truck Repair Site - Bronx Park Apartments, redevelopment from commercial to mixed use
Location:	Bronx, NY, White Plains Road
Type:	NYS BCP Site, Former gas station, repair shop & junk yard
Contamination:	Petroleum - Gasoline
Role:	Project Manager, during Site Management Phase

Project:	Former Uniforms for Industry Site – Richmond Hill Senior Living Residences / Richmond Place
Location:	Jamaica Ave, Richmond Hill Queens, NY
Type:	NYS BCP, NYC E-Site Hazmat, Noise, Former industrial Laundry
Contamination:	Chlorinated Solvents, Historic Fill, Petroleum - Fuel oil/Mop oil
Role:	Project Manager, RAWP implementation

Project:	Former Gas Station / car wash to mixed use affordable housing / commercial
Location:	Bronx, NY, Southern Boulevard
Type:	NYS BCP, NYC E-Site Hazmat, Former gas station / gar wash
Contamination:	Petroleum - Gasoline
Role:	Project Manager, RAWP implementation

Project:	Redevelopment of former industrial property to residential
Location:	Williamsburg section of Brooklyn, NY, Bedford Ave
Type:	NYC E-Designation Site, Former dye manufacturing plant
Contamination:	Hazardous levels of heavy metals, fuel oil tanks
Role:	Project Manager, RAWP implementation

Project:	Former Domsey Fiber Corp Site
Location:	Williamsburg section of Brooklyn, NY, Kent Ave
Type:	NYC E-Designation Site, Former commercial property
Contamination:	Chlorinated solvents, fuel oil and Historic fill
Role:	Project Manager, RIWP Development and Implementation, RAWP development and implementation, waste characterization and soil management

PUBLICATIONS

Chemical Stress Induced by Copper, Examination of a Biofilm System;
(Water Science Technology, 2006; 54(9): 191-199.)

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kristen DiScenza, Project Manager

Professional Experience
EBC: February 2013
Prior: 7.5 years

Education
Graduate Certificate, Waste Management, Stony Brook University, NY
Bachelor of Science, Environmental Science, SUNY Oneonta, Oneonta, NY

Areas of Expertise
- Phase I /Phase II Property Assessments
- NYSDEC Spill Site Investigations
- Management of Site Investigations/Remedial Oversight NYC "E" Designation Sites
- Management of RI Investigations/RAWP Implementation NYS BCP Sites

Professional Certification
- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Health and Safety
- Lead Awareness

PROFILE

Ms. DiScenza has 7.5 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Ms. DiScenza has conducted Phase I, Phase II, and Phase III Environmental Site Assessments for commercial, industrial and residential properties in New York.

Ms. DiScenza's field experience includes tank removal and installations, spill management and closure, soil and groundwater sampling, oversight of soil boring and well installation and abandonment activities, UIC structure remediation and abandonment, Enhanced Fluid Recovery oversight and installation and operation of soil vapor extraction/air sparge and oxygen injection remediation systems. Ms. DiScenza has prepared reports for both regulatory and client use.

PREVIOUS EXPERIENCE

Sovereign Consulting, Inc., Farmingdale, New York
Senior Project Manager, 2006-2013

Tyree Brothers Environmental Services, Farmingdale, New York
Field Technician, 2005-2006

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Chawinie Miller, Project Manager / Industrial Hygienist

Professional Experience
EBC: March 2013
Prior: 7.5 years

Education
Bachelor of Science, Environmental Health and Safety, Stony Brook University, NY

Areas of Expertise
- Phase I / Property Condition Assessments
- Occupational Health and Safety Sampling
- Indoor Air Quality (IAQ) Investigations
- Mold Investigations and Remediation
- Soil and Ground Water Investigations
- Noise Studies

Professional Certification
- OSHA 40-hr HAZWOPER
- NYS Asbestos Inspector
- NYC Asbestos Investigator
- OSHA 10-hr Construction Health and Safety
- Hazard Analysis and Critical Control Point (HACCP) Certified

PROFILE

Ms. Miller has 7.5 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Ms. Miller has conducted Phase Is and Property Condition Assessments for commercial, industrial, and residential properties in New York, New Jersey and Connecticut. In addition, Ms. Miller has conducted various IAQ, asbestos, mold and occupational health and safety sampling investigations for a variety of city, state, federal and private clients.

PREVIOUS EXPERIENCE

The Louis Berger Group, New York, New York
Industrial Hygienist, 2008-2013

AEI Consultants, Jersey City, New Jersey
Environmental Scientist, 2005-2008

ATTACHMENT G
BCP Signage Specifications

New York State Brownfields Cleanup Program

FORMER SUNBELT EQUIPMENT SITE
BCP Site No. C-xxxxxx
19 Kent Development LLC

Governor Andrew M. Cuomo
NYSDEC Commissioner Joe Martens
Mayor Bill de Blasio

Transform the Past. Build for the Future.

SIGNS FOR REMEDIAL PROGRAMS

Instructions

Signs are required at sites where remedial activities are being performed under one of the following remedial programs: State Superfund, Voluntary Cleanup Program (VCP), Brownfield Cleanup Program (BCP), Environmental Restoration Program (ERP), Brownfield Opportunity Area (BOA) Program (note: activities under this program would be for investigation). The cost of the sign will be borne by the parties performing the remedial activities based on the legal document the activities are being performed under (i.e. volunteers/participants would pay 100% of the cost under the BCP; municipalities would be reimbursed for 90% of the cost under the ERP).

Sign Requirements

Size: **Horizontal format - 96" wide by 48" high**

Construction Materials: **Aluminum or wood blank sign boards with vinyl sheeting.**

Inserts: **"Site Name", "Site Number", "Name of Party Performing Remedial Activities" and "Municipal Executive".**
Indicate position, size and topography for specific inserts.

Color Scheme: **Copy surrounding DEC logo - "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION" - PMS 355**

DEC logo: **PMS 301 Blue**
PMS 355 Green

Text:

Program (choose one):	**PMS 301**
Brownfield Cleanup Program	
Voluntary Cleanup Program	
Brownfield Opportunity Areas Program	
Petroleum Remediation Program	
State Superfund Program	
1996 Clean Water/Clean Air Bond Act - Environmental Restoration Program	
Site Name, Site Number, Party Performing Remedial Activities	**PMS 355**
Names of Governor, Commissioner, Municipal Executive	**PMS 301**
Transform the Past.....Build for the Future	**PMS 355**

Type Specifications: **All type is Caslon 540, with the exception of the logotype.**
Format is: center each line of copy with small caps and initial caps.

Production Notes: **96" wide x 48" high aluminum blanks will be covered with vinyl sheeting to achieve background color. Copy and logo will be silk screened on this surface.**

See attached format

ATTACHMENT H
Estimated Remedial Costs

FORMER SUNBELT EQUIPMENT
Brooklyn, NY

Summary of Project Costs

NYS Brownfields Cleanup Program
Costs by Task

TASK - ENVIRONMENTAL REMEDIATION

BCP Entry Documents	$	17,450.00
Supplemental Investigation and RI Report	$	58,850.00
Remedial Work Plan, Remedy Scoping & Coordination	$	18,450.00
Remedial Program Implementation	$	6,277,415.00
Final Engineering Report, Site Management Plan & IC/ECs	$	125,450.00
Post Remedial Monitoring	$	33,050.00
Subtotal	$	6,530,665.00
15% Contigency	$	979,599.75
Total	**$**	**7,510,264.75**

ATTACHMENT I
Geotechnical Report

Geotechnical Engineering Study

for

25 Kent Avenue
Brooklyn, New York

Prepared For:

Heritage Equity Partners
55 North 10th Street
Brooklyn, NY 11249

Prepared By:

Langan Engineering, Environmental, Surveying and Landscape Architecture D.P.C.
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001
NJ Certificate of Authorization No: 24GA27996400

Robert A. Garino, Professional Engineer
Professional Engineer License No. 079030

Alan R. Poeppel, Professional Engineer
Professional Engineer License No. 080220

9 July 2014
170285701

LANGAN

TABLE OF CONTENTS

DRAWINGS

APPENDICES

INTRODUCTION

This report presents the results of our geotechnical engineering study for the proposed development at 25 Kent Avenue in Brooklyn, NY. The purpose of the study is to evaluate subsurface conditions and to develop recommendations for foundation design and construction. Our understanding of the project, the results of the field exploration program and a summary of our recommendations are presented herein.

This report was prepared by Langan Engineering, Environmental, Surveying, and Landscape Architecture D.P.C. (Langan) in accordance with our proposal to Heritage Equity Partners, dated 30 December 2013.

Architectural information was provided by Gensler; structural information was provided by DeSimone Consulting Engineers. Ground surface elevations were taken from a topographic survey prepared by Perfect Point Land Surveying RT dated 23 November 2013. All elevations presented herein are referenced to the North American Vertical Datum of 1988 (NAVD88) which is 1.46 ft below the Borough President of Brooklyn Highway Datum.

Analysis and recommendations presented herein are in accordance with the New York City Building Code (Building Code), effective July 2008.

SITE DESCRIPTION

The proposed development, in the Greenpoint section of Brooklyn, New York (Block 2282; Lots 1, 15, 28, 34) is on the city block bordered by North 13th Street to the north, North 12th Street to the south, Wythe Avenue to the east, and Kent Avenue to the west. A site location map is attached as Drawing No. 1.

The site consists of four contiguous lots having an approximate footprint of 80,000 square feet. A brief description of the lots is provided below:

- Lot 1 has a footprint of about 35,000 square feet and consists of asphalt pavement. The lot is current used to store commercial vehicles and construction vehicles.

- Lot 15 has a footprint of about 27,500 square feet and is occupied by five one-story buildings. Records indicate the buildings were constructed in about 1920.

- Lot 28 has a footprint of about 11,500 square feet and is occupied by a one and two-story building. Records indicate the buildings were constructed in about 1950.

- Lot 34 has a footprint of about 6,000 square feet and includes three one-story buildings. Records indicate the buildings were constructed in about 1930.

The site topography slopes downward from south to north. Sidewalk grades along North 12th Street range from el 11.5 at the corner of North 12th Street and Kent Avenue to about el 17 at the corner of North 12th Street and Wythe Avenue; sidewalk grades along North 13th Street range from el 10 at the corner of North 13th Street and Kent Avenue to about el 11.5 at the corner of North 13th Street and Wythe Avenue.

We have reviewed several historical topographic maps of the area and found that about four-fifths of the site was former tidal marsh land. The historic Colton 1849 map is reproduced as Drawing No. 2. A current site map with imposed historic conditions is attached as Drawing No. 3.

Site Geology

It is likely that two glacial advances and retreats in the New York City region are primarily responsible for present day surface features and topography in northwest Brooklyn. During the first glacial retreat, a lake formed and deposited loose soil material. The lake sediments consist of varying pockets of granular soils and varved fine-grained soils. Upon the next glacial advance, the lake material was consolidated under stress of the ice load. During the subsequent retreat, a layer of ground moraine was deposited at the base of the ice sheet during periods of ablation. The ground moraine is an unsorted, un-stratified mixture of soil and rock debris ranging in size from clay to boulders, and is the most widespread deposit of continental glaciers.

Flood Zone

We have reviewed the Preliminary National Flood Insurance Rate Maps for the City of New York (Community-Pane No. 360497 0202 G) published 5 December 2013 by the Federal Emergency Management Agency (FEMA). Based on our review, the majority of the site falls within Zone X, areas determined to be outside the 1.0% annual chance (100-year) floodplain. The intersection of North 13th Street and Kent Avenue, as well as the corner of the property, are identified as Zone AE, areas subject to inundation by the 1% annual chance flood. The Base Flood Elevation (BFE) for Zone AE is el 11 NAVD88. The relevant portion of the FEMA panel is attached as Drawing No. 4.

PROPOSED CONSTRUCTION

The new development is to be a mixed-use building with ten above-grade stories and two cellar levels extending about 32 feet below ground surface. The building will have retail space at the first floor level, parking levels will occupy the below-grade levels and above the retail level; office space will occupy the balance of the building above the Level 2 parking floor. The building will step back away from the property lines along North 12th and North 13th Street to create the sky exposure plane above a height of 60 ft.

SUBSURFACE EXPLORATION

The subsurface exploration program consisted of twenty borings and four groundwater observation wells. All borings were drilled by Warren George Inc. between 3 April 2014 and 14 May 2014 under the full-time inspection of a Langan engineer. A plan of the subsurface investigation is attached as Drawing No. 5.

Test Borings

Borings were advanced to depths ranging from 77 to 102 feet below ground surface using mud-rotary drilling techniques and steel casing for soil support where necessary. Standard Penetration Tests (SPT)[1] and split-spoon sampling were typically obtained continuously to a depth of about 12-feet below grade, and at 5-foot intervals thereafter. Soil samples were obtained using a standard two-inch outside-diameter split-spoon sampler driven by a 140-pound safety hammer in accordance with ASTM D1586.

Recovered soil samples were visually examined and classified in the field in accordance with Unified Soil Classification System (USCS), and assigned classification numbers in accordance with the 2008 New York City Building Code (Building Code). All soil samples were returned to our New York City office for confirmation of field classification. Select samples were sent for laboratory testing. Soil classifications, Standard Penetration Resistances (N-values), and other field observations were recorded on field logs. Final boring logs are presented in Appendix A.

[1] The Standard Penetration Test is a measure of the soil density and consistency. The SPT N-value is defined as the number of blows required to drive a 2-inch outer diameter split-barrel sampler 12-inches, after an initial penetration of 6-inches, using a 140-pound hammer falling freely for 30-inches. (in accordance with ASTM D-1586)

Observation Wells

Four groundwater observation wells were installed in completed Borings B-1(OW), B-15 (OW), B-16A (OW) and B-20(OW). The wells were typically constructed using 10 foot of 2-inch diameter Schedule 40, slotted PVC screen and about 10 foot of riser pipe. The annulus around the PVC pipe was backfilled with No. 1 filter sand to about 2 feet above the top of screen and a bentonite pellet seal of 1-foot was placed to prevent surface water from influencing the well readings. A protective flush-mounted steel well cap was installed at the ground surface. Final well construction logs are presented in Appendix A.

Subsurface Conditions

The general subsurface soil profile consists of fill underlain by soft peat across the majority of the site. A ground moraine, with primarily medium to fine silty sand and sandy silt interlayered with clay, was encountered below the peat and fill. The ground moraine is underlain by a glacial lake deposit consisting primarily of clay interbedded with fine silty sand and sandy silt. The lake deposit is underlain by a second moraine consisting of medium to fine sand and clay layers. Though bedrock was not encountered, it is known to exist at a depth greater than about 100 feet below ground surface. Representative soil profiles are attached as Drawing No. 6, 7, 8, 9 and 10. Detailed descriptions of each subsurface stratum are given below.

Fill [Class 7][2]

A layer of surficial fill material, consisting of black to brown, course to fine sand, with varying amounts of gravel, silt and deleterious material (concrete fragments, asphalt fragments, brick, etc.), was encountered at the site in all borings. Thickness of the fill ranged from about 9 feet to 24 feet below the existing ground surface. The bottom of the fill corresponds to el 9 to el -11. N-values in the fill ranged from about 2 to sampler refusal (more than 50 blows over six inches of penetration or 100 blows over one foot of penetration), and averaged about 16 blows per foot (bpf). Occasionally, spoon refusal occurred where obstructions such as coarse gravel, cobbles, and boulders were encountered. The fill is considered to be generally loose to medium-dense. The higher N-values are likely the result of obstructions in the fill that impeded the advance of the split-spoon sampler. The fill layer is designated as Building Code Class 7, Controlled and Uncontrolled Fills.

[2] Numbers in brackets indicate classification of soil materials in accordance with the Building Code.

Peat [Class 6]

Black fibrous peat was encountered below the fill layer in 12 of the 20 borings. The thickness of peat ranged between about 2 and 10 feet, but was typically about 5 feet thick. The N-values ranged between weight of hammer and 19 bpf with an average of 7 bpf. The peat layer is designated as Building Code Class 6, Peats.

Upper Ground Moraine [Class 3/5]

A ground moraine layer was encountered below the fill or peat in all borings. Thickness of the moraine ranged between about 20 and 40 feet, but was typically about 30 feet thick. This layer consisted of primarily brown, coarse to fine sand and silt with varying amounts of gravel, and clay. The layer was occasionally interbedded with small clay pockets. N-values in this layer ranged between 6 bpf and refusal, but typically ranged between 25 and 65 bpf, averaging about 35 bpf. Occasionally, spoon refusal occurred where obstructions such as coarse gravel, cobbles, and boulders were encountered.

A representative soil sample of the moraine layer was tested in the laboratory. Percentage by dry weight passing the No. 200 sieve (fines) was measured to be about 60%. No in-situ permeability tests were performed; however, due to the high content of fine grain soils the layer is estimated to have a permeability coefficient of about 10^{-5} cm/s. The sample was classified as sandy silt. Results of the testing can be found in Appendix B.

The moraine is generally designated as Building Code Class 3a, Dense Granular Soils; Class 3b, Medium Granular Soils; Class 5a, Dense Silts and Silty Soils; or Class 5b, Medium Silts and Silty Soils.

Clay (Glacial Lake Deposit) [Class 4]

A glacial lake deposit was encountered below the moraine in all borings. Thickness of the lake deposit ranged between 5 and 28 feet, but was typically about 15 feet thick. This layer consists of primarily of overconsolidated silty clay with varying amounts of fine sand and varying plasticity. The layer was interbedded with sandy silt and silty sand pockets. N-values in this layer ranged between 7 and 70 bpf, but typically ranged between 15 and 40 bpf, averaging about 25 bpf.

Four representative soil samples of the lake deposit were tested in the laboratory. Natural moisture contents ranged between 22.9% and 35.2%; plastic limits ranged between 22 and 31. Percentage by dry weight passing the No. 200 sieve (fines) ranged between 80.3% and

98.9%. Using Atterburg-Limits testing, three of the samples were classified as Lean Clay; one sample was classified as Fat Clay. Two incremental consolidation tests and one unconfined compression test were performed on the samples. Results of the testing can be found in Appendix B.

This layer is generally designated as Building Code Class 4b, Stiff Clays; or Class 4a, Hard Clays.

Lower Ground Moraine [Class 3a/4a]

A ground moraine layer was encountered below the lake deposit in all borings to the maximum depth of the borings, about 100 feet below ground surface. The layer consisted of primarily coarse to fine sand with varying amounts of silt and clay interbedded with highly overconsolidated clay layers. N-values in this layer ranged between 19 bpf and refusal, but typically ranged between 45 and 70 bpf, averaging about 55 bpf. This layer is generally designated as Building Code Class 3a material, Dense Granular Soils; or Class 4a, Hard Clays.

Silt [Class 5b]

A 20-feet thick pocket of silt was encountered in boring B-15. The thickness and makeup of this pocket is dissimilar to soil encountered across the rest of the site. It is unclear if the silt was deposited during the retreat of a glacier or in the basin of a glacial lake. The pocket consists of silt with moderate amounts of fine sand. N-values in the silt ranged from 10 to 16 bpf, averaging 14 bpf. The soil is designated as Building Code Class 5b material, Medium Silts and Silty Soils.

Groundwater

Groundwater readings are generally a few feet above the mean tidal level of the East River. Groundwater was measured to be between 5 ft to 8 ft below the ground surface corresponding to el 3.5 (near Kent Avenue) and el 6.5 (near Wythe Avenue).

DISCUSSION

The subsurface conditions impose a series of complex geotechnical issues likely to be encountered at the site. We have identified significant design challenges, related to these subsurface conditions and the proposed depth of excavation. We have outlined these challenges as follows:

1. The upper layers of fill and peat are unsuitable as load-bearing layers. The fill has been classified as potentially liquefiable and therefore cannot be relied upon for support in engineering calculations. The peat layer has significant thickness and is highly compressible, making it unsuitable for loading from either shallow or deep foundation.

2. A glacial lake deposit exists below an upper layer of glacial till. While over-consolidated, the glacial lake deposit is compressible and can undergo prolonged consolidation over a period of time after construction. The glacial lake deposit is not as strong as the glacial till above, making it less suitable for load bearing.

3. The static groundwater was measured to be between 5 and 8 feet below the ground surface. The high water level combined with the proximity of the east river and presence of fine grained soil create difficult conditions for dewatering and support of excavation for the deep cellar.

4. A deep excavation below the groundwater table requires a site-wide lowering of the water level. Dewatering can be an expensive process and requires engineering judgment regarding effects on adjacent structures. Dewatering may also cause migration of fine-grained soils into the excavation, leading to settlement of adjacent ground. An additional concern is basal heave, the uplift of clayey soils at the base of an excavation.

The following sections discuss our evaluation of the site subsurface conditions and our recommendations for the seismic parameters, design of foundations, below-grade walls, permanent groundwater control, excavation support and underpinning.

EVALUATION AND DESIGN RECOMMENDATIONS

The following sections discuss our evaluation of the site subsurface conditions and our recommendations for the seismic parameters, design of foundations, below-grade walls, permanent groundwater control, and excavation support.

Seismic Evaluation

This section presents the results of our seismic evaluation for the site relative to the provisions outlined in the Building Code. The following subsections provide recommended parameters for use in the seismic design of the proposed structure.

Structural Occupancy Category and Seismic Use Group

Per Table 1604.5 of the Building Code, the proposed addition falls into Structural Occupancy Category III and is given a seismic importance factor (IE) of 1.25. Per section 1616.2 of the Building Code, the proposed building falls into Seismic Use Group II.

Mapped Spectral Accelerations

Per section 1615.1 of the Building Code, the mapped maximum considered earthquake response spectra for the short period (SS) is 0.365g and the 1-second period (S1) is 0.071g.

Site Class

The site is assigned to Site Class D (Stiff Soil Profile) in accordance with Table 1615.1.1 of the Building Code. Therefore, the site coefficients are 1.51 for the short period (F_a) and 2.4 for the 1-second period (F_v).

Design Spectral Response Acceleration and Seismic Design Category

The design spectral accelerations were determined in accordance with section 1615.1.3 of the Building Code. The design spectral acceleration at the short period (S_{DS}) is 0.367g and at the 1-second period (S_{D1}) is 0.114g.

Based on the above design spectral acceleration and the use group/occupancy category of the structure, the correspondent Seismic Design Category (SDC) is identified as SDC C, in accordance with section 1616.3 of the Building Code.

Liquefaction Potential

The Building Code requires an evaluation of the liquefaction potential of non-cohesive soils below the groundwater table and to a depth of 50 feet below the ground surface. In accordance with the Building Code screening process, the uncorrected field N-values were plotted against depth to investigate the potential for liquefaction. Several data points fall within the "Liquefaction Probable" zone in accordance with the Building Code screening tool for Occupancy Category III. The Building Code Screening Chart is attached as Drawing No. 11.

We concluded that the potential for soil liquefaction needed to be addressed further. The potential for soil liquefaction was evaluated using the procedure outlined by Youd et al. (2001). The Youd et al. evaluation is based on the Seed and Idriss (1982) procedure for liquefaction evaluation and is currently considered to be State of Practice procedure, as recommended by the National Earthquake Hazard Reduction Program (NEHRP). This evaluation presents an

empirical relationship between the earthquake demand, represented by the Cyclic Stress Ratio (CSR), and the soil's resistance to dynamic loading, represented by the Cyclic Resistance Ratio (CRR). The CSR is correlated to the Peak Ground Acceleration (PGA) of the design earthquake event, as well as the in-situ stresses, whereas the CRR is correlated to SPT N-values obtained in the field. The field N-values are converted to $(N1)_{60}$ by applying correction factors for soil overburden pressure (CN), hammer energy efficiency (CE) and percent fines.

Our analysis parameters included a Magnitude 5.71 earthquake event, a Peak Ground Acceleration of 0.1724g, and a Magnitude Scaling Factor of 1.76. Twelve data points were found to have a factor of safety less than one and an additional three had a safety factor less than the recommended 1.2. With one exception, these data points were found in the fill layer. Therefore, it is our judgment that the fill layer should be considered potentially 'liquefiable' and not be used for foundation design purposes. The data point below the fill with a safety factor smaller than 1.2 is considered to be a statistical anomaly. A plot of safety factors versus depth is attached as Drawing No. 12.

Foundations

As discussed, two cellar levels are being considered for subgrade construction. The two-cellar option can utilize a shallow mat foundation bearing on the underlying dense sand and stiff clay layers.

Mat Foundation

For the two-cellar option where subgrade will extend at least 30 ft below existing grade, a shallow foundation system may be viable. We recommend the use of a mat foundation bearing on natural overburden or, if necessary, compacted structural fill in place of excavated existing fill or peat. We note that this excavation will result in hydrostatic uplift pressure on the mat resulting from about 25 feet of water pressure. If the building weight alone is not sufficient to counteract the uplift pressure, then supplemental soil anchors will be needed to hold down the building. Soil anchors are discussed in the next section of this report.

Mat design is usually an iterative process to be coordinated with the structural and geotechnical engineers. We recommend a uniform modulus of subgrade reaction of 50 pounds per square inch per inch of deflection (psi/in) be used for initial design of the mat foundation. The total building settlement must be evaluated when the column layout and column loads have been established; however, the preliminary estimate for total settlement is about 1 inch.

The foundation subgrade should be leveled and cleared of standing or frozen water, debris, and other deleterious materials. Prior to foundation construction, soil subgrades must be proof-rolled using a one-ton walk-behind roller to compact any loose soils and to verify that adequate bearing pressures can be achieved at the subgrade level. Any areas exhibiting pumping, excessive rutting, bleeding or other signs of soft or wet soils should be removed and replaced with compacted structural fill as discussed in the Fill Material and Compaction Criteria section of this report.

The Building Code requires that a Professional Civil Engineer licensed in the state of New York inspect and approve foundation subgrades prior to placement of concrete, to verify that the subgrade material is adequate to provide the recommended allowable bearing pressure.

Soil Anchors

The two-cellar option may displace enough water to produce a net uplift load on the building. Soil anchors are recommended to resist this uplift pressure. Soil anchors are drilled-in elements that resist uplift forces through friction bond with the soil.

To achieve an allowable tension resistance of 50 tons on a single anchor, we recommend using a 6-inch diameter drill hole with a single 1.75 inch diameter, double-corrosion-protected, high strength threaded bar. The anchor should have a 35-ft bonded zone and a 15-ft un-bonded zone.

The layout of the uplift anchors needs to be considered to provide the necessary uplift capacity and global stability, which is a function of the free-stressing length of the individual tie-down, and spacing of tie-downs.

Slab Support

The mat foundation will need to be designed to resist uplift loads. It is recommended that the mat be designed as pressure-resisting "sandwich" slab. The slab would consist of a bottom reinforced concrete slab that is integral with the foundation of the building, overlain by a 1-foot-thick layer of crushed stone with perforated pipes leading to a sump pit. The stone layer would be covered with a concrete wearing slab. The porous layer would capture any water that may seep through cracks in the bottom slab. A subfloor drainage system is not considered feasible, as it would generate significant volumes of water for disposal.

Over-excavated areas below the slab should be backfilled with controlled granular fill or gravel. Recommendations for fill material are provided in a subsequent section within this report. A

well-compacted granular structural fill should be used to backfill any over-excavation. This structural fill should be placed in lifts not exceeding 12 inches in loose thickness and compacted to at least 95% of the modified Proctor maximum dry density. The subgrade surface should be proof-rolled with at least 5 overlapping passes of a one-ton walk-behind roller. Any soft or unsuitable areas, as identified by an on-site geotechnical inspector, should be removed and replaced.

Below Grade Walls

Permanent below grade walls should be designed to resist earth pressures and hydrostatic water pressures. We recommend that the below-grade walls be designed using a triangular earth pressure distribution having an equivalent fluid weight of 60 psf per foot of depth of soil above the groundwater and 29 psf per foot of depth of soil below groundwater. Lateral pressures due to the surcharge have a uniform distribution based on a pressure equal to 50 percent of the vertical pressure. Hydrostatic pressures should be based on the design water level for the project. Our recommended lateral earth pressure diagram for below-grade walls is attached as Drawing No.13.

Backfill should not be placed against below grade walls until the wall concrete has reached its 28-day compressive design strength and after either the next level floor slab has been completed, or temporary lateral bracing has been provided to prevent rotation of the wall.

Design Groundwater Level

Because a portion of the site is in the flood zone, we recommend using the design flood elevation (el 12) as the design groundwater level for the entire building.

Waterproofing

For the one and two cellar options, the lowest floor slab and below grade walls should be fully waterproofed. A membrane type waterproofing, such as the Preprufe and Bituthene products by W.R. Grace, should be used. The use of bentonite waterproofing or negative side crystalline waterproofing is not recommended. For horizontal applications, the waterproofing membrane should be installed on a 2-inch thick working membrane (mud slab). The vertical waterproofing should be protected with a rigid barrier to prevent damage during backfilling operations.

Successful waterproofing is dependent on careful installation, specifically on penetrations, corners, laps and seams. We recommend that a warrantee be obtained from the manufacturer and installer to cover materials and workmanship; only certified installers should be used to perform the work. Diligent protection and quality control is critical in producing a final product

that limits the potential for seepage. Detailed daily inspections should be performed to document any damage resulting from the contractor's activities. Repairs should be made as soon as possible.

CONSTRUCTION RECOMMENDATIONS

Our recommendations for support of excavation, temporary construction dewatering, fill placement and compaction, and special inspection are provided below.

Temporary Groundwater Control

For the double and single cellar options, site-wide dewatering in conjunction with a water resistant support of excavation wall is recommended to allow for subgrade preparation and construction of foundation elements.

Through discussions with a dewatering contractor, site-wide dewatering will likely consist of drilled-in well points. The well points would be installed within the extents of the excavation once the general excavation nears the level of the top of water. The wells would likely be connected to a vacuum-type pump via a manifold system. Due to the size of the site, additional sacrificial wells will likely be necessary nearer to the center of the excavation.

Significant seepage will occur into the excavation due to the high water table and proximity of the East River. Therefore, prevention of flowing groundwater from outside the site will be essential to the effectiveness of the dewatering system. A sheet pile wall, also acting as the support of excavation described below, is recommended for this purpose. Driving the sheet piles into the clays of the glacial lake deposit will help to reduce the amount of dewatering. Clay has a significantly low hydraulic conductivity; permeability coefficients for clay can range up to 5 orders of magnitude lower than that of sand. Therefore the clay layer will effectively act as a lower barrier for flowing groundwater while the wall acts as a vertical barrier.

If the bottom of excavation terminates in clay, the base of the excavation could become unstable and heave into the excavation. We recommend the dewatering wells extend no less than 10 ft below the bottom of the sheet piles to address the potential for basal heave.

The contractor will need to coordinate with the structural engineer to confirm the dead weight of the building in conjunction with the soil anchors is sufficient to terminate of dewatering activities.

Temporary Excavation Support System

For the double and single cellar options, excavation to depths of about 13 ft and 25 ft below grade, respectively, will be required. A perimeter sheet pile wall is recommended to limit water flowing from soils surrounding the site and to retain the soil at the edges of the excavation. The sheet pile wall should be advanced into the glacial lake deposit layer along the sides of the excavation. Tiers of pre-stressed anchors drilled into soil will be needed for lateral support of the sheet pile walls.

Temporary below-grade walls should be designed to resist static earth pressures, pavement and construction surcharges, and surcharges from adjacent buildings. All adjacent utilities must also be protected and supported as needed. The excavation contractor should be responsible the final design of the shoring system, including selection of the wall pressures.

The effectiveness of sheet piling will depend on the integrity of the interlocks between sheets. However, due to the variable content of the overburden fill layer, sheet piling may be hindered and the interlocking sheets could separate. Should driving difficulties be encountered, pre–excavation of the surficial fill and obstructions, and backfilling with clean soil prior to installation of the sheet piles is recommended to facilitate proper interlocking of the sheets.

Fill Material and Compaction Criteria

Fill material and compaction equipment to be used to raise grade or to backfill behind walls should be free of organic, frozen, and other deleterious materials, and should have a maximum particle size no greater than 4 inches. Imported fill should contain well graded sand, gravel, crushed rock, recycled concrete aggregate or a mixture of these, or equivalent materials with a maximum of 10 percent passing the #200 sieve, as determined from the percent passing the #4 sieve. Fill should be placed in uniform 12-inch-thick loose lifts and compacted to at least 95% of the maximum dry density as determined by Modified Proctor tests (ASTM D1557). Water content at the time of compaction should be within a few percentage points of optimum.

Grain size distributions, maximum dry density and optimum water content determinations should be made on representative samples of the proposed fill material. All fill placement and compaction should be subject to special inspection and testing. No fill material should be placed on areas where free water is standing, on frozen subsoil, or on surfaces which have not been approved by the on-site geotechnical engineer. The suitability of on-site material for reuse as backfill should be determined during construction by the Owner's geotechnical engineer.

Monitoring Adjacent Buildings

We recommend that a monitoring plan and specifications be completed for the project, which should provide details of the methods and equipment for monitoring vibration and movement, as well as movement criteria and requirements for frequency of readings and reporting.

Prior to and during excavation, dewatering, and sheet pile installation, a precise optical survey program should be implemented to monitor for vertical and horizontal movements of the surrounding structures. Criteria for allowable movements and vibrations of structures should be finalized after a building pre-construction conditions report is completed.

Pre-Construction Conditions Documentation

A pre-construction conditions documentation (pre-con) of the adjacent buildings and utilities should be performed. The pre-con would provide the client and the foundation contractor with documentation of existing conditions in the event of a future damage claim. The pre-con should be made by a qualified Professional Engineer experienced in such documentation work. The pre-con should include photographs, dimensioned sketches, and measurements of ambient vibrations. Crack reference lines and settlement reference points should be established for monitoring during construction. The pre-con would serve as a pictorial and quantitative reference document to assess conditions prior to, during and after construction.

CONSTRUCTION DOCUMENTS AND QUALITY CONTROL

Technical specifications and design drawings should incorporate Langan's recommendations. When authorized, Langan will assist the design team in preparing specification sections related to geotechnical issues such as earthwork, shallow foundations, backfill, and excavation support. Langan should also, when authorized, review foundation drawings prepared by the Structural Engineer, as well as Contractor submittals relating to materials and construction procedures for geotechnical work.

Langan has investigated and interpreted the site subsurface conditions and developed the foundation design recommendations contained herein, and is therefore best suited to perform quality assurance observation and testing of geotechnical-related work during construction, This work requiring quality assurance confirmation includes, but is not limited to, earthwork, backfill, ground improvement, shallow and deep foundations, and excavation support. Recognizing that construction is essentially the completion of design, Langan's quality assurance observation and testing during construction is necessary to maintain our continuity of responsibility on this project.

OWNER AND CONTRACTOR OBLIGATIONS

The Contractor is responsible for construction quality control, which includes satisfactorily constructing the foundation system and any associated temporary works to achieve the design intent while not adversely impacting or causing loss of support to neighboring structures. Construction activities that can alter the existing ground conditions such as excavation, fill placement, foundation construction, ground improvement, pile driving/drilling, dewatering, etc. can also potentially induce stresses, vibrations, and movements in nearby structures and utilities, and disturb occupants of nearby structures. Contractors working at the site must ensure that their activities will not adversely affect the performance of the structures and utilities, and will not disturb occupants of nearby structures. Contractors must also take all necessary measures to protect the existing structures during construction. By using this report, the Owner agrees that Langan will not be held responsible for any damage to adjacent structures.

The preparation and use of this report is based on the condition that the project construction contract between the Owner and their Contractor(s) will include: 1) Langan being added to the Project Wrap and/or Contractor's General Liability insurance as an additional insured, and 2) language specifically stating the Foundation Contractor will defend, indemnify, and hold harmless the Owner and Langan against all claims related to disturbance or damage to adjacent structures or properties.

LIMITATIONS

The conclusions and recommendations provided in this report are based on subsurface conditions inferred from a limited number of borings, as well as architectural and structural information provided by Gensler and by DeSimone. Recommendations provided are contingent upon one another and no recommendation should be followed independent of the others.

This report has been prepared to assist the owner, architect and structural engineer in the design process and is only applicable to the envisioned project discussed herein. Any proposed changes in structures or their locations should be brought to our attention so that we can determine whether such changes affect our recommendations. Langan cannot assume responsibility for use of this report for any areas beyond the limits of this study or for any projects or temporary structures not specifically discussed herein.

Information on subsurface strata and groundwater levels shown on the logs represents conditions encountered only at the locations indicated and at the time of investigation. If different conditions are encountered during construction, they should immediately be brought to our attention for evaluation as they may affect our recommendations.

Environmental issues (such as potentially contaminated soil and groundwater) are outside the scope of this study.

DRAWINGS

SOURCE: U.S. GEOLOGICAL SURVEY. **BROOKLYN Quandrangle Map** [map]. 1967. Photovised 1979.

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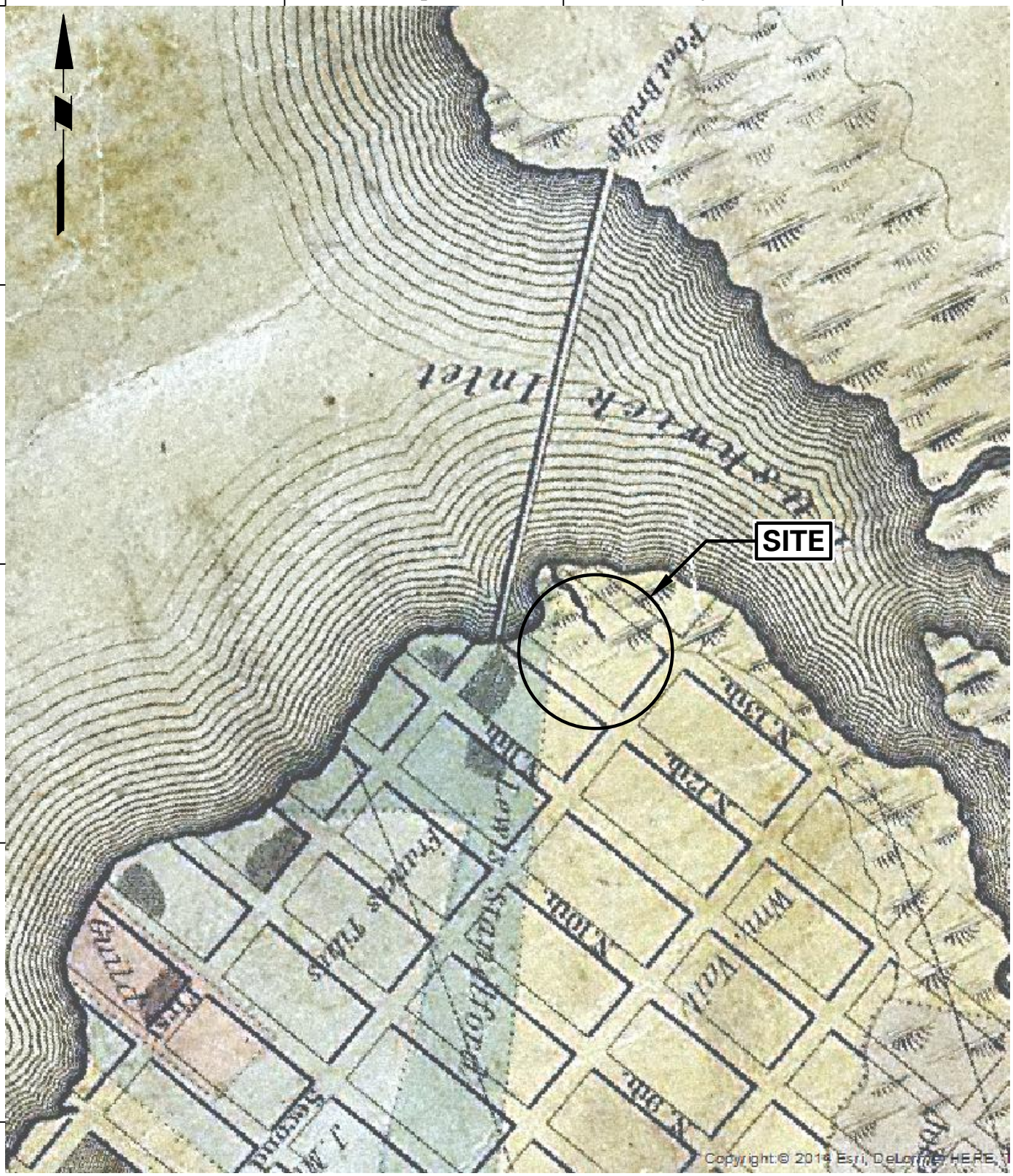
Langan International LLC
Collectively known as Langan

Project
25 KENT AVENUE
BLOCK No. 2282, LOT No. 1,15,28,34
BROOKLYN NEW YORK

Drawing Title
SITE LOCATION MAP

Project No. 170285701	Drawing No. 1
Date 4/25/2014	
Scale N.T.S.	
Drawn By EYE / Checked By RAG	
Submission Date 7/9/2014	Sheet 1 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\geotechnical report\FIG-01 - Site Location Map.dwg Date: 7/9/2014 Time: 12:36 User: soconnell Style Table: Langan.stb Layout: ANSI-BB



SOURCE: "MAP OF THE CITY OF BROOKLYN" DATED 1849, PUBLISHED BY J.H. COLTON, NEW YORK

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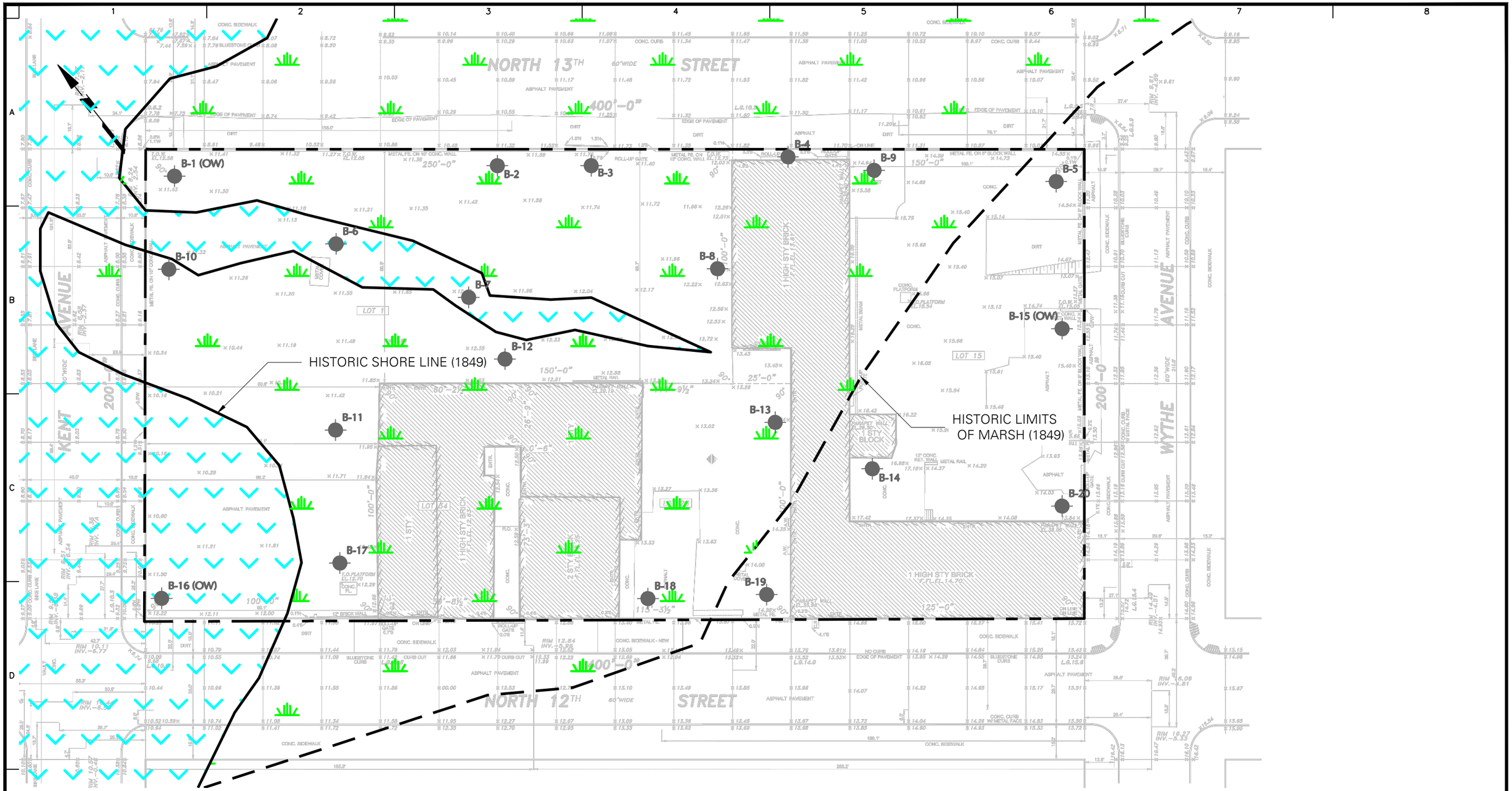
Project
25 KENT AVENUE
BLOCK No. 2282, LOT No. 1,15,28,34
BROOKLYN NEW YORK

Drawing Title
COLTON 1849 HISTORIC MAP

Project No. 170285701	Drawing No. 2
Date 4/25/2014	
Scale N.T.S.	
Drawn By EYE / Checked By RAG	
Submission Date 7/9/2014	Sheet 2 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\geotechnical report\FIG-01 - Site Location Map.dwg Date: 7/9/2014 Time: 12:36 User: soconnell Style Table: Langan.stb Layout: FIG 2



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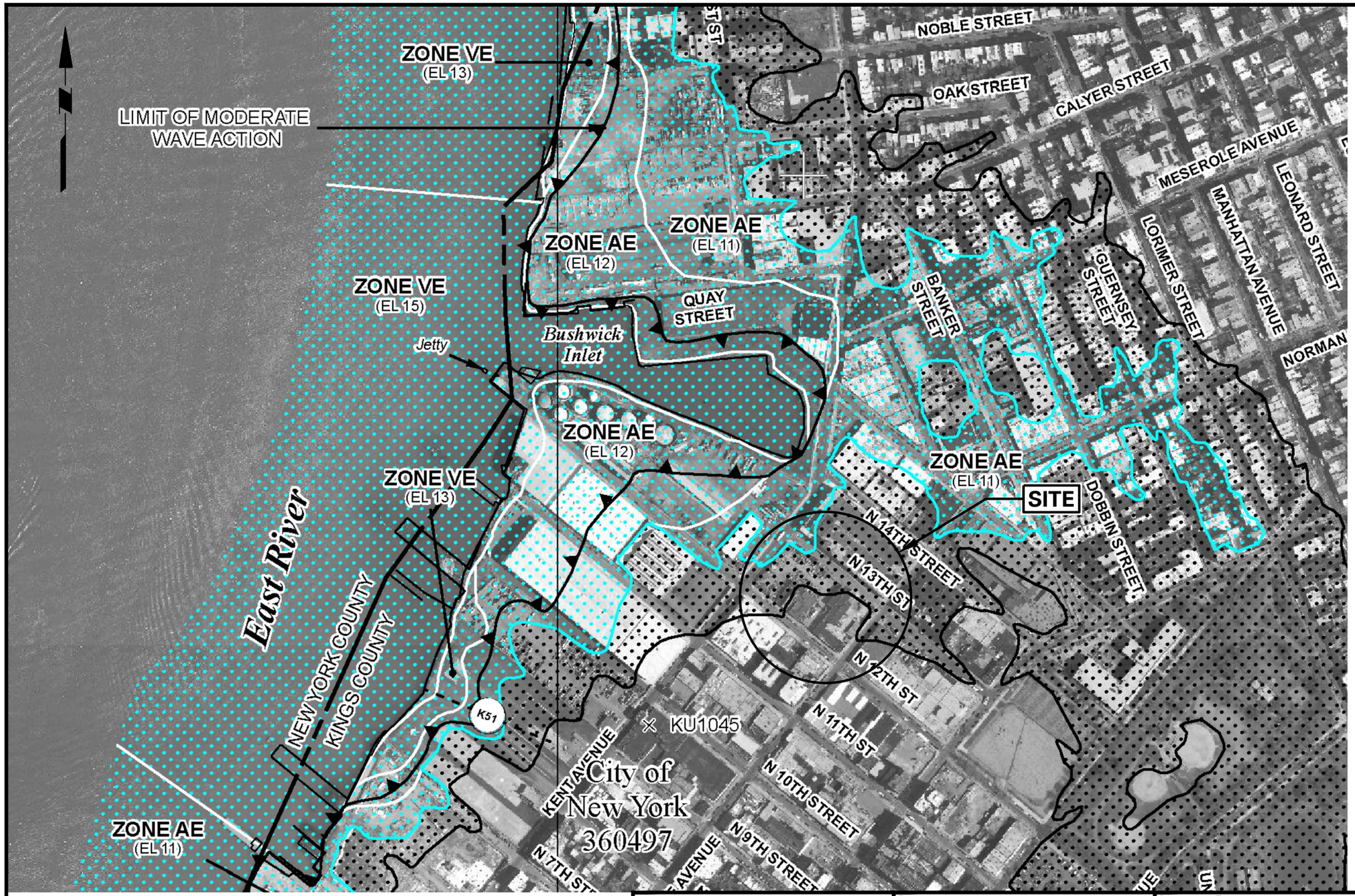
Project	25 KENT AVENUE BLOCK No. 2282, LOT No. 1,15,28,34 BROOKLYN NEW YORK
Drawing Title	HISTORIC SITE CONDITIONS
Project No.	170285701
Drawing No.	3
Date	5/1/2014
Scale	1" = 40'
Drawn By / Checked By	E.YE / RAG
Submission Date	7/9/2014
Sheet	3 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:37 User: soconnell Style Table: Langan.stb Layout: Fig 3 - Historic Conditions



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 2476000m N — 1000-meter Universal Transverse Mercator grid values, zone 18
- 600000 FT — 5000-foot grid values: New York State Plane coordinate system, Long Island zone (FIPSZONE 3104), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ● M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

INITIAL NFIP MAP DATE
June 28, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS
June 11, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE
November 16, 1983

FLOOD INSURANCE RATE MAP REVISIONS

SOURCE: FIRM FLOOD RATE INSURANCE MAP FOR THE CITY OF NEW YORK, NEW YORK PANEL 202 OF 457 [3604970202G] MAP REVISED PRELIMINARY DECEMBER 5, 2013.

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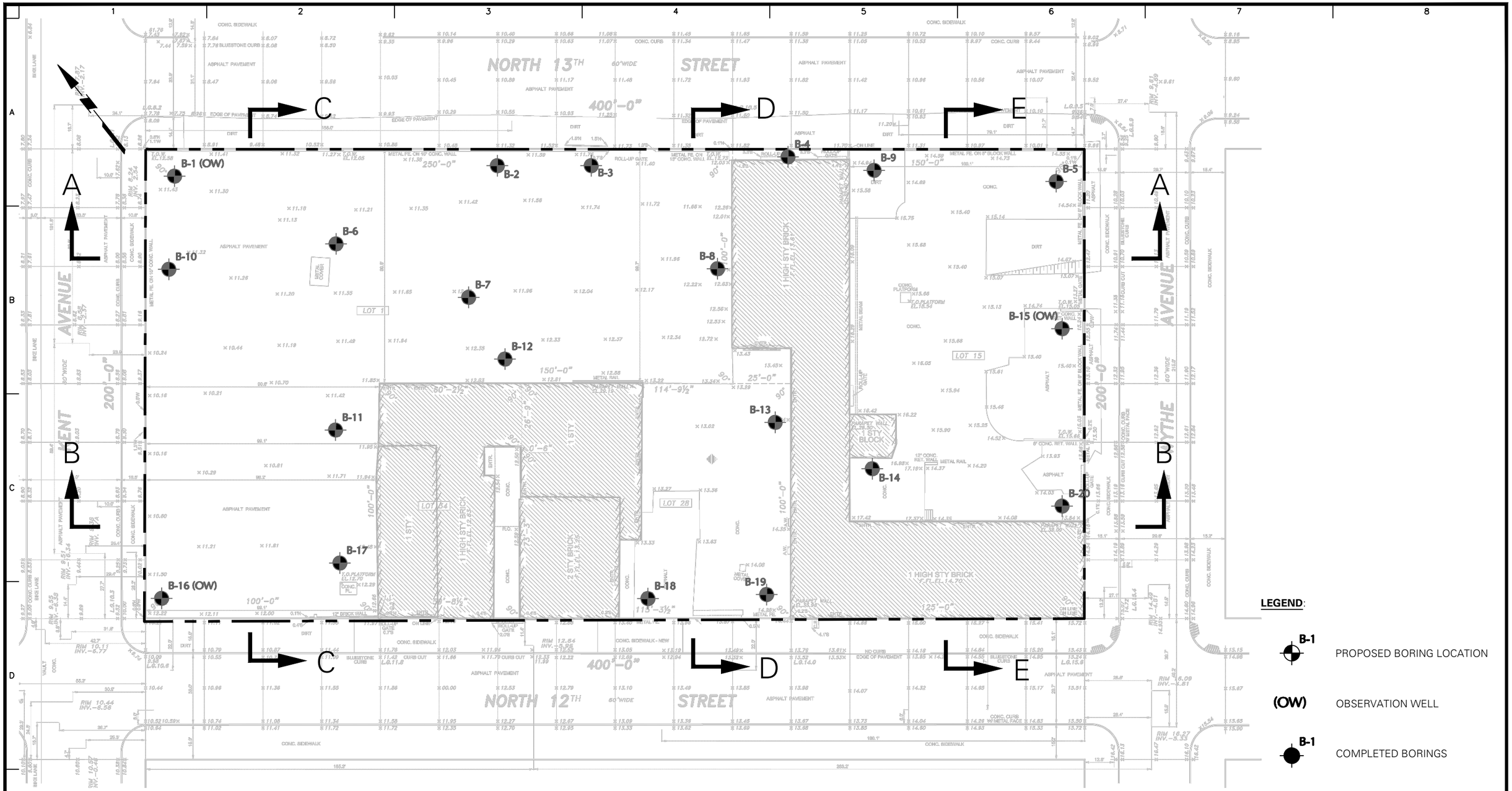
BLOCK No. 2282, LOT No. 1,15,28,34
BROOKLYN NEW YORK

Drawing Title
PRELIMINARY FLOOD INSURANCE RATE MAP

Project No. 170285701	Drawing No. 4
Date 4/25/2014	
Scale N.T.S.	
Drawn By EYE / Checked By RAG	
Submission Date 7/9/2014	Sheet 4 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\geotechnical report\FIG-03 - Preliminary Flood Rate Insurance Map.dwg Date: 7/9/2014 Time: 12:37 User: soconnell Style Table: Langan.stb Layout: Fig 4 - Firm



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BLOCK No. 2282, LOT No. 1,15,28,34

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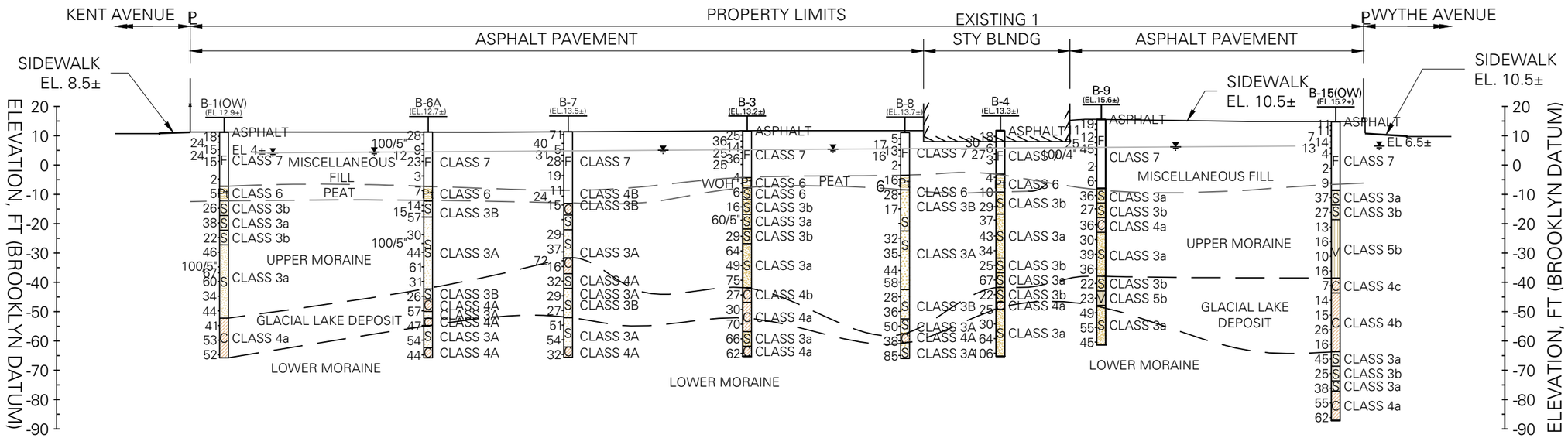
Drawing Title

BORING LOCATION PLAN

Project No. 170285701	Drawing No. 5
Date 5/1/2014	
Scale 1" = 40'	
Drawn By E.YE / Checked By RAG	
Submission Date 7/9/2014	Sheet 5 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 6 - BLP



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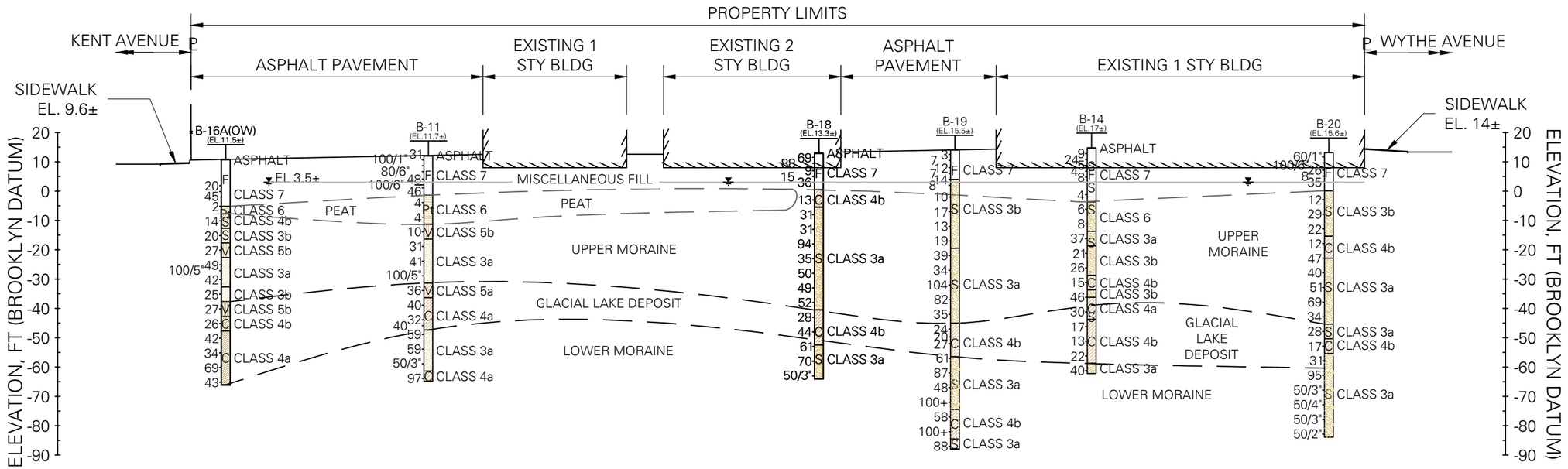
Project	25 KENT AVENUE BLOCK No. 2282, LOT No. 1,15,28,34 BROOKLYN NEW YORK
Drawing Title	SUBSURFACE PROFILE A
Project No.	170285701
Date	5/1/2014
Scale	1" = 40'
Drawn By / Checked By	E.YE / RAG
Submission Date	7/9/2014
Drawing No.	6
Sheet	6 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 7 - Profile A



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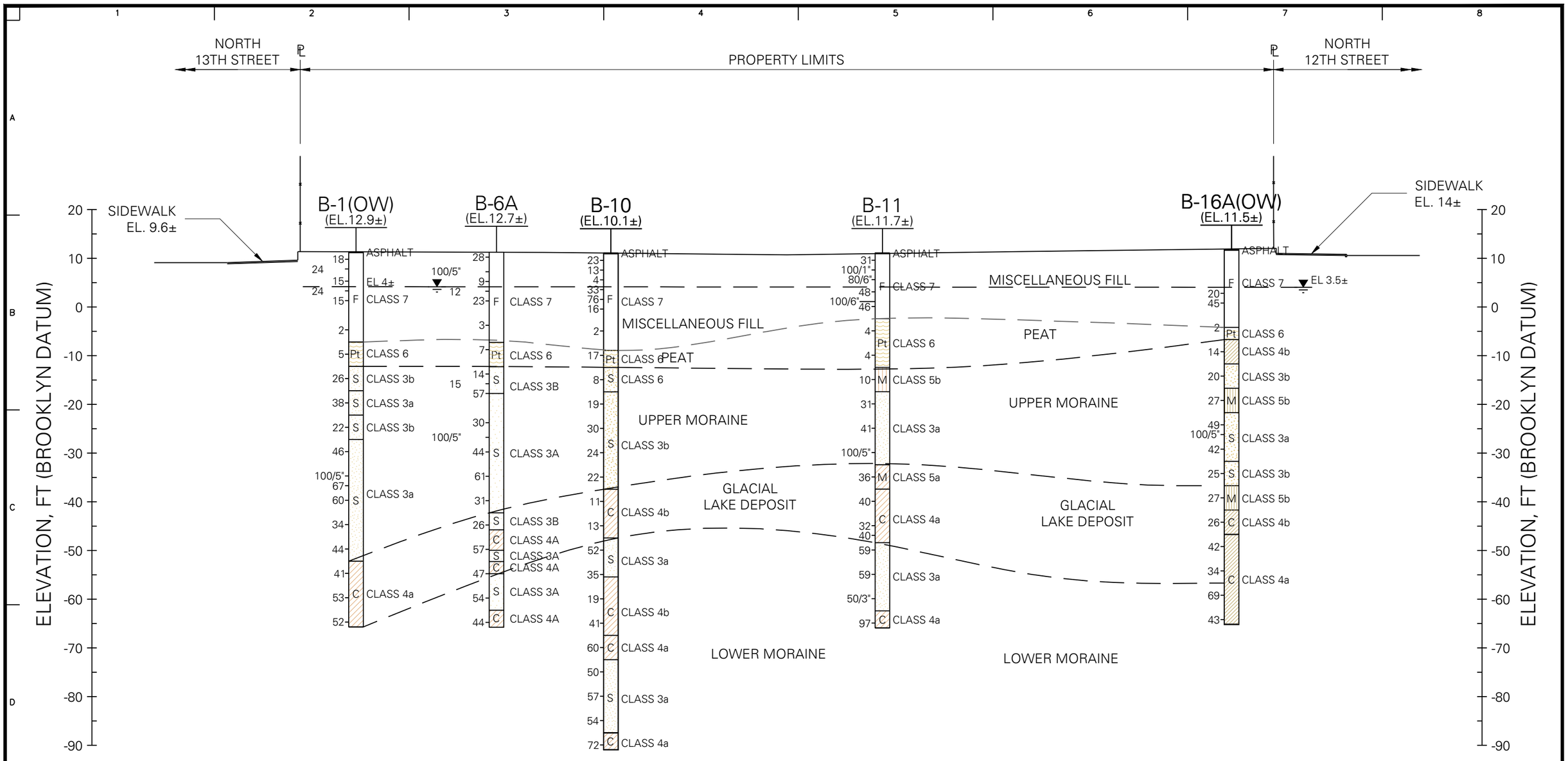
BROOKLYN **NEW YORK**

Drawing Title

SUBSURFACE PROFILE B

Project No. 170285701	Drawing No. 7
Date 5/1/2014	
Scale 1" = 40'	
Drawn By E.YE / Checked By RAG	
Submission Date 7/9/2014	Sheet 7 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 8 - Profile B



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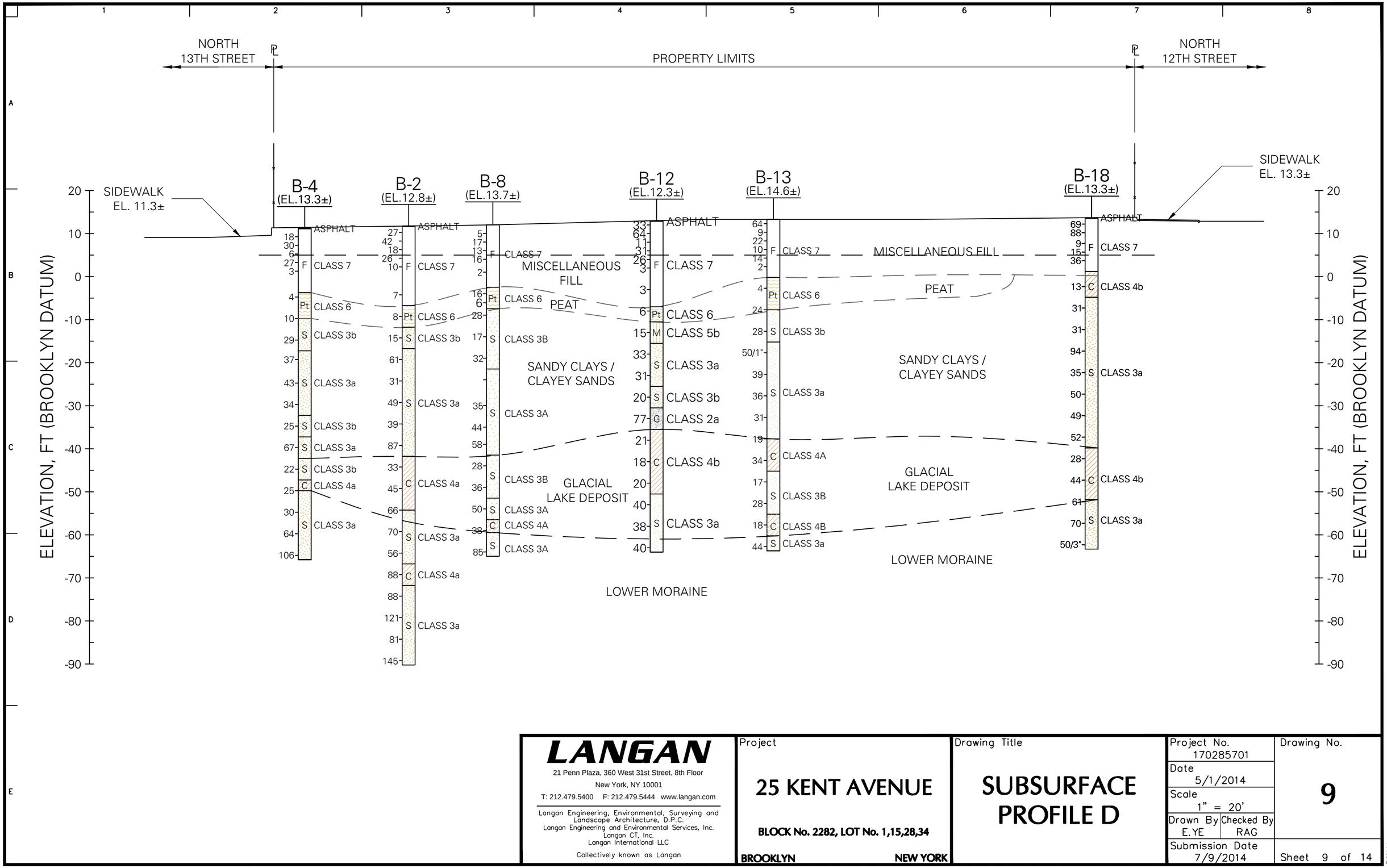
BROOKLYN **NEW YORK**

Drawing Title

SUBSURFACE PROFILE C

Project No. 170285701	Drawing No. 8
Date 5/1/2014	
Scale 1" = 20'	
Drawn By E.YE / Checked By RAG	
Submission Date 7/9/2014	Sheet 8 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 9 - Profile C



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BLOCK No. 2282, LOT No. 1,15,28,34
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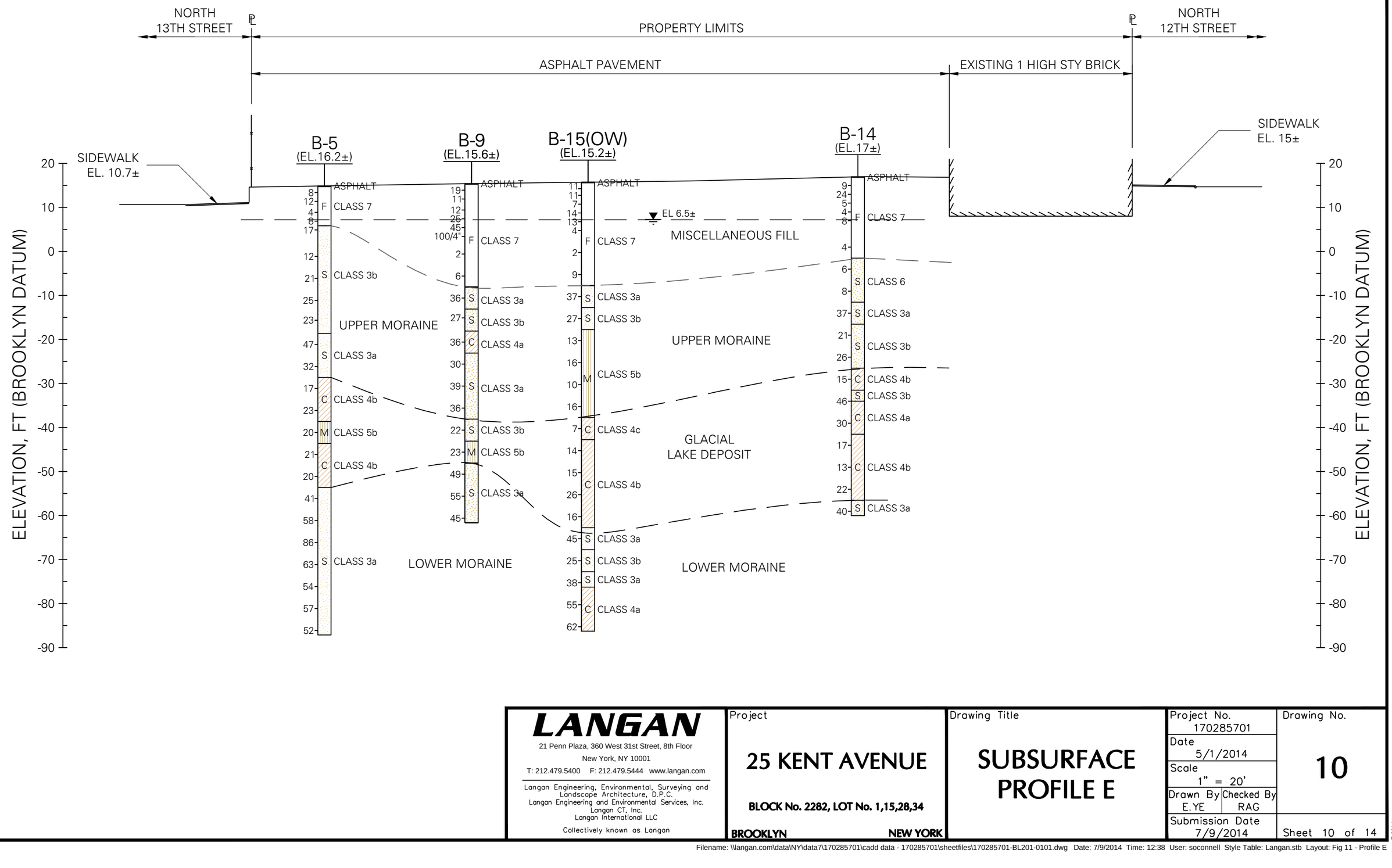
Drawing Title
SUBSURFACE PROFILE D

Project No. 170285701	Drawing No. 9
Date 5/1/2014	
Scale 1" = 20'	
Drawn By E.YE / Checked By RAG	
Submission Date 7/9/2014	Sheet 9 of 14

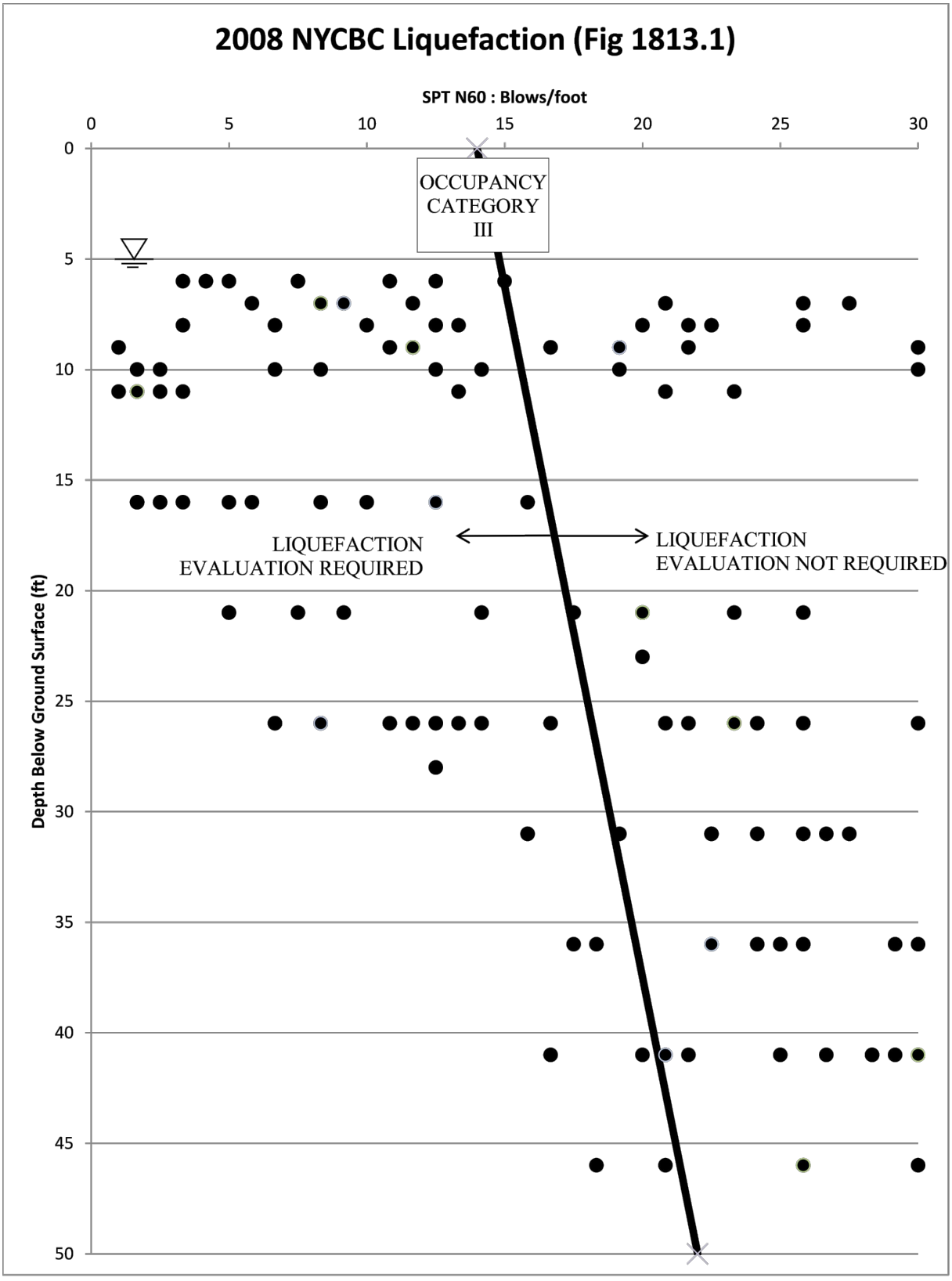
Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 10 - Profile D



LANGAN 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan	Project **25 KENT AVENUE** **BLOCK No. 2282, LOT No. 1,15,28,34** **BROOKLYN** **NEW YORK**	Drawing Title **SUBSURFACE PROFILE E**	Project No. 170285701 Date 5/1/2014 Scale 1" = 20' Drawn By E.YE / Checked By RAG Submission Date 7/9/2014	Drawing No. **10** Sheet 10 of 14	

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BL201-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: Fig 11 - Profile E

2008 NYCBC Liquefaction (Fig 1813.1)



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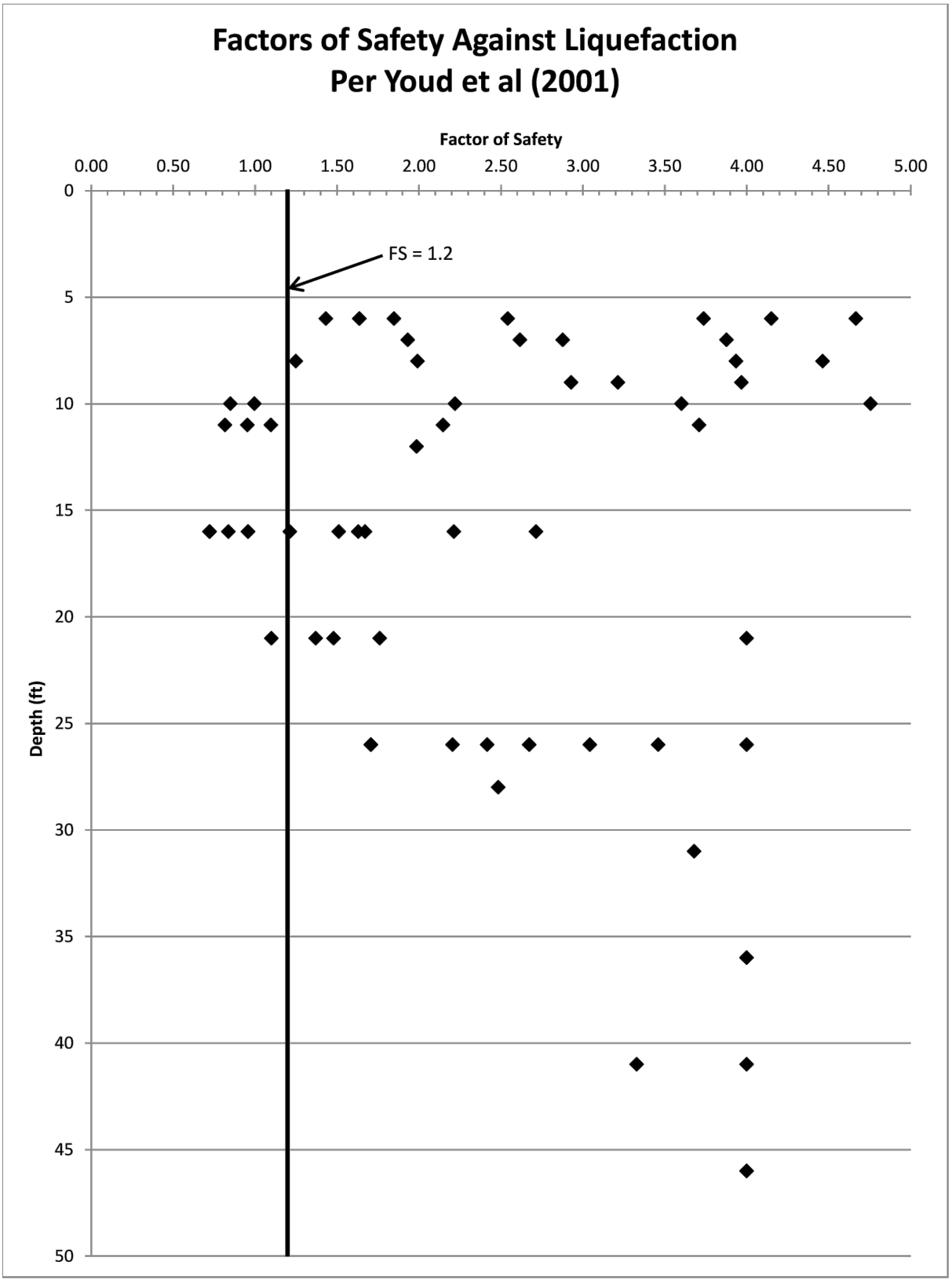
Project	25 KENT AVENUE BLOCK No. 2282, LOT No. 1,15,28,34 BROOKLYN NEW YORK
Drawing Title	2008 NYCBC LIQUEFACTION SCREENING CHART
Project No.	170285701
Date	5/21/2014
Scale	N.T.S.
Drawn By / Checked By	SJO / RAG
Submission Date	7/9/2014
Drawing No.	11
Sheet	11 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BI601-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: NYCBC



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BLOCK No. 2282, LOT No. 1,15,28,34

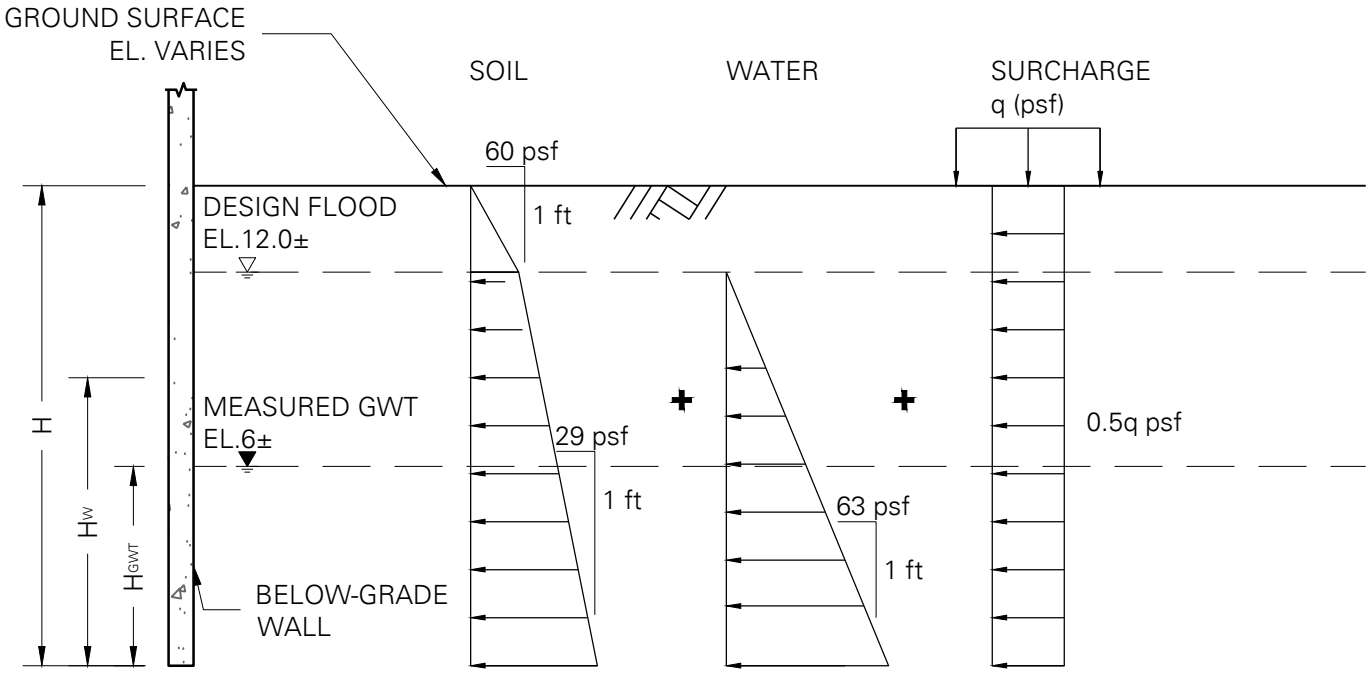
BROOKLYN NEW YORK

Drawing Title

YOUD ET AL. (2001) LIQUEFACTION CHART

Project No. 170285701	Drawing No. 12
Date 5/21/2014	
Scale N.T.S.	
Drawn By SJO / Checked By RAG	
Submission Date 7/9/2014	Sheet 12 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\170285701-BI601-0101.dwg Date: 7/9/2014 Time: 12:38 User: soconnell Style Table: Langan.stb Layout: YOUD



LEGEND:

H = HEIGHT OF BELOW GRADE WALL (FT)
H_W = DEPTH TO DESIGN GROUND WATER TABLE (FT), (EL.XX.X±)
H_{GWT} = DEPTH TO MEASURED GROUND WATER TABLE (FT), (EL.XX.X±)

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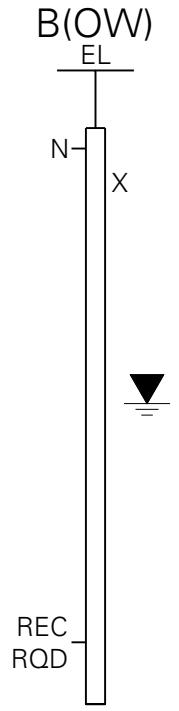
Drawing Title
RECOMMENDED LATERAL EARTH PRESSURE DIAGRAM

Project No. 170285701	Drawing No. 13
Date 5/22/2014	
Scale N.T.S.	
Drawn By SJO / Checked By RG	
Submission Date 7/9/2014	Sheet 13 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\geotechnical report\FIG-XX - Lateral Earth Pressure Diagram.WIP.dwg Date: 7/9/2014 Time: 12:39 User: soconnell Style Table: Langan.stb Layout: LATERAL PRESSURES

BORING KEY



B	BORING IDENTIFICATION
EL	GROUND SURFACE ELEVATION AT TIME OF BORING
N	STANDARD PENETRATION RESISTANCE; NUMBER OF BLOWS OF A 140 LB. HAMMER FREE FALLING 30 IN. TO DRIVE A 2 IN O.D. SPLIT SPOON SAMPLER 12 IN. AFTER 6 INCHES OF INITIAL PENETRATION
REC	(LENGTH OF ROCK RETRIEEVED)/(LENGTH OF ROCK CORED)*100%
RQD	ROCK QUALITY DESIGNATION (LENGTH OF ROCK PIECES 4 INCHES OR LONGER)/ (LENGTH OF ROCK CORED)*100%
X	NEW YORK CITY BUILDING CODE CLASSIFICATION
(OW)	GROUNDWATER OBSERVATION WELL
▼	MEASURED GROUNDWATER LEVEL
C-1	ROCK CORE RUN IDENTIFICATION AND LENGTH

MATERIAL SYMBOLS

F	UNCONTROLLED FILL
S	SAND
M_S	SANDY SILT/SILTY SAND
M	SILT
WR	WEATHERED ROCK
R	BEDROCK

NEW YORK CITY BUILDING CODE CLASSIFICATION NUMBER

1A	HARD SOUND ROCK
1B	MEDIUM SOUND ROCK
1C	INTERMEDIATE ROCK
1D	SOFT ROCK-WEATHER ROCK
2A	DENSE SANDY GRAVEL & GRAVEL
2B	MEDIUM SANDY GRAVEL & GRAVEL
3A	DENSE GRANULAR SOILS
3B	MEDIUM GRANULAR SOILS
4A	HARD CLAYS
4B	STIFF CLAYS
4C	MEDIUM CLAYS
5A	DENSE SILTS & SILTY SOILS
5B	MEDIUM SILTS & SILTY SOILS
6	ORGANIC SILTS & CLAYS, PEATS, SOFT CLAYS, LOOSE GRANULAR SOILS, AND VARVED SILTS
7	CONCTROLLED & UNCOTROLLED FILLS

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Project	25 KENT AVENUE BLOCK No. 2282, LOT No. 1,15,28,34 BROOKLYN NEW YORK
Drawing Title	BORING KEY
Project No.	170285701
Date	7/9/2014
Scale	N.T.S.
Drawn By / Checked By	EYE /
Submission Date	7/9/2014
Drawing No.	LS-1
	Sheet 14 of 14

Filename: \\langan.com\data\NY\data7\170285701\cadd data - 170285701\sheetfiles\geotechnical report\FIG-XX - Boring Key.WIP.dwg Date: 7/9/2014 Time: 12:39 User: soconnell Style Table: Langan.stb Layout: ANSIA-BP

APPENDIX A

BORING AND WELL CONSTRUCTION LOGS

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Log of Boring **B-01(OW)** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.9 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/3/14 — Date Finished: 4/7/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 19 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 35	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat / Maria Mis
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+12.9									
	+12.4		2" Asphalt, course gravel		0					
			Black/Brown m-f SAND, so.. silt, tr. c- gravel, tr. asphalt [FILL]	PUSH	1	S-1	SS	8	6, 12, 6, 7	18
			Black/Brown m-f SAND, so. silt, tr. gravel, strong odor (moist) [FILL]	65	2 3 4	S-2	SS	6	9, 11, 13, 11	24
			Gray f- SAND, so. silt, tr. gravel, so. wood, strong odor (moist) [FILL]	PUSH	5 6	S-3	SS	6	3, 3, 12, 21	15
			Gray/Black m-f silty SAND, tr. gravel (moist) [FILL]	258	7 8	S-4	SS	16	14, 12, 12, 36	24
		Class 7	Brown m-f silty SAND, tr. gravel, tr. brick (moist) [FILL]		9 10	S-5	SS	6	12, 6, 9, 8	15
				310	11 12 13 14					
			Brown f- silty SAND, tr. mica (wet) [FILL]		15 16	S-6	SS	21	1, 1, 1, 1	2
	-5.6			426	17 18 19					
		Class 6			20					

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/3/2014
10:30 AM - Drillers arrived on site
11:10 AM - Set up and began drilling
Drill through asphalt and coarse gravel layer
Took sample S-1 @ 0.5'
Took sample S-2 @ 2.5'
Sample wet @ ~4'
11:40 AM - 12:10 PM - Separate two 5' casings
Install casing up to 5'
12:20 PM Water connection established
12:45PM Drill to 5'
Slight rig chatter
no return
Took sample S-3 @ 5'
Took sample S-4 @ 7'

Drill to 9'
No return
Hole collapses
Install casing up to 10'
Redrill to 9'
White to brown wash
Took Sample S-5 @ 9'

Drill to 15'
Brown wash
Took sample S-6 @ 15'

\\LANGAN.COM\DATA\NY\DATA7\170285701\ENGINEERING DATA\GEOTECHNICAL\GINTLOGS\170285701.GPJ ... 6/18/2014 2:18:20 PM ... Report: Log - LANGAN ...Template TEMPLATE.GDT

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Log of Boring **B-01(OW)** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.9 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Dark gray PEAT [PT]	378	20–22	S-7	SS	12	1 3 2 2	5	Drill to 20' Brown wash Took sample S-7 @ 20'
	-10.6										
		Class 3b	Light Gray f- clayey SAND, so. m- sand, tr. mica (wet) [SC]	353	25–27	S-8	SS	18	4 6 20 17	26	Drill to 25' Brown wash Took sample S-8 @ 25' 2:40PM Drilling stopped 2:50PM Drillers left site 4/4/2014 7:10AM Drillers arrived on site 7:30AM Set up and began drilling
	-15.6										
		Class 3a	Brown c-f SAND, so. silt, tr. c-f gravel (wet) [SW]	398	30–32	S-9	SS	15	23 17 21 25	38	Drill to 30' Brown wash Rig chatter @ 28' Very slow drilling to 30' Took sample S-9 @ 30'
	-20.6										
		Class 3b	Brown m-f SAND, so. silt, tr. c-f gravel, tr. mica (wet) [SW]		35–37	S-10	SS	12	5 10 12 17	22	Drill to 35' Brown wash Smooth/easy drilling Took sample S-10 @ 35'
	-25.6										
		Class 3a	No Recovery		40–42	S-11	SS	0	20 23 23 25	46	Drill to 40' Brown wash Smooth/easy drilling Took sample S-11 @ 40'

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Log of Boring **B-01(OW)** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.9 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Brown m-f SAND, so. silt, tr. c-f gravel (wet) [SW]		45	S-12	SS	12	51 71 100/5"	100/5"	Drill to 45' Brown wash Rig chatter @ 43' Took sample S-12 @ 45' Spoon refusal @ 46.5'
					46						
			Brown m-f SAND, tr. c-f gravel, tr. silt, tr. mica (wet)[SW]		47	S-13	SS	18	27 34 33 61	67	S-12 may be drilling wash Took sample S-13 @ 47' Hole collapsed @ 35' Attempt to drill through Roller bit refusal @ 35' Install casing to 25' Clean out casing Roller bit refusal @ 35' Install casing to 30' c Clean out casing Drill to 50'
					48						
					49						
			Brown m-f SAND, tr. f- gravel, tr. silt, tr. mica (wet)[SW]		50	S-14	SS	12	14 28 32 33	60	Brown wash Slight rig chatter Took sample S-14 @ 50'
					51						
					52						
		Class 3a			53						
					54						
					55	S-15	SS	15	9 15 19 23	34	Drill to 55' Brown wash Slight rig chatter Took sample S-15 @ 55' End of drilling at 2:48PM @ 57'
			Brown m-f SAND, tr. f- gravel, tr. silt, tr. mica (wet)[SW]		56						
					57						4/7/2014 7:04AM - Drillers arrive on site Clean out tub and pipes
					58						
					59						
					60	S-16	SS	18	9 18 26 56	44	Drill to 60' Brown wash Slow drilling from approx. 58' to 60' Took sample S-16 @ 60'
			Brown fine SAND, so. silt, tr. mica (wet) [SP]		61						
					62						
	-50.6				63						
					64						
					65	S-17	SS	12	6 15 26 31	41	Drill to 65' Brown wash Smooth/easy drilling Took sample S-17 @ 65'
			Red/Gray silty CLAY, tr. mica [CL]		66						
		Class 4a			67						
					68						
					69						
					70						

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Log of Boring **B-01(OW)** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.9 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4a	Red/Gray silty CLAY, tr. c-f sand, tr. mica [CL]		70	S-18	SS	10	18 26 27 42	53	Drill to 70' Brown wash Smooth/easy drilling Took sample S-18 @ 70'
					71						
					72						
					73						
					74						
					75	S-19	SS	12	22 23 29 43	52	Drill to 75' Brown wash Smooth drilling Took sample S-19 @ 75'
	-64.1		Red/Gray silty CLAY, tr. c-f sand, tr. mica [CL]		76						
			End of Boring @ 77'		77						Remove casing Backfill hole with soil cuttings upto 20' and convert hole into well
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-02** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.8 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/7/14 — Date Finished: 4/10/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 23 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 10	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Maria Mis / Shreya Bhat/Sean O'Connell
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Casing blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+12.8				0						4/7/2014 2:10 PM - Begain drilling through asphalt Took sample S-1 @ 1'
			Black c-f SAND, tr. c-f gravel, tr. silt, tr. asphalt, odor [FILL]		1	S-1	SS	12	13 16 11 5	27	
				193	2						
			Black c-f SAND, tr. silt, tr. asphalt, odor [FILL]		3	S-2	SS	12	8 14 28 10	42	Took sample S-2 @ 3' Install casing up to 5'
					4						
			Black c-f SAND, tr. silt, tr. wood, odor [FILL]	100	5	S-3	SS	6	4 8 10 14	18	4/8/2014 Helper 1-hr late 8:13AM Drill to 5' Took sample S-3 @ 5'
					6						
			Black c-f SAND, tr. silt, tr. brick, odor [FILL]	6	7	S-4	SS	14	25 14 12 15	26	Took sample S-4 @ 7'
				9	8						Drill to 9' odor, black wash rig chatter
		Class 7	Top 3": Black c-f SAND, tr. silt, odor [FILL]	14	9	S-5	SS	8	6 6 4 7	10	Took Sample S-5 @ 9'
			Bottom 5": Brown/gray f- SAND, so. silt, odor [FILL]		10						
					11						
					12						
					13						
					14						
					15						9:07AM Hammer casing to 15' (~30 bpf) 9:15AM Drill to 15' Brown wash Took sample S-6 @ 15'
			Gray f- silty SAND, odor (moist) [FILL]		16	S-6	SS	6	2 5 2 4	7	
	-5.7				17						
		Class 6			18						
					19						
					20						

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Log of Boring **B-02** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.8 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Black Peat [PT]		20	S-7	SS		3 3 5 7	8	Hammer casing to 20' Coffee break 10:15 AM Drill to 20' Brown wash Took sample S-7 @ 20'
	-10.7				21						
		Class 3b	Gray m-f SAND, tr. silt [SP]		22						
					23						
					24						
					25	S-8	SS		9 8 7 7	15	10:34AM Drill to 25' Black wash @ 23' Gray wash @35' Took sample S-8 @ 25' Added bentonite
					26						
					27						
	-15.7				28						
					29						
			Brown m-f SAND, so. silt, tr. c- sand, tr. f- gravel [SP]		30	S-9	SS		13 23 38 30	61	Drill to 30' Brown wash Rig chatter @ 29' Took sample S-9 @ 30'
					31						
					32						
					33						
					34						
		Class 3a	Gray c-m gravelly SAND, tr. silt [SP]		35	S-10	SS	10	22 17 14 16	31	Drill to 35' Brown wash Took sample S-10 @ 35' Hammer casing to 35'
					36						
					37						
					38						
					39						
					40	S-11	SS		5 36 13 24	49	Drill to 40' Added bentonite Took sample S-11 @ 40'
			Gray clayey f. SAND, tr. m-c sand, tr. f- gravel, tr. silt [CL]		41						
					42						
					43						
	-30.7				44						
		Class 3a			45						

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Log of Boring **B-02** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.8 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description
		Class 3a	Red f- SAND, tr. silt, tr. mica (dry) [SP]
		Class 3a	Brown m-f SAND, tr. silt (moist) [SP]
	-40.7	Class 4a	Brown silty CLAY, tr. f. sand (moist) [CL]
		Class 4a	Top 6": Red/Gray silty CLAY, tr. f. sand (moist) [CL] Bottom 8": Red/Brown silty CLAY, tr. f. sand, tr. mica (moist) [CL]
	-53.0	Class 3a	Top: Brown silty CLAY (moist) [CL] Bottom: Black/Brown f- SAND, tr. mica (moist) [SP]

Casng blws/ ft

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-12	SS	10	19 18 21 29	39
S-13	SS	16	28 42 45 45	87
S-14	SS	18	10 15 18 23	33
S-15	SS	8	12 17 28 36	45
S-16	SS	18	13 21 45 58	66

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Smooth drilling
Hole collapsed when dropping spoon
Hammer casing to 40'
Took sample S-12 @ 45'
4/9/2014
Install casing up to 45'

Drill to 50'
Brown wash
Took sample S-13 @ 50'

Drill to 55'
Brown wash
Took sample S-14 @ 55'

Drill to 60'
Brown wash
Took sample S-15 @ 60'

Drill to 65'
Brown wash
Took sample S-16 @ 65'

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Log of Boring **B-02** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.8 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown m-f SAND, tr. silt, tr. gravel (moist)[SP]		70	S-17	SS	18	17 37 33 31	70	Drill to 70' Brown wash Took sample S-17 @ 70'
					71						
					72						
					73						
					74						
					75	S-18	SS	24	11 24 32 40	56	Drill to 75' Brown wash Took sample S-18 @ 75' Difficulty advancing casing beyond 45' Approx. 10-min. to advance casing to 77'
			Top 16": Brown m-f SAND, tr. gravel, tr. silt (moist)[SP]		76						
			Bottom 8": Gray clayey SAND (moist)[SC]		77						
	-65.7				78						
					79						
		Class 4a	Gray sandy CLAY, tr. sand (moist)[CL]		80	S-19	SS	16	22 42 46 60	88	Drill to 80' Brown wash Took sample S-19 @ 80'
					81						
					82						
	-70.7				83						
					84						
					85	S-20	SS	16	31 48 40 85	88	Drill to 85' Brown wash Took sample S-20 @ 85'
			Gray clayey SAND (moist)[SC]		86						
					87						
					88						
					89						
		Class 3a			90	S-21	SS	24	25 54 67 82	121	Drill to 90' Brown wash 3:00PM Stopped drilling 4/10/2014 7:10AM Drillers arrived on site 7:30AM Began drilling Took sample S-21 @ 90'
			Top 16": Brown f- SAND, tr. clay (moist)[SC]		91						
			Bottom 8": Gray f- SAND, tr. clay (moist)[SC]		92						
					93						
					94						
					95						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-02** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.8 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
					95						Drill to 95'
					96	S-22	SS	14	23 33 48 77	81	Brown wash Took sample S-22 @ 95'
		Class 3a	Gray f- clayey SAND (moist)[SC]		97						
					98						
					99						
					100						Drill to 100'
					101	S-23	SS		48 51 94 100/3"	145	Brown wash Slight rig chatter Took sample S-23 @ 100'
	-89.2		White/Black f- clayey SAND (moist)[SC]		102						
			End of Boring @ 102'		103						
					104						
					105						
					106						
					107						
					108						
					109						
					110						
					111						
					112						
					113						
					114						
					115						
					116						
					117						
					118						
					119						
					120						

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Log of Boring **B-03** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13.2 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/8/14 — Date Finished: 4/9/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 20 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 15	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Sean O'Connell / Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+13.2				0					
			Black c-f SAND, tr. silt, tr. gravel [FILL]		1	S-1	SS	10	15, 12, 13	25
				HAMMER	2					
			Black c-f SAND, tr. silt, tr. gravel [FILL]		3	S-2	SS	10	14, 23, 13, 10	36
			Black c-f SAND, tr. silt, tr. gravel, odor [FILL]		4	S-3	SS		9, 8, 6, 3	14
				PUSH	5					
			Black c-f SAND, tr. silt, tr. f- gravel, odor [FILL]		6	S-4	SS	5	7, 13, 12, 10	25
		Class 7	Black m-f SAND, so. silt, odor [FILL]	HAMMER	7	S-5	SS	10	13, 12, 24, 26	36
			Gray/Brown m-f SAND, so. silt, odor [FILL]		8	S-6	SS	12	10, 17, 8, 5	25
					9					
					10					
					11					
					12					
					13					
					14					
			Top 10": Gray m-f SAND, so. silt, odor [FILL]		15	S-7	SS	16	3, 2, 2, 2	4
	-3.8		Bottom 6": Black Peat (Pt)		16					
		Class 6	Black Pt [Pt]		17	S-8	SS	24	WOH, WOH, WOH, WOH	
					18					
					19					
					20					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/8/2014
9:30 AM - Drillers arrived on site w/ second rig
10:40 AM - Set up and began drilling, problems with gears, mechanics called
Took sample S-1 @ 0'
Took sample S-2 @ 2'

11:47 AM - Gear problem fixed
Casing hammered to 4'

12:00PM Added bentonite
Drill to 4'
Took sample S-3 @ 4'
Took sample S-4 @ 6'

Drill to 8'
12:30PM Took sample S-5 @ 8'
Pushing casing to 8'
Hammered casing to 10'

12:53PM Rig down, pump issues
12:57PM Took sample S-6 @ 10'
Hammered casing to 15'

Drill to 15'
Gray wash
Took sample S-7 @ 15'
Took sample S-8 @ 17'

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Log of Boring **B-03** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.2 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Gray/Brown clayey SILT [ML]		20	S-9	SS	48	2 3 3 2	6	Drill to 20' Took sample S-9 @ 20'
	-10.3				21						
		Class 3b	Brown m-f SAND, tr. c- sand, tr. f- gravel, tr. silt [SW]		22						
					23						
					24						
					25	S-10	SS	14	14 9 7 15	16	Drill to 25' Hard drilling @ 23' Possible boulder as per building Took sample S-10 @ 25'
					26						
	-15.3				27						
		Class 3a	Brown m-f SAND, c- gravel in tip		28						
					29						
					30	S-11	SS	3	60/5"	60/5"	Drill to 30' Took sample S-11 @ 30'
	-20.3				31						
		Class 3b	Brown m-f silty SAND, tr. gravel (moist)[SM]		32						
					33						
					34						
					35	S-12	SS	6	16 13 16 21	29	4/9/2014 Drill to 35' Boulder @ 32' Brown wash Change roller bit @ ~34' Took sample S-12 @ 35'
	-25.3				36						
					37						
					38						
					39						
		Class 3a	Brown/Red/Gray m-f SAND, tr. silt, tr. gravel (moist)[SP]		40	S-13	SS	18	17 29 35 34	64	Drill to 40' Brown wash Rig chatter Took sample S-13 @ 40'
					41						
					42						
					43						
					44						
					45						

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Log of Boring **B-03** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.2 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Brown/Red/Gray m-f SAND, tr. silt, tr. gravel (moist)[SP]		45	S-14	SS	18	20 22 27 30	49	Drill to 45' Gray wash Took sample S-14 @ 45'
		Class 3a			46						
					47						
					48						
					49						
			Red m-f SAND, tr. silt, tr. mica (moist)[SP]		50	S-15	SS	18	31 36 39 37	75	Drill to 50' Brown wash Took sample S-15 @ 50'
	-40.3				51						
					52						
					53						
					54						
		Class 4b	Gray silty CLAY, tr. sand, tr. mica (moist)[CL]		55	S-16	SS	16	15 12 15 15	27	Drill to 55' Brown wash Took sample S-16 @ 55'
					56						
	-45.3				57						
					58						
					59						
			Gray silty CLAY, tr. m-f sand (moist)[CL]		60	S-17	SS	20	7 12 18 21	30	Drill to 60' Brown wash Took sample S-17 @ 60'
		Class 4a			61						
					62						
					63						
					64						
					65	S-18	SS	21	10 31 39 28	70	Drill to 65' Brown wash Took sample S-18 @ 65'
			Brown silty CLAY, tr. f- sand, tr. mica (moist)[CL]		66						
	-55.3				67						
					68						
					69						
		Class 3a			70						

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Log of Boring **B-03** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.2 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown m-f SAND, tr. silt, tr. gravel, tr. mica (moist)[SP]		70				33		Drill to 70' Brown wash Took sample S-19 @ 70'
					71	S-19	SS	16	37	66	
					72				29		
	-60.3				73				35		
					74						
		Class 4a			75				15		Drill to 75' Brown wash Took sample S-20 @ 75'
			Gray silty CLAY (moist)[CL]		76	S-20	SS	16	24	62	
	-63.8				77				38		
			End of Boring @ 77'		78				34		Borehole is backfilled with soil cuttings and patched with asphalt
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-04** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13.3 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/21/14 — Date Finished: 4/22/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 18 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 14	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Mike Kelly
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+13.3				0						4/21/14 12:30PM: Drillers set up and start drilling through asphalt Drill to 1' Take S-1 at 1'
			Brown/Black/Red c-f SAND, c-f gravel, so. brick, tr. silt, moist [FILL]	PUSH	1	S-1	SS	13	7 9 9 10	18	
					2						
			Black/Gray m-f SAND, c-f gravel, so. silt, moist [FILL]		3	S-2	SS	8	8 13 17 12	30	Take S-2 at 3' Drill to 4' Black Wash 12:50PM: Hose of the pump head breaks 2:05PM: Fix it and continue drilling Install Casing upto 4'
	+8.3				4						Drill to 5' Dark Gray Wash Take S-3 at 5' Take S-4 at 7'
		Class 7	Gray f-SAND, tr. silt, tr. gravel, moist [FILL]	PUSH	5	S-3	SS	12	3 3 3 1	6	
			Gray m-f SAND, tr. silt, tr. gravel, moist [FILL]		6	S-4	SS	12	7 10 17 15	27	
					7						
			Gray m-f SAND, tr. silt, tr. gravel, moist [FILL]		8	S-5	SS	10	6 2 1 1	3	Drill to 9' Black Wash Take S-5 at 9'
				PUSH	9						
					10						
	+0.3			HAMMER	11						
					12						
					13						
					14						
			Black PEAT [Pt]		15	S-6	SS	16	3 2 2 2	4	Drill to 15' Gray Wash Take S-6 at 15'
		Class 6			16						
					17						
					18						
					19						
					20						

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Log of Boring **B-04** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.3 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 6	Top 12": Black PEAT [Pt]
	-7.7		
		Class 3b	Bottom 8" Brown m-f SAND, tr. silt, moist [SP]
			Reddish Brown m-f SAND, tr. silt, tr. gravel, tr. mica, moist [SP]
	-15.2		
		Class 3a	Reddish Brown m-f SAND, tr. silt, tr. gravel, moist [SP]
			No Recovery
			Reddish Brown m-f SAND, tr. silt, tr. mica, moist [SP]
	-30.2		
		Class 3b	

Coring (min)

Depth Scale: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-7	SS	20	2 5 5 9	10
S-8	SS	20	15 15 14 11	29
S-9	SS	13	21 17 20 34	37
S-10	SS	0	19 20 23 25	43
S-11	SS	13	13 19 15 17	34

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Brown Wash
Rig Chatter
Take S-7 at 20'

2:30PM: Stop Drilling

4/22/14
7:00AM: Drillers Arrive
7:35AM: Collect S-7
Install Casing upto 9'

Drill to 25'
Brown Wash
Rig Chatter at ~24'
Take S-8 at 25'
Install Casing upto 14'

Drill to 30'
Brown Wash
Rig Chatter
Take S-9 at 30'

Drill to 35'
Brown Wash
Slight Rig Chatter
Take S-10 at 35'

Drill to 40'
Brown Wash
Take S-11 at 40'

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Log of Boring **B-04** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.3 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 3b	Reddish Brown m-f SAND, tr. silt, tr. mica, moist [SP]
	-35.2		
		Class 3a	Reddish Brown m-f SAND, tr. silt, tr. mica, moist [SP]
	-40.2		
		Class 3b	Top 8" Reddish Brown m-f SAND, tr. silt, tr. mica, moist [SP] Bottom 8" Gray f-SAND, so. silt, tr. clay, moist [SP-SM]
	-45.2		
		Class 4a	Gray CLAY, tr. silt, tr. mica, moist [CL]
	-47.7		
		Class 3a	Bottom 12" Brown m-f SAND, tr. silt, tr. mica, moist [SP] Reddish brown m-f SAND, tr. silt, tr. clay, tr. gravel, moist [SP] Gray f-SAND, so. silt, so. clay, tr. mica, moist [SC]

Coring (min)

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-12	SS	14	10 13 12 14	25
S-13	SS	20	18 35 32 45	67
S-14	SS	16	14 10 12 14	22
S-15	SS	24	6 13 22 25	35
S-16	SS		20 14 16 11	30

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown Wash
Take S-12 at 45'

Drill to 50'
Brown Wash
Take S-13 at 50'

9:20AM to 9:45AM: Take a break

Drill to 55'
Brown Wash
Take S-14 at 55'

Drill to 60'
Brown Wash
Take S-15 at 60'

Drill to 65'
Brown Wash
Take S-16 at 65'

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Log of Boring **B-04** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.3 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Reddish brown m-f SAND, tr. silt, tr. mica, tr. gravel, moist [SP]		70	S-17	SS	18	18 31 33 36	64	Drill to 70' Brown Wash Take S-17 at 70'
					71						
					72						
					73						
					74						
					75	S-18	SS	14	33 42 64 50/4"	106	Drill to 75' Brown Wash Take S-18 at 75'
			Reddish brown m-f SAND, tr. silt, tr. mica, tr. gravel, moist [SP]		76						
	-63.7				77						End of borehole at 77'
			End of borehole at 77' 4/22/14 at 11:30AM		78						Backfilled with soil cuttings upon completion
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-05** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 16.2 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/17/14 — Date Finished: 4/18/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 23 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 34	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar/Mike Kelly
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+16.2		Ashphalt		0						
	+15.7	Class 7	Black c-f SAND, so. c-f gravel, tr. silt, tr. shell [FILL]	PUSH	1	S-1	SS	10	5 3 5 2	8	4/17/14 11:15AM: Set up rig at the borehole location 11:25AM: Drill through asphalt 11:30AM: Take S-1 at 0.5' Take S-2 at 2.5'
			Black c-f SAND, so. c-f gravel, so. silt, tr. shell [FILL]		2						
					3	S-2	SS	10	3 5 7 5	12	
					4						
			Black c-f SAND, so. c-f gravel, tr. silt, tr. shell [FILL]		5	S-3	SS	6	3 2 2 1	4	Drill to 5' Brown Wash Take S-3 at 5'
					6						
			Black c-f SAND, so. c-f gravel, tr. silt, tr. brick, tr. shell [FILL]		7	S-4	SS	12	2 4 4 6	8	Take S-4 at 7' Install casing upto 9'
	+7.2				8						
		Class 3b	Brown m-f SAND. so. silt, tr. gravel, moist [SP]	DRILL	9	S-5	SS	16	17 11 6 11	17	Drill to 9' Take S-5 at 9'
					10						
					11						
					12						
					13						
					14						
			Top 5": Brown m-f SAND, so. silt, so. gravel, moist [SW]		15	S-6	SS	12	6 5 7 8	12	Drill to 15' Brown Wash Rig chatter Take S-6 at 15' Install casing upto 14'
					16						
					17						
					18						
					19						
					20						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-05** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 16.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Top 14": Brown Silty SAND, moist [SM] Bottom 2": Black SAND, tr. silt, moist [SP]		20	S-7	SS	16	3 10 11 13	21	Drill to 20' Brown Wash Take S-7 at 20'
				DRILL	24						
		Class 3b	Brown m-f SAND, tr. silt, tr. gravel, moist [SP]		25	S-8	SS	16	11 13 12 13	25	Drill to 25' Brown Wash Take S-8 at 25'
			Brown/Red SAND, tr. silt, tr. gravel, tr. mica, tr. clay, moist [SP]		30	S-9	SS	16	13 8 15 16	23	Drill to 30' Brown Wash Rig chatter Take S-9 at 30' Install casing upto 14'
	-17.3				34						
		Class 3a	Brown m-f SAND, tr. silt, moist [SP]		35	S-10	SS	11	14 20 27 28	47	Drill to 35' Brown Wash Slight Rig chatter Take S-10 at 35' 3:00PM: Stopped drilling 4/18/14 7:00AM Drillers arrive
			Top 9": Brown m-f SAND, so. silt, tr. clay, moist [SP] Bottom 3": Brown m-f SAND, so. clay, tr. silt, moist [SP]		40	S-11	SS	12	14 17 15 21	32	7:15AM: Drill to 40' Brown Wash Take S-11 at 40'
	-27.3				44						
		Class 4b			45						

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Log of Boring **B-05** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 16.2 (NAVD 88)

Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Class 4b	Gray CLAY, tr. silt, moist [CL]	45	S-12	SS	24	7 8 9 13	17	Drill to 45' Brown Wash Difficulty advancing spoon beyond 20' Install casing upto 34' Take S-12 at 45'
			46						
			47						
			48						
			49						
			50	S-13	SS	24	6 11 12 15	23	Drill to 50' Brown Wash Take S-13 at 50'
		Gray CLAY, tr. silt, moist [CL]	51						
-37.3			52						
	Class 5b	Gray f. sandy SILT, tr. clay, tr. mica, moist [ML]	53						
			54						
			55	S-14	SS	22	7 10 10 16	20	Drill to 55' Brown Wash Take S-14 at 55'
-42.3			56						
			57						
			58						
			59						
			60	S-15	SS	22	8 9 12 15	21	Drill to 60' Brown Wash Take S-15 at 60'
	Class 4b	Gray CLAY, tr. silt, tr. mica, moist [CL]	61						
			62						
			63						
			64						
			65	S-16	SS	24	9 8 12 9	20	Drill to 65' Brown Wash Take S-16 at 65'
		Gray CLAY, tr. silt, moist [CL]	66						
			67						
			68						
			69						
-52.8	Class 3a		70						

N-Value (Blows/ft) scale: 10 20 30 40

Coring (min)

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Log of Boring **B-05** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 16.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Brown m-f SAND, tr. silt, tr. gravel, tr. mica, moist [SW]		70	S-17	SS	17	19 21 20 28	41	Drill to 70' Brown Wash Take S-17 at 70'
					71						
					72						
					73						
					74						
					75	S-18	SS	18	25 27 31 37	58	Drill to 75' Brown Wash Take S-18 at 75'
			Brown m-f SAND, tr. silt, so. c-f gravel, moist [SW]		76						
					77						
					78						
					79						
					80	S-19	SS	18	28 36 50 70	86	Drill to 80' Brown Wash Take S-19 at 80'
			Brown m-f SAND, tr. silt, tr. m-f gravel, moist [SW]		81						
		Class 3a			82						
					83						
					84						
					85	S-20	SS	12	39 34 29 29	63	Drill to 85' Gray Wash Take S-20 at 85'
			Brown m-f SAND, tr. silt, tr. m-f gravel, moist [SW]		86						
					87						
					88						
					89						
					90	S-21	SS	10	22 24 30 47	54	Drill to 90' Brown Wash Rig chatter Take S-21 at 90'
			Gray f-SAND, tr. silt, tr. clay, moist [SP]		91						
					92						
					93						
					94						
					95						

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Log of Boring **B-05** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 16.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
					95				8		Drill to 95'
					96	S-22	SS	19	22	57	Brown Wash
									35		Rig chatter
					97				40		Take S-22 at 95'
					98						
		Class 3a			99						
					100				14		Drill to 100'
			Gray f-SAND, tr. silt, tr. clay, tr. black gravel, moist [SP]		101	S-23	SS	23	22	52	Brown Wash
	-85.8								30		Rig chatter
					102				37		Take S-23 at 100'
			End of Borehole at 102'								End of Borehole at 102'
			4/18/14 at 12:20PM		103						Backfilled with soil cuttings and patched with asphalt upon completion
					104						
					105						
					106						
					107						
					108						
					109						
					110						
					111						
					112						
					113						
					114						
					115						
					116						
					117						
					118						
					119						
					120						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-06** Sheet 1 of 1

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 5/2/14 — Date Finished: 5/2/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 4.5 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 2 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 0	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+12.7			0					
	+12.2		Asphalt						
		Class 7	Gray/black m-f SAND, so. gravel, so. brick, tr. clay, tr. silt, moist [FILL]	1	S-1	SS	13	22 17 11 11	28
				2					
			Gray/Red m-f SAND, so. brick, so c-f gravel, moist [FILL]	3	S-2	SS	4	11 100/5"	100/5"
	+8.2			4					
			End of borehole at 4.5' 5/2/14 at 1:00 pm	5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

5/2/14
11:32 am: Drill through asphalt
Took S-1 at 0.5'

Took S-2 at 2.5'

Drill to 5'
Rig chatter
Dark gray wash
No return around 3.5'
Drill bit refusal
Move hole

End of borehole at 4.5'

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Log of Boring **B-06A** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 5/2/14 — Date Finished: 5/5/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 18 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 24	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+12.7				0						
					1						
					2						
					3						
					4						
				DROP	5	S-1	SS	7	7 5 4 4	9	5/2/14 1:10 pm: Drill to 5' Black to gray wash at ~2' Rig chatter Gray to medium brown wash at ~3' No return from 4' to 5' Took S-1 at 5' Took S-2 at 7'
			Black c-f SAND, so. gravel, tr. silt, tr. clay, tr. brick, moist (odor) [FILL]		6						
					7	S-2	SS	2	7 5 7 9	12	
			Brown/red GRAVEL, BRICK, tr. m-f sand, tr. silt, moist [FILL]		8						
		Class 7			9	S-3	SS	3	4 11 12 13	23	Drill to 9' No return Took S-3 at 9' Install casing upto 14'
			Gray m-f SAND, tr. silt, tr. gravel, tr. brick, moist [FILL]		10						
				PUSH	11						
					12						
					13						
					14						
					15	S-4	SS	19	1 1 2 4	3	Drill to 15' Reddish brown to light brown wash at ~12' Medium brown wash ~15' Took S-4 at 15' Install casing upto 19'
			Gray/brown m-f SAND, tr. silt, tr. clay, tr. f-gravel, tr. twigs, moist [FILL]	PUSH	16						
					17						
	-5.8				18						
		Class 6			19						
					20						

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Log of Boring **B-06A** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 6	Black PEAT, moist [Pt]
	-13.3		No Recovery
		Class 3b	Brown f-SAND, so. clay, tr. silt, tr. mica, moist [SP]
	-16.3		Brown m-f SAND, tr. clay, tr. gravel, tr. silt, moist [SP]
			No Recovery
		Class 3a	Brown m-f SAND, tr. silt, tr. gravel, moist [SP]
			Red m-f SAND, c-m GRAVEL, tr. clay, tr. silt, moist [SP]

Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
PUSH	20	S-5	SS	11	2, 3, 4, 5	7
	25	S-6	SS	0	10, 6, 8, 7	14
	27	S-7	SS	7	8, 7, 8, 5	15
	29	S-8	SS	10	5, 17, 40, 29	57
	35	S-9	SS	0	8, 12, 18, 24	30
	37	S-10	SS	2	52, 100/5"	100/5"
	40	S-11	SS	2	11, 21, 23, 41	44
	45					

N-Value (Blows/ft) scale: 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Light brown wash
Took S-5 at 20'
2:40 pm: Stop working

5/5/14
8:15 am: Drillers arrive
8:40 am: Install casing upto 24'

8:43 am: Drill to 25'
Dark grayish brown wash
8:55 am: Took S-6 at 25'

Drill to 27'
Dark brown wash
Took S-7 at 27'

Took S-8 at 29'

Drill to 35'
Grayish brown wash
Took S-9 at 35'

Drill to 37'
Brown wash
Took S-10 at 37'

Drill to 40'
Brown wash
30min break
10:40 am: Took S-11 at 40'

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Log of Boring **B-06A** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Gray m-f SAND, tr. clay, so. gravel, moist [SP]	45	S-12	SS	10	17 23 38 40	61	Drill to 45' Brown wash Took S-12 at 45'
				46						
				47						
				48						
				49						
			Top 3": Gray m-f SAND, tr. clay, moist [SP]	50	S-13	SS	12	6 8 23 27	31	Drill to 50' Gray wash Took S-13 at 50'
	-38.6			51						
	-38.8	Class 4b	Mid 4" Red CLAY, tr. f-sand [CL]							
		Class 3a	Bottom 5": Brown m-f SAND, tr. silt, tr. c-f gravel, moist (slight odor) [SP]	52						
	-40.8			53						
		Class 3b		54						
				55	S-14	SS	4	7 10 16 20	26	Drill to 55' Gray wash Took S-14 at 55'
	-44.2		Top 2": Brown m-f SAND, tr. silt, tr. clay, tr. gravel, moist [SP]	56						
		Class 4a	Bottom 2": Red CLAY, tr. sand [CL]	57						
				58						
				59						
			Top 6": Gray CLAY, tr. sand, mica [CL]	60	S-15	SS	14	12 27 30 25	57	Drill to 60' Brown wash Took S-15 at 60'
	-48.6		Bottom 8": Reddish brown SAND, tr. silt, tr. clay, moist [SP]	61						
		Class 3a		62						
	-50.8			63						
		Class 4a		64						
			Top 4": Gray/Red CLAY [CL]	65	S-16	SS	12	10 22 25 27	47	Drill to 65' Brown wash Took S-16 at 65'
	-53.6		Bottom 8": Brown f-SAND, tr. silt, tr. clay, tr. mica, moist [SP]	66						
		Class 3a		67						
				68						
				69						
				70						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-06A** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Reddish brown m-f SAND, tr. silt, tr. gravel, moist [SP]		70	S-17	SS	12	19 26 28 24	54	Drill to 70' Brown wash Took S-17 at 70'
	-60.8				71						
		Class 4a	Gray CLAY, tr. silt [CL]		72						
					73						
					74						
					75	S-18	SS	12	9 17 27 32	44	Drill to 75' Brown wash Toook S-18 at 75'
	-64.3				76						
			End of borehole at 77' 5/5/14 at 12:45 pm		77						End of borehole at 77' Backfilled with soil cuttings upon completion.
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-07** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13.5 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 5/8/14 — Date Finished: 5/9/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 20 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+13.5				0						5/8/14
	+13.0		Asphalt		1						12:55 pm: Set up at borehole location
			Black/gray c-f SAND, so. gravel, tr. silt (slight odor) [FILL]		2	S-1	SS	18	17 29 42 20	71	1:04 pm: Drill through asphalt 1:15 pm: Took S-1 at 1'
			Black m-f SAND, tr. gravel, tr. silt (odor), moist [FILL]		3	S-2	SS	8	10 20 20 28	40	Took S-2 at 3'
			Gravel in the nose of the spoon (odor)	PUSH	4	S-3	SS	0	1 2 3 23	5	Drill to 5' Brown wash Took S-3 at 5'
			Black m-f SAND, m-f gravel, tr. twigs, moist (odor) [FILL]		5	S-4	SS	4	10 17 14 20	31	Took S-4 at 7' Install casing upto 9'
		Class 7	Brown/black m-f SAND, tr. gravel, tr. silt, moist (odor) [FILL]		6	S-5	SS	10	49 24 4 8	28	Drill to 10' Black to gray wash at ~8' Black wash at ~9' Took S-5 at 10'
			Yellow/pink/brown/black/gray m-f SAND, tr. gravel, tr. silt, moist		7	S-6	SS	20	4 10 9 12	19	Drill to 15' Black to gray wash at ~15' Took S-6 at 15'
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15						
					16						
					17						
					18						
					19						
					20						

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Log of Boring **B-07** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
			No Recovery
		Class 7	Brown m-f SAND, tr. silt, moist [SP]
	-11.0		
		Class 4b	Light brown sandy CLAY, moist [CL]
	-15.0		
		Class 3b	Brown/black c-f SAND, tr. clay, tr. silt, tr. gravel. tr. mica, moist [SP]
	-22.9		Top 4": Brown m-f SAND, tr. silt, tr. clay, tr. mica, moist [SP]
			Bottom 6": Brown m-f SAND, tr. silt, moist [SP]
		Class 3a	No Recovery
	-29.7		Top: Brown m-f SAND, tr. silt [SP]
		Class 4	Bottom 20": Gray CLAY, tr. sand, tr. mica, moist [CL]

Coring (min)

Depth Scale: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-7	SS	0	4 5 6 8	11
S-8	SS	12	7 10 14 12	24
S-9	SS	12	2 6 9 9	15
S-10	SS	12	9 13 16 23	29
S-11	SS	10	24 22 15 19	37
S-12	SS	0	19 34 19 20	53
S-13	SS	20	24 36 36 50/5"	72

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Dark gray wash
Took S-7 at 20'

Drill to 22'
Gray to dark brown wash at ~23'
Took S-8 at 22'

Drill to 25'
Dark brown wash
Took S-9 at 25'

Drill to 30'
Grayish brown wash
3:00 pm: Drillers leave

5/9/14
7:50 am: Drillers arrive
8:00 am: Start working
8:20 am: Took S-10 at 30'

Drill to 35'
Brown wash
Took S-11 at 35'

Drill to 40'
Dark brown wash
Took S-12 at 40'

Drill to 43'
Brown wash
Took S-13 at 43'

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Log of Boring **B-07** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.5 (NAVD 88)

Elev. (ft)	Building Code	Sample Description
	Class 4	Gray CLAY, tr. f-sand, tr. mica, moist [CL]
-35.0		
	Class 3a	Brown m-f SAND, tr. clay, tr. silt, wet [SP]
-40.0		
	Class 3b	Brown m-f SAND, tr. clay, tr. f-gravel, tr. mica, moist [SP]
		Top 4": Brown m-f SAND, tr. silt, tr. gravel, moist [SP] Bottom 8": Gray f-SAND, so. clay, tr. mica [SC]
-50.0		
	Class 3a	Brown m-f SAND, tr. silt, tr. gravel, tr. mica, moist [SP]

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-14	SS	14	3, 7, 9, 17	16
S-15	SS	12	8, 16, 16, 42	32
S-16	SS	11	9, 14, 15, 17	29
S-17	SS	12	9, 11, 16, 24	27
S-18	SS	14	13, 25, 26, 36	51

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Took S-14 at 45'

Drill to 50'
Brown wash
Took S-15 at 50'

Drill to 55'
Brown wash
Took S-16 at 55'

Drill to 60'
Brown wash
Took S-17 at 60'

Drill to 65'
Reddish brown wash
Took S-18 at 65'

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Log of Boring **B-07** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown c-f SAND, so. c-f gravel, tr. silt, moist [SP]		70	S-19	SS	14	28 26 28 23	54	Drill to 70' Dark brown wash Took S-19 at 70'
	-60.0				71						
		Class 4a	Gray CLAY, tr. sand, tr. mica [CL]		72						
					73						
					74						
					75	S-20	SS	12	10 14 18 20	32	Drill to 75' Dark brown wash Took S-20 at 75'
	-63.5				76						
			End of borehole at 77' 5/9/14 at 12:00 pm		77						End of borehole at 77' Backfill with soil cuttings upon completion. 1:00 pm: Drillers leave
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
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Log of Boring **B-08** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 5/5/14 — Date Finished: 5/6/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 19 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 19	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+13.7									
	+13.2		Asphalt		0					
			Brown/black m-f SAND, tr. silt, so. glass fragments [FILL]		1	S-1	SS	10	4 4 2	6
			No Recovery		2	S-2	SS	0	7 10 7	17
			Black/brown m-f SAND, so c-f gravel, tr. clay, tr. silt, moist (slight odor) [FILL]	DROP	3 4 5	S-3	SS	12	6 5 8	13
		Class 7	Black/brown m-f SAND, so. gravel, so. glass fragments, tr. silt, moist (slight odor) [FILL]		6 7 8	S-4	SS	24	12 7 9	16
			Black f-SAND, tr, clay, moist (slight odor) [FILL]	PUSH	9 10 11	S-5	SS	16	1 1 1	2
	-0.8				12 13 14					
			No Recovery		15 16	S-6	SS	0	3 6 10	16
		Class 6	Brown f-SAND, tr. clay, tr. mica, tr. silt, moist [SC]		17 18	S-7	SS	24	3 2 4	6
	-5.8	Class			19 20					

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

5/5/14
1:20 pm: Drill through asphalt
REC=10"/" =%
RQD=8"/" =%
Took S-1 at 1'

REC=0"/" =%
RQD=5"/" =%
Took S-2 ar 3'

REC=12"/" =%
RQD=13"/" =%
Start drilling to 5'
1:40 pm: Problem with swivel head
2:35 pm: Change rigs
3:00 pm: Set up new rig and stop for the day

5/6/14
7:30 am: Drillers arrive
8:05 am: Drill to 5'
Brown wash
Took S-3 at 5'
REC=24"/" =%
RQD=6"/" =%
Took S-4 at 7'
REC=16"/" =%
RQD=1"/" =%
Drill to 10'
Black wash
Took S-5 at 10'
Install casing upto 14'

REC=0"/" =%
RQD=1"/" =%
Drill to 15'
Dark gray wash
Took S-6 at 15'

REC=24"/" =%
RQD=2"/" =%
Drill to 17'
Gray wash
Took S-7 at 17'
Install casing upto 19'

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Log of Boring **B-08** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.7 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		3b	Greenish gray f-SAND, so. clay, tr. silt, moist [SC]		20	S-8	SS	16	5 6 22	28	REC=16"/" =% RQD=3"/" =% Drill to 20' Gray wash Took S-8 at 20'
					21						
					22						
					23						
					24						
					25	S-9	SS	8	7 7 10	17	REC=8"/" =% RQD=5"/" =% Drill to 25' Brown wash Took S-9 at 25'
			Brown m-f SAND, tr. clay, tr. gravel, tr. silt, moist [SP]		26						
		Class 3b			27						
					28						
					29						
					30	S-10	SS	14	12 14 18	32	REC=14"/" =% RQD=12"/" =% Drill to 30' Dark gray to brown wash Took S-10 at 30' 30 min break
			Brown m-f SAND, tr. silt, tr. mica, moist [SP]		31						
	-19.8				32						
					33						
					34						
					35	S-11	SS	16	18 20 30	50	REC=16"/" =% RQD=9"/" =% Drill to 35' Gray to brown wash ~35' Slight chatter at ~34' Took S-11 at 35'
			Top 6": Gray m-f SAND, so. c-f gravel, tr. clay, moist Mid 4": Red f-SAND, tr. clay, tr. mica, tr. silt Bottom 6": Brown m-f SAND, tr. silt, tr. mica, moist [SP]		36						
					37						
					38						
		Class 3a			39						
					40	S-12	SS	16	17 15 20	35	REC=16"/" =% RQD=8"/" =% Drill to 40' Brown wash Took aS-12 at 40'
			Reddish brown m-f SAND, tr. silt, tr. mica, moist [SP]		41						
					42						
					43						
					44						
					45						

N-Value (Blows/ft) axis: 10 20 30 40

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Log of Boring **B-08** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.7 (NAVD 88)

Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Reddish brown f-SAND, tr. silt, tr. mica, moist [SP]	45	S-13	SS	16	14 20 24	44	REC=16"/" =% RQD=9"/" =% Drill to 45' Brown wash Took S-13 at 45'
	Class 3a		46						
			47						
			48						
			49						
		Reddish brown m-f SAND, tr. silt, tr. mica, moist [SP]	50	S-14	SS	18	24 25 33	58	REC=18"/" =% RQD=17"/" =% Drill to 50' Brown wash Took S-14 at 50'
			51						
-39.8			52						
			53						
			54						
		Top 8": Gray f-clayey SAND, tr. m-sand, moist [SC] Top 8"-12": Brown m-f SAND, tr. clay, tr. silt, tr. mica, moist [SP] 12"-18": Gray f-clayey SAND, tr. mica [SC] Bottom 6": Brown f-SAND, so. clay, tr. silt, moist [SP]	55	S-15	SS	24	9 11 17	28	REC=24"/" =% RQD=4"/" =% Drill to 55' Brown wash Took S-15 at 55'
	Class 3b		56						
			57						
			58						
			59						
		Gray f-SAND, tr. clay, tr. silt, tr. mica [SP]	60	S-16	SS	23	13 16 20	36	REC=23"/" =% RQD=7"/" =% Drill to 60' Brown wash Took S-16 at 60'
			61						
-49.8			62						
			63						
			64						
		Brown m-f SAND, tr. silt, tr. gravel, tr. mica, moist [SP]	65	S-17	SS	16	23 25 25	50	REC=16"/" =% RQD=22"/" =% Drill to 65' Brown to gray wash Took S-17 at 65'
	Class 3a		66						
			67						
			68						
-54.8			69						
	Class 4a		70						

Coring (min)

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-08** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.7 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4a	Top 6": Gray CLAY, tr. sand [CL]		70	S-18	SS	14	13 19 19	38	REC=14"/" =% RQD=10"/" =% Drill to 70' Gray wash Took S-18 at 70'
	-57.7				71						
			Bottom 8": Gray/black m-f SAND, tr. clay, moist [SP]		72						
					73						
		Class 3a			74						
					75	S-19	SS	16	13 35 50	85	REC=16"/" =% RQD=7"/" =% Drill to 75' Gray wash Took S-19 at 75'
			Top 13": Gray f-clayey SAND, tr. mica [SC] Bottom 3": Brown m-f SAND, tr. silt, tr. mica [SP]		76						
	-63.3				77						End of borehole at 77'
			End of borehole at 77' 5/6/14 at 1:30 pm		78						Backfilled with soil cuttings upon completion.
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-09** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 17.6 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/18/14 — Date Finished: 4/21/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 19 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 14	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Mike Kelly
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+17.6				0					10 20 30 40	4818/14 1:15PM: Take S-1 at 0'
			Black c-f SAND, so. gravel, tr. silt, tr. brick, tr. shell, moist [FILL]		1	S-1	SS	3	30 10 9 6	19	
				PUSH	2						Take S-2 at 2'
			Black/Light Red c-f SAND, tr. silt, tr. brick, so. gravel, moist [FILL]		3	S-2	SS	10	5 6 5 12	11	
		Class 7			4						Take S-3 at 4'
			Black/Brown/Gray m-f SAND, so. shell, tr. silt, tr. gravel, moist [FILL]		5	S-3	SS	8	8 7 5 9	12	
					6						Take S-4 at 6'
			Gray/ White c-f SAND, white shell, so. gravel, tr. silt [FILL]		7	S-4	SS	8	11 7 18 38	25	Install casing upto 4'
	+9.6				8						Drill to 8' Take S-5 at 8'
			Black m-f SAND, c-f gravel, tr. silt, moist [SP]	DRILL	9	S-5	SS	14	31 26 19 16	45	
		Class 3a	No Recovery		10	S-6	SS	0	100/4"	100/4"	Drill to 10' Take S-6 at 10'
					11						
					12						
					13						
	+4.1				14						
			Black f-Silty SAND, Wet [SM]		15	S-7	SS	19	1 1 1 3	2	Drill to 15' Brown Wash Take S-7 at 15'
		Class 3b			16						2:10PM Stop Drilling
					17						4/21/14 7:15AM: Drillers arrive Rig break down 7:50AM: Rig fixed
					18						
					19						Install casing upto 14'
					20						

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Log of Boring **B-09** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 3b	Gray f-SAND, tr. silt, moist [SP]
	-5.9		
		Class 3a	Black m-f SAND, tr. silt, tr. gravel, moist [SP]
	-10.9		
		Class 3b	Brown m-f SAND, so. silt, tr. gravel, moist [SP]
	-15.9		
		Class 4a	Gray Silty CLAY, moist [CL]
	-20.9		
		Class 3a	Reddish Brown m-f SAND, tr. silt, tr. mica, moist [SP]

Coring (min)

Depth Scale: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-8	SS	18	3 3 3 4	6
S-9	SS	11	17 25 11 21	36
S-10	SS	14	8 12 15 13	27
S-11	SS	12	12 16 20 40	36
S-12	SS	12	11 15 15 16	30

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Blackish Gray Wash
Take S-8 at 20'

Drill to 25'
Blackish Gray Wash
Take S-9 at 25'

Drill to 30'
Dark Brown Wash
Take S-10 at 30'

Drill to 35'
Brown Wash
Take S-11 at 35'

Drill to 40'
Brown Wash
Take S-12 at 40'

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Log of Boring **B-09** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 3a	Reddish Brown f-SAND, so. silt, tr. mica, moist [SP-SM]
			Reddish Brown f-SAND, so. silt, tr. clay, tr. mica, moist [SP]
	-35.9		
		Class 3b	Gray f-SAND, tr. silt, tr. mica, moist [SP]
	-40.9		
		Class 5b	Gray clayey SILT, moist [ML]
	-45.9		
		Class 3a	Brown c-f SAND, tr. m-f gravel, tr. silt, moist [SP]

Coring (min)

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-13	SS	12	9 17 22 23	39
S-14	SS	11	10 20 16 14	36
S-15	SS	18	3 8 14 12	22
S-16	SS	20	6 12 11 18	23
S-17	SS	12	17 22 27 26	49

N-Value (Blows/ft) 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Gray Wash
Take S-13 at 45'

Drill to 50'
Gray Wash
Take S-14 at 50'

Drill to 55'
Reddish Brown Wash
Take S-15 at 55'

Drill to 60'
Brown Wash
Take S-16 at 60'

Drill to 65'
Brown Wash
Take S-17 at 65'

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Log of Boring **B-09** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
					70						Drill to 70'
			Brown m-f SAND, so. silt, tr. black silt, tr. gravel, tr. mica [SP-SM]		71	S-18	SS	16	17 22 33 27	55	Brown Wash Take S-18 at 70'
		Class 3a			72						
					73						
					74						
					75						Drill to 75'
			Brown c-f SAND, so. c-f gravel, tr. silt, moist [SW]		76	S-19	SS	20	27 20 25 23	45	Brown Wash Take S-19 at 75'
	-59.4				77						End of borehole at 77'
			End of borehole at 77' 4/21/14 at 11:15AM		78						Backfilled with soil cuttings upon completion
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-10** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 11.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/9/14 — Date Finished: 4/11/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 24 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First — Completion — 24 HR.
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Casing blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+11.7		Brown m-f SAND, so. gravel, tr. brick (odor) [FILL]		0	S-1	SS	8	10, 14, 9, 6	23	4/9/2014 2:40 PM - Took sample S-1 @ 0'
				119	1						
			Gray c-f SAND, so. gravel (moist) (odor) [FILL]		2	S-2	SS	8	3, 4, 9, 9	13	Took sample S-2 @ 2' 2:50PM Stopped working
					3						
			Gray c-f SAND, so. gravel (moist) (odor) [FILL]	250	4	S-3	SS	12	8, 2, 8, 18	10	4/10/2014 7:25AM Drillers arrived on site 8:40AM Began drilling Install casing up to 4' Drill to 4' Brown wash Slight rig chatter Took sample S-3 @ 4' Took sample S-4 @ 6'
					5						
			Gray c-f SAND, so. gravel (moist) (odor) [FILL]	HAMMER	6	S-4	SS	3	62, 17, 16, 14	33	
				130	7						
			Black m-f SAND, tr. gravel (moist) [FILL]		8	S-5	SS	12	42, 37, 39, 24	76	Took sample S-5 @ 8' Installed casing up to 9'
		Class 7			9						
			Top 8": Black m-f SAND, clayey sand Bottom 4": Brown/Black/Red clayey f. SAND (moist) [FILL]		10	S-6	SS	12	2, 2, 14, 7	16	Drill to 10' Add bentonite Brown wash 20 min break to eat 10:15AM continue drilling to 10' Took sample S-6 @ 10'
					11						
					12						
					13						
					14						
					15	S-7	SS	14	1, 1, 1, 1	2	Drill to 15' Blackish Brown wash Took sample S-7 @ 15'
			Black/Brown f- clayey SAND (moist) [FILL]		16						
					17						
		Class 6			18						
	-8.3				19						
					20						

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Log of Boring **B-10** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 11.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Black Peat (moist) [Pt]		20–21	S-8	SS	24	7 8 9 6	17	Drill to 20' Gray wash Took sample S-8 @ 20'
	-11.8				21–25						
			Black/Gray f. SAND, so. clay (moist)[SC]		25–26	S-9	SS	14	9 5 3 3	8	Drill to 25' Gray wash Took sample S-9 @ 25'
			Gray f- clayey SAND (moist)[SC]		26–30	S-10	SS	6	17 7 12 8	19	Drill to 30' Gray wash Took sample S-10 @ 30'
		Class 3b	Brown f- SAND, so. clay, tr. mica (moist)[SC]		30–35	S-11	SS	14	11 10 20 18	30	Drill to 35' Gray wash Slight rig chatter Took sample S-11 @ 35'
			Brown f- clayey SAND, tr. mica (moist)[SC]		35–40	S-12	SS	14	15 12 12 11	24	Drill to 40' Gray wash Took sample S-12 @ 40'
	-33.3				40–45						

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Log of Boring **B-10** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 11.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description
		Class 3b	Brown m-f SAND, so. clay, tr. mica (moist)[SC]
	-36.8		
		Class 4b	Gray CLAY [CL]
	-46.8		
		Class 3a	Brown f. SAND, tr. m. sand, so. clay, tr. mica (moist) [SC]
	-51.8		
		Class 4a	Top 10": Brown f. SAND, tr. m. sand, so. silt (moist) [SC]
	-54.8		Bottom: 14": Red CLAY, tr. f- sand, tr. mica (moist) [CL]
		Class 4b	

Casng blws/ ft
Coring (min)

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-13	SS	14	13 11 11 10	22
S-14	SS	18	4 4 7 8	11
S-15	SS	21	5 6 7 9	13
S-16	SS	20	11 25 27 24	52
S-17	SS	24	11 16 19 11	35

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Took sample S-13 @ 45'

Drill to 50'
Gray wash
Took sample S-14 @ 50'

Drill to 55'
1:10PM Drillers leave to get fuel
1:50PM Took sample S-15 @ 55'

Drill to 60'
Brown wash
Took sample S-16 @ 60'

Drill to 65'
Brown wash
Took sample S-17 @ 65'

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Log of Boring **B-10** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 11.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4b	Red/Gray CLAY (moist)[CL]		70	S-18	SS	18	5 8 11 14	19	Drill to 70' Brown wash Took sample S-18 @ 70'
	-61.8				71						
		Class 4a	Red/Gray CLAY (moist)[CL]		72						
					73						
					74						
					75	S-19	SS	18	10 16 15 28	31	Drill to 75' Brown wash 3:00PM Stopped drilling 4/11/2014 7:00AM Drillers arrived on site 7:30AM Began drilling Redrilled to 75; Brown to reddish brown wash Took sample S-19 @ 75'
	-66.3				76						
					77						
					78						
		Class 4a	Top 4": Gray/Red CLAY Middle 6": ROCK FRAGMENTS Bottom 2": Gray/Black SILT, so. clay		79						
					80	S-20	SS	10	11 28 32 31	60	Drill to 80' Red wash Took sample S-20 @ 80'
	-71.8				81						
					82						
					83						
					84						
			Gray clayey SAND, tr. mica, tr. silt (moist)[SC]		85	S-21	SS	24	15 19 31 35	50	Drill to 85' Red wash Took sample S-21 @ 85'
					86						
					87						
					88						
		Class 3a			89						
					90	S-22	SS	18	22 28 29 37	57	Drill to 90' Red wash Took sample S-22 @ 90'
			Gray clayey SAND, tr. silt (moist)[SC]		91						
					92						
					93						
					94						
					95						

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Log of Boring **B-10** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 11.7 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Gray clayey SAND, tr. silt, tr. mica (moist)[SC]		95	S-23	SS	12	13 23 31 36	54	Drill to 95' Red wash Took sample S-23 @ 95'
	-86.8				96						
		Class 4a			97						
					98						
					99						
					100	S-24	SS	16	16 25 47 60/5"	72	Drill to 100' Red wash Took sample S-24 @ 100'
	-90.3		Grayish white silty CLAY, tr. mica [ML]		101						
			End of Boring @ 102'		102						11:00AM Borehole is backfilled with soil cuttings.
					103						
					104						
					105						
					106						
					107						
					108						
					109						
					110						
					111						
					112						
					113						
					114						
					115						
					116						
					117						
					118						
					119						
					120						

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Log of Boring **B-11** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/11/14 — Date Finished: 4/15/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 20 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 35	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+13.0				0						4/11/2014 11:30 AM - Trucked moved to borehole location 11:50 AM - Drillers leave to get fuel 12:30PM Began drilling through asphalt Took sample S-1 @ 0.5' Took sample S-2 @ 2'
			Black/Red/Gray m-f SAND, Peat(3" thick), so. Brick, so. gravel		1	S-1	SS	10	18 18 13	31	
			No Recovery		2	S-2	SS	0	100/1"	100/1"	
					3						
					4	S-3	SS	6	80/6"	80/6"	Drill to 4' Took sample S-3 @ 4'
			Black/Red c-f SAND, so. brick, so. gravel, strong odor (moist)	HAMMER	5						Drill to 5' Red wash Rig chatter Took sample S-4 @5'
		Class 7	Top 7": Black/Red c-f SAND, so. gravel, odor (moist) Bottom 12": Black WOOD Black/Gray/Red c-f SAND, so. gravel, wood in the nose, odor (moist)		6	S-4	SS	19	85 25 23 20	48	
					7	S-5	SS	6	100/6"	100/6"	Took sample S-5 @ 7'
					8						
					9						
					10						Drill to 10' Red wash Took sample S-6 @ 10' Hammered casing to 10'
			Brown/Black m-f clayey SAND, so. white sand, tr. gravel (moist)	PUSH	11	S-6	SS	8	4 12 34 25	46	
					12						Drill to 12' Dark Brown wash 2:45PM Drilling Stopped
	-0.5			HAMMER	13						
					14						
					15						4/14/2014 7:00AM Drillers arrived on site 7:30AM Began drilling Drill to 15' Dark brown wash Rig chatter Took sample S-7 @ 15' Installed 5' casing (Pushed 2' and Hammered 3')
		Class 6	Black Peat [Pt]		16	S-7	SS	6	1 2 2 2	4	
					17						
					18						
					19						
					20						

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Log of Boring **B-11** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Black Peat (moist) [Pt]		20	S-8	SS	21	1 2 2 4	4	Drill to 20' Took sample S-8 @ 20'
	-10.5				21						
		Class 5b	Brown/Gray SILT, so. clay (moist) [ML]		22						
					23						
					24						
					25	S-9	SS	14	3 4 6 8	10	Drill to 25' Dark brown wash Slight rig chatter @ ~24' Took sample S-9 @ 25'
					26						
	-15.5				27						
					28						
					29						
			Brown silty SAND, so. c- gravel (moist) [ML]		30	S-10	SS	6	4 13 18 15	31	Drill to 30' Dark brown wash Slight rig chatter @ ~29' Took sample S-10 @ 30'
					31						
					32						
					33						
					34						
		Class 3a	Brown f- silty SAND, so. c- gravel (moist) [ML]		35	S-11	SS	10	20 17 24 13	41	Drill to 35' Brown wash Slight rig chatter Took sample S-11 @ 35'
					36						
					37						
					38						
					39						
					40	S-12	SS	10	21 90 100/5"	100/5"	Drill to 40' Brown wash Took sample S-12 @ 40' Spoon slightly bent
			Brown/Red clayey SAND, tr. silt, tr. gravel (moist) [SC]		41						
					42						
					43						
	-30.5				44						
		Class 3a			45						

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Log of Boring **B-11** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Gray f. clayey SILT, tr. red f- sand, tr. mica (moist)[ML]		45	S-13	SS	19	5 11 25 17	36	Drill to 45' Gray wash Slight rig chatter Slow drilling Took sample S-13 @ 45'
	-35.5				46						
					47						
					48						
					49						
					50	S-14	SS	14	13 17 23 22	40	Drill to 50' Gray wash Took sample S-14 @ 50' Difficulty advancing casing beyond 35'
		Class 4a	Red CLAY, so. sand, tr. silt (moist) [CL]		51						
					52						
					53						
					54						
					55	S-15	SS	0	11 15 17 21	32	Drill to 55' Brown wash Took sample S-15 @ 55'
			No Recovery		56						
					57	S-16	SS	16	15 18 22 24	40	Drill to 57' Brown wash Took sample S-16 @ 57'
			Top 6": Red/Gray CLAY (moist) [CL] Bottom 10": Gray f. sandy SILT, tr. mica (moist) [ML]		58						
	-46.5				59						
					60	S-17	SS	12	17 24 35 40	59	Drill to 60' Brown wash Took sample S-17 @ 60'
			Brown m-f SAND, tr. silt, tr. clay, tr. mica (moist) [SP]		61						
					62						
		Class 3a			63						4/15/2014 7:00AM Drillers arrived on site 8:00AM Began drilling
					64						
					65	S-18	SS	12	1 26 33 34	59	Drill to 65' Brown wash Took sample S-18 @ 65'
			Brown m-f SAND, tr. silt, tr. clay, tr. gravel, tr. mica (moist) [SP]		66						
					67						
					68						
	-55.5				69						
		Class 3a			70						

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Log of Boring **B-11** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown f- clayey SAND, so. gravel, tr. silt, tr. mica (moist) [SC]		70	S-19	SS	2	18 68 50/3"	50/3"	Drill to 70' Brown wash Took sample S-19 @ 70'
	-60.5				71						
					72						
					73						
					74						
		Class 4a			75	S-20	SS	8	20 25 72 50/3"	97	Drill to 75' Brown wash Took sample S-20 @ 75'
			Brown/Gray CLAY, tr. silt (moist) [CL]		76						
	-64.0		End of Boring @ 77'		77						10:20AM Borehole is backfilled with soil cuttings and patched with asphalt
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-12** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 13.8 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/16/14 — Date Finished: 4/16/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 19 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft) +13.8		Sample Description	Casing blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Black/Gray c-f SAND, so. c-f gravel, tr. silt [FILL]		0	S-1	SS	8	7 7 26 8	33	4/15/2014 11:15AM Began drilling through asphalt 11:25AM Took sample S-1 @ 0' Took sample S-2 @ 2'
			Black/Brown c-f SAND, so. c-f gravel, so. clay, tr. brick, tr. mica (odor) [FILL]	200	2	S-2	SS	10	5 7 57 24	64	Installed casing to 4' 12:00PM Drillers leave due to rain 4/16/2014 7:00AM Drillers arrived on site 7:45AM Drill to 4' Brown-Gray wash @ 3' Took sample S-3 @4'
			Black/Brown c-f SAND, tr. clay, tr. silt, tr. gravel (moist) (odor) [FILL]		4	S-3	SS	12	12 8 3 3	11	
			Brown silty SAND, tr. gravel (moist) (odor) [FILL]		6	S-4	SS	21	12 18 13 13	31	Took sample S-4 @ 6'
			Brown/Black m-f SAND, so. silt, tr. clay, tr. gravel (moist) [FILL]	PUSH	8	S-5	SS	16	9 13 13 13	26	Took sample S-5 @ 8'
		Class 7	Black m-f SAND, so. silt, tr. gravel, odor (moist) [FILL]		10	S-6	SS	14	WOH 1 2 1	3	Install casing up to 9' Drill to 10' Gray wash Took sample S-6 @ 10'
					14						
			Brown silty SAND, tr. gravel (moist) [FILL]		15	S-7	SS	4	2 1 2 1	3	Drill to 15' Gray wash Took sample S-7 @ 15'
	-6.2				20						

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Log of Boring **B-12** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.8 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 6	Brown/Black Peat (moist)[Pt]		20	S-8	SS	14	3 3 3 3	6	Drill to 20' Gray wash Took sample S-8 @ 20'
	-9.7	Class 5b	Brown sandy SILT, tr. gravel (moist)		25	S-9	SS	10	9 8 7 7	15	Drill to 25' Gray wash Took sample S-9 @ 25'
	-14.7	Class 3a	Brown silty SAND, tr. gravel (moist)		30	S-10	SS	2	10 10 23 20	33	Drill to 30' Gray wash Took sample S-10 @ 30'
					33						10:30AM Rig breakdown
			Brown m-f SAND, so. silt, tr. gravel (moist) [SP]		35	S-11	SS	4	18 17 14 18	31	11:40AM Drill to 35' Brown wash Slight rig chatter Took sample S-11 @ 35'
	-24.7	Class 3b	Brown m-f SAND, so. silt, tr. mica (moist) [SP]		40	S-12	SS	12	7 8 12 13	20	Drill to 40' Brown wash Slight rig chatter Took sample S-12 @ 40'
	-29.7	Class 2a			45						

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Log of Boring **B-12** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.8 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description
		Class 2a	Gray c-m GRAVEL, tr. m-f brown sand (moist) [GP]
	-34.7		
		Class 4b	Red/Gray CLAY, tr. silt (moist) [CL]
			Brown/Gray sandy CLAY, tr. silt (moist) [SC]
			Gray sandy CLAY, tr. silt (moist) [SC]
	-49.7		
		Class 3a	Gray clayey SAND, tr. silt (moist) [SC]
	-54.7		
		Class 3a	

Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	45	S-13	SS	2	22 37 40 23	77	Drill to 45' Brown wash Took sample S-13 @ 45'
	46						
	47						
	48						
	49						
	50	S-14	SS	10	8 9 12 12	21	Drill to 50' Brown wash Took sample S-14 @ 50'
	51						
	52						
	53						
	54						
	55	S-15	SS	20	7 8 10 11	18	Drill to 55' Brown wash Took sample S-15 @ 55'
	56						
	57						
	58						
	59						
	60	S-16	SS	20	7 8 12 15	20	Drill to 60' Brown wash Took sample S-16 @ 60'
	61						
	62						
	63						
	64						
	65	S-17	SS	12	15 18 22 24	40	Drill to 65' Brown wash Took sample S-17 @ 65'
	66						
	67						
	68						
	69						
	70						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-12** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 13.8 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown m-f SAND, tr. silt, tr. gravel (moist) [SP]		70	S-18	SS	16	15 17 21 17	38	Drill to 70' Brown wash Took sample S-18 @ 70'
					71						
					72						
					73						
					74						
					75	S-19	SS	14	17 18 22 28	40	Drill to 75' Brown wash Took sample S-19 @ 75'
	-63.2		Brown m-f SAND, so. gravel, tr. silt (moist) [SW]		76						
			End of Boring @ 77'		77						2:12PM Borehole is backfilled with soil cuttings and patched with asphalt 2:45PM Drillers leave site
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-13** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 14.6 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 5/6/14 — Date Finished: 5/8/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 20 — Undisturbed 1 — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 19	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
	+14.6									
	+14.1		Concrete		0					
			Brown/black/gray c-f SAND, tr. silt, so. gravel [FILL]		1	S-1	SS	10	20, 21, 43, 10	64
			Gray c-f GRAVEL, so. m-f sand, tr. silt [FILL]	DROP	2	S-2	SS	3	8, 5, 4, 3	9
			Brown m-f SAND, so. c-f gravel, tr. silt, moist [FILL]		3	S-3	SS	10	8, 6, 16, 13	22
		Class 7	Brown m-f SAND, tr. clay, tr. silt, tr. gravel, moist [FILL]		4	S-4	SS	10	5, 6, 4, 4	10
			Gray m-f SAND, tr. clay, tr. silt, moist [FILL]	PUSH	5	S-5	SS	10	5, 7, 7, 8	14
			Brown f-SAND, so. silt, moist [FILL]		6	S-6	SS	20	1, 1, 1, 2	2
	+1.1			PUSH	7					
		Class 6	Gray f-SAND, tr. clay, tr. silt, moist [SP]		8	S-7	SS	8	1, 2, 2, 4	4
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

5/6/14
2:05 pm: Drill through concrete
2:30 pm: Drillers leave

5/7/14
8:15 am: Drillers arrive
8:30 am: Took S-1 at 0.5'
Drill to 2'
Black wash
Took S-2 at 2'
Took S-3 at 4'

Drill to 6'
Dark brown wash
Took S-4 at 6'

Took S-5 at 8'
Install casing upto 9'

Drill to 10'
Brown wash
Took S-6 at 10'
Install casing upto 14'

Drill to 15'
Dark brown wash
Took S-7 at 15'
Install casing upto 19'

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Log of Boring **B-13** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.6 (NAVD 88)

Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Class 6	Top 6": Gray f-SAND, tr. clay, tr. silt, moist [SP]	20						Drill to 20' Gray wash Took S-8 at 20'
-6.4		Bottom 12": Brown m-f SAND, tr. silt, moist [SP]	21	S-8	SS	18	3 12 12 20	24	
	Class 3b		22						
			23						
			24						
		Gray/brown m-f SAND, tr. silt, tr. gravel, moist [SP]	25	S-9	SS	12	8 13 15 23	28	Drill to 25' Gray wash Took S-9 at 25'
			26						
			27						
			28						
-13.9			29						
			30	S-10	SS	0	50/1"	50/1"	Drill to 30' Gray wash Took S-10 at 30'
		No Recovery	31						
			32						
			33						
			34						
			35	S-11	SS	0	10 15 24 26	39	Drill to 35' Brown wash Took S-11 at 35'
		No Recovery	36						
	Class 3a		37	S-12	SS	3	100/4"	100/4"	Drill to 37' Gray wash Took S-12 at 37'
		Gray m-f SAND, tr. silt, wet [SP]	38						
			39						
			40						
		Red m-f SAND, tr. silt, tr. mica, moist [SP]	41	S-13	SS	18	10 18 18 22	36	Drill to 40' Gray wash Slow drilling 11:48 am: Leakage problem with rig 2:05 pm: Fix it Took S-13 at 40'
			42						
			43						
			44						
			45						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-13** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 3a	Reddish brown f-SAND, tr. silt, tr. mica, moist [SP]
	-36.7		Top 3": Brown m-f SAND, tr, silt [SP]
		Class 4a	Bottom 9": Gray sandy CLAY, tr. mica, moist [CL] Red/gray sandy CLAY, moist [CL] Gray sandy CLAY, moist [CL]
	-43.9		
		Class 3b	Gray f-SAND, tr. clay, tr. mica, moist [SC] Gray/brown m-f SAND, tr. clay, tr. silt, tr. gravel, moist [SP]
	-53.9	Class 4b	

Coring (min)

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-14	SS	14	9, 16, 15, 22	31
S-15	SS	12	7, 8, 11, 22	19
S-16	SH	24		
S-17	SS	24	12, 16, 18, 26	34
S-18	SS	18	4, 6, 11, 39	17
S-19	SS	16	10, 14, 14, 11	28

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Took S-14 at 45'

Drill to 50'
Brown wash
Took S-15 at 50'
3:00 pm: Drillers leave

5/8/14
8:15 am: Drillers arrive
8:30 am: Leave to get rain gear
9:10 am: Drill to 52'
Brown wash
9:29 am: Took S-16 at 52' with Shelby tube
9:50 am: Collect Shelby tube
Took S-17 at 54' with Split spoon

Drill to 60'
Brown wash
Took S-18 at 60'

Drill to 65'
Brown wash
Took S-19 at 65'

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Log of Boring **B-13** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4b	Gray sandy CLAY, tr. mica, moist [CL]		70	S-20	SS	16	4 8 10 30	18	Drill to 70' Brown wash Took S-20 at 70'
	-58.9				71						
		Class 3a	Reddish brown c-f SAND, tr c-f gravel, tr. silt, moist [SP]		72						
					73						
					74						
					75	S-21	SS	14	17 23 21 27	44	Drill to 75' Brown wash Took S-21 at 75'
	-62.4				76						
			End of borehole at 77' 5/8/14 at 12:00 pm		77						End of borehole at 77' Backfill with soil cuttings upon completion.
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-14** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 18.5 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/17/14 — Date Finished: 4/18/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 18 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+18.5		Concrete		0						4/17/14 7:00AM to 12:15PM: Rig break down 12:15PM: Rig Fixed and moved to borehole location 12:45PM: Drill through concrete slab Take S-1 at 1' Take S-2 at 3'
	+17.5		Black c-f SAND, c-f gravel [FILL]	PUSH	1	S-1	SS	12	4 4 5 4	9	
			Black c-f SAND, c-f gravel [FILL]		2	S-2	SS	12	10 17 7 6	24	Install casing upto 4'
			Brown/Red/Black m-f SAND, c-f GRAVEL, tr. silt, so. brick, moist [FILL]	PUSH	3	S-3	SS	6	3 2 3 3	5	1:30PM: Problem with the rig 1:45PM: Fixed Drill to 5' Take S-3 at 5' Take S-4 at 7'
			White ?, so. c-f SAND, tr. silt, tr. gravel, moist [FILL]	10	4	S-4	SS	6	1 2 2 3	4	Install casing upto 9'
		Class 7	Brown m-f SAND, so. silt, so. gravel, moist [FILL]		5	S-5	SS	12	10 5 3 4	8	Drill to 9' Gray wash Take S-5
					6						
					7						
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15						Drill to 15' Dark brown wash Take S-6 at 15'
			Brown m-f SAND, so. silt, tr. brick, moist [FILL]		16	S-6	SS	12	3 1 3	4	
					17						
					18						
					19						
	0.0				20						
	-1.5	Class 3b									

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Log of Boring **B-14** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 18.5 (NAVD 88)

Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Class 6	Brown f SAND, tr. silt, moist [SP]	20	S-7	SS	17	2 3 3 4	6	Drill to 20' Dark brown wash Take S-7 at 20'
			21						
			22						
			23						
			24						
			25						Drill to 25' Brown wash Take S-8 at 25'
		Brown f SAND, tr. silt, tr. clay, moist [SP]	26	S-8	SS	18	3 4 4 4	8	
			27						
			28						
-10.0			29						
	Class 3a	Brown m-f SAND, so. clay, tr. silt, tr. gravel, moist [SP]	30	S-9	SS	18	17 18 19 16	37	Drill to 30' Brown wash Take S-9 at 30'
			31						
			32						
-15.0			33						
			34						
			35						Drill to 35' Brown wash
		Brown f SAND, tr. silt, tr. clay, moist [SP]	36	S-10	SS	12	10 10 11 15	21	3:15PM: Stop Drilling 4/18/14 7:00AM: Drillers arrive 7:15AM: Take S-10 at 35'
			37						
	Class 3b		38						
			39						
			40						Drill to 40' Brown wash Take S-11 at 40'
		Brown f SAND, tr. silt, tr. clay, tr. mica, moist [SP]	41	S-11	SS	16	7 11 15 30	26	
			42						
			43						
-25.0			44						
	Class 4b		45						

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Log of Boring **B-14** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 18.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 4b	Red/Gray CLAY, tr. silt, moist [CL]
	-30.0	Class 3a	Top 7": Brown SAND, tr. silt, tr. clay, moist [SP]
	-33.3		Bottom 3": Gray CLAY, tr. silt, moist [CL]
			Brown Silty CLAY, moist [CL]
		Class 4b	Gray Silty CLAY, moist [CL]
			Gray Silty CLAY, tr. mica, moist [CL]

Casng blws/ ft
Coring (min)

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-12	SS	12	3 7 8 11	15
S-13	SS	10	5 6 40 23	46
S-14	SS	14	6 12 18 20	30
S-15	SS	16	6 6 11 15	17
S-16	SS	20	4 5 8 15	13

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Take S-12 at 45'

Drill to 50'
Brown wash
Take S-13 at 50'

Drill to 55'
Brown wash
Take S-14 at 55'

Drill to 60'
Brown wash
Take S-15 at 60'

Drill to 65'
Brown wash
Take S-16 at 65'

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Log of Boring **B-14** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 18.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4b	Gray Silty CLAY, tr. mica, moist [CL]		70	S-17	SS	19	5 8 14 17	22	Drill to 70' Red wash Take S-17 at 70'
	-55.0				71						
		Class 3a	Brown m-f SAND, tr. silt, tr.		72						
					73						
					74						
					75	S-18	SS	14	12 17 23 23	40	Drill to 75' Red wash Take S-18 at 75'
	-58.5				76						
			End of borehole at 77'		77						End of borehole at 77'
			4/18/14 at 9:45AM		78						Backfilled with soil cuttings upon completion
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-15 (OW)** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 17.2 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/18/14 — Date Finished: 4/21/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 24 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Donut — Weight (lbs): 300 — Drop (in): 30	Drilling Foreman: Dave
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks
	+17.2				0					10 20 30 40	
	+16.7		Asphalt								
			Black m-f SAND, so. clay, tr. silt, tr. m-f gravel, tr. shell, tr. glass [FILL]		1	S-1	SS	10	6 4 7	11	4/18/14 10:45AM: Drill through asphalt Take S-1 at 0.5' Take S-2 at 2'
				PUSH	2				4		
			Brown/White m-f SAND, tr. silt, tr. gravel, white shell, moist [FILL]		3	S-2	SS	5	4 7 9	11	Install casing upto 4'
			Black m-f SAND, m-f gravel, shell, tr. silt, moist [FILL]		4	S-3	SS	6	4 4 3	7	Drill to 4' Brown Wash Take S-3 at 4'
				PUSH	5				3		
		Class 7	Brown m-f SAND, m-f gravel, shell, tr. silt, moist [FILL]		6	S-4	SS	6	6 8 6	14	Take S-4 at 6'
					7				4		
			Top 6": Brown m-f SAND, m-f gravel, shell, tr. silt, moist Bottom 4": Brown m-f SAND, tr. silt [FILL]		8	S-5	SS	10	5 6 7	13	Take S-5 at 8' Install casing upto 9'
					9				8		
			Brown f SAND, tr. silt, moist [FILL]		10	S-6	SS	10	3 2 2	4	Drill to 10' Brown Wash Take S-6 at 10'
					11				3		
	+3.7				12						
					13						
					14						
		Class 6	Brown f SAND, tr. silt, moist [SP]		15	S-7	SS	12	1 1 1	2	Drill to 15' Brown Wash Take S-7 at 15'
					16				3		
	-1.3				17						
		Class 6			18						
					19						
					20						

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Log of Boring **B-15 (OW)** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 6	Brown f SAND, tr. silt, tr. clay, moist [SP]
	-6.3		
		Class 3a	Brown c-f SAND, tr. silt, tr. gravel, moist [SW]
			Top 6": Brownish red clayey SILT, tr. mica, moist [ML] Bottom 6": Brown c-f SAND, tr. silt, tr. mica, moist [SP]
	-16.3		
		Class 5b	Brown clayey SILT, tr. mica, moist [ML]
			Brown clayey SILT, tr. mica, moist [ML]

Coring (min)

Depth Scale: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-8	SS	16	3 4 5 4	9
S-9	SS	14	17 21 16 22	37
S-10	SS	12	6 12 15 14	27
S-11	SS	19	5 6 7 9	13
S-12	SS	17	5 7 9 12	16

N-Value (Blows/ft) 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Brown Wash
Take S-8 at 20'

Drill to 25'
Brown Wash
Take S-9 at 25'

Drill to 30'
Brown Wash
Take S-10 at 30'

Drill to 35'
Brown Wash
Take S-11 at 35'

Drill to 40'
Brown Wash
Take S-12 at 40'

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Log of Boring **B-15 (OW)** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Gray clayey SILT, moist [ML]		45	S-13	SS	19	3 4 6 8	10	Drill to 45' Brown Wash Take S-13 at 45'
		Class 5b			46						
					47						
					48						
					49						
			Gray clayey SILT, tr. mica, moist [ML]		50	S-14	SS	16	4 7 9 11	16	Drill to 50' Brown Wash Take S-14 at 50'
					51						
	-36.3				52						
					53						
					54						
		Class 4c	Gray silty CLAY, tr. mica [CL]		55	S-15	SS	20	3 3 4 3	7	Drill to 55' Brown Wash Take S-15 at 55'
					56						
					57						
	-41.3				58						
					59						
			Gray silty CLAY, tr. mica [CL]		60	S-16	SS	18	5 6 8 8	14	Drill to 60' Brown Wash Take S-16 at 60'
					61						
					62						
					63						
		Class 4b			64						
					65						
			Gray silty CLAY, tr. mica [CL]		66	S-17	SS	18	4 7 8 9	15	Drill to 65' Brown Wash Take S-17 at 65'
					67						
					68						
					69						
					70						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-15 (OW)** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 4b	Gray silty CLAY [CL]
	-61.3	Class 3a	Brown m-f SAND, tr. silt, tr. gravel, moist [SP]
	-66.3	Class 3b	Brown c-f SAND, so. m-f gravel, tr. silt, moist [SW]
	-71.3	Class 3a	Reddish brown m-f SAND, tr. silt, so. gravel, moist [SP]
	-74.8	Class 4a	Nose: Gray silty CLAY [CL]

Coring (min)

Depth Scale: 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-18	SS	21	9, 10, 16, 21	26
S-19	SS	19	5, 6, 10, 16	16
S-20	SS	16	18, 19, 26, 26	45
S-21	SS	14	10, 13, 12, 15	25
S-22	SS	16	19, 20, 18, 16	38

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 70'
Brown Wash

2:10PM: Stop drilling
4/21/14
7:00AM: Drillers arrive
8:00AM: Take S-18 at 70'

Drill to 75'
Brown Wash
Take S-19 at 75'

Drill to 80'
Brown Wash
Take S-20 at 80'

Drill to 85'
Brown Wash
Take S-21 at 85'

Drill to 90'
Brown Wash
Take S-22 at 90'

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Log of Boring **B-15 (OW)** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 17.2 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Gray CLAY, moist [CL]		95	S-23	SS	15	16 25 30 32	55	Drill to 95' Brown Wash Take S-23 at 95'
		Class 4a			96						
					97						
					98						
					99						
					100	S-24	SS	18	18 28 34 40	62	Drill to 100' Brown Wash Take S-24 at 100'
	-84.8		Gray CLAY, tr. silt, tr. mica [CL]		101						
			End of borehole at 102'		102						End of borehole at 102'
			4/21/14 at 10:56AM		103						Borehole convered into an observation well upon completion
					104						
					105						
					106						
					107						
					108						
					109						
					110						
					111						
					112						
					113						
					114						
					115						
					116						
					117						
					118						
					119						
					120						

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Log of Boring **B-16** Sheet 1 of 1

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/10/14 — Date Finished: 4/10/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 8.3 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 4 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 0	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

MATERIAL SYMBOL	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+12.7				0					
			Black/Gray c-f SAND, GRAVEL, tr. brick [FILL]		1	S-1	SS	14	21 9 6 7	15
					2					
			Red/Gray Brick, GRAVEL (wet) [FILL]		3	S-2	SS	3	4 14 13 5	27
		Class 7		HAMMER	4					
			Gray/Red GRAVEL (wet) [FILL]		5	S-3	SS	2	9 1 3 6	4
			Black c-f SAND, tr. silt, tr. gravel, strong odor (wet) [FILL]		6					
	+4.5				7	S-4	SS	4	4 100/4"	100/4"
			End of Boring @8.25'		8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/10/2014
11:00AM truck moved to borehole location
11:15AM Begain drilling through asphalt
Took sample S-1 @ 0.5'
Took sample S-2 @ 2.5'
Took sample S-3 @ 4.5'
Took sample S-4 @ 6.5'
Difficulting installing casing due to obsutruction (possible boulder) hole abandoned and moved.

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Log of Boring **B-16A(OW)** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/10/14 — Date Finished: 4/11/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 16 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 9	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+12.7	Class 7	Gray/Brown c-f silty SAND, so. gravel, tr. brick (moist) (light odor) [FILL]	PUSH	0	S-1	SS	6	30 14 6 8	20	4/10/2014 1:20PM Drill to 7' Difficulty pushing casing beyond 7' Drill to 9' Tremendous rig chatter Brown to black to clear wash 2:15PM Begain hammering casing to 9' (difficult) 3:00PM Stopped drilling Took sample S-1 @ 8' Took sample S-2 @ 10'
			Brown/Black c-f silty SAND, so. gravel, odor (moist) [FILL]	DRILL	1	S-2	SS	23	5 20 25 10	45	
			Top 10": Brown m-f silty SAND (moist)[SM]		2	S-3	SS	22	1 1 2 1 3		Drill to 15' Dark brown wash Took sample S-3 @ 15'
	-3.3	Class 6	Middle 8": Gray silty CLAY, tr. mica (moist)[ML] Bottom 4": Black Peat [Pt]		3						
	-5.8	Class 4b			4						
					5						
					6						
					7						
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15						
					16						
					17						
					18						
					19						
					20						

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Log of Boring **B-16A(OW)** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4b	Top 7": Gray clayey SILT (moist)[ML] Middle 5": Gray CLAY (moist)[CL] Bottom 2": Gray/Brown m-f SAND, tr. clay, tr. mica (moist)[SC]		20	S-4	SS	14	7 5 9 13	14	Drill to 20' Brown wash Took sample S-4 @ 20'
	-10.8				21						
		Class 3b	Top 8": Brown silty SAND, so. gravel (moist) Bottom 4": Brown/Gray c-f SAND, tr. silt (moist)		22						
					23						
					24						
					25	S-5	SS	12	4 7 13 12	20	Drill to 25' Brown wash Took sample S-5 @ 25'
	-15.8				26						
		Class 5b	Gray clayey SILT (moist)[ML]		27						
					28						
					29						
					30	S-6	SS	6	14 8 19 18	27	Drill to 30' Gray wash Took sample S-6 @ 30'
	-20.8				31						
					32						
					33						
					34						
		Class 3a	No Recovery		35	S-7	SS	0	18 20 29 48	49	Drill to 35' Gray wash Took sample S-7 @ 35'
					36						
					37	S-8	SS	6	84 100/5"	100/5"	Took sample S-8 @ 37'
			Gray clayey f. SAND, tr. mica (moist)[ML]		38						
	-26.3				39						
		Class 3a	Brown m-f SAND, tr. clay, tr. silt, tr. mica (moist)[SC]		40	S-9	SS	12	14 20 22 27	42	Drill to 40' Gray wash Took sample S-9 @ 40'
					41						
					42						
	-30.8				43						
		Class 3b			44						
					45						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-16A(OW)** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3b	Gray/Red clayey f. SAND, tr. silt, tr. mica (moist)[SC]		45	S-10	SS	12	12 13 12 15	25	Drill to 45' Gray wash 20 min. break Took sample S-10 @ 45'
	-35.8				46						
		Class 5b	Gray SILT, so. f. sand (moist)[CL]		47						
					48						
					49						
					50	S-11	SS	19	6 10 17 22	27	Drill to 50' Brown wash Took sample S-11 @ 50'
	-40.8				51						
		Class 4b	Gray silty CLAY (moist)[CL]		52						
					53						
					54						
					55	S-12	SS	10	4 10 16 20	26	Drill to 55' Brown wash Took sample S-12 @ 55'
	-45.8				56						
			Red/White CLAY, tr. silt (moist)[CL]		57						
					58						
					59						
					60	S-13	SS	14	13 17 25 33	42	Drill to 60' Brown wash Took sample S-13 @ 60'
		Class 4a			61						
					62						
					63						
					64						
					65	S-14	SS	20	10 14 20 32	34	Drill to 65' Red wash Took sample S-14 @ 65'
			Red/Gray CLAY (moist)[CL]		66						
					67						
					68						
					69						
					70						

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Log of Boring **B-16A(OW)** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
					70						Drill to 70'
									20		Red wash
					71	S-15	SS	12	31	69	Took sample S-15 @ 70'
									38		
					72				50		
		Class 4a	Red/Gray CLAY (moist)[CL]		73						
					74						
					75				15		Drill to 75'
						S-16	SS	12	20		Red wash
			Red/Gray CLAY, tr. black fine wood (moist)[CL]		76				23	43	Took sample S-16 @ 75'
	-64.3								26		
			End of Boring @ 77'		77						1:08PM Borehole is backfilled with soil cuttings and converted into an observation well
					78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-17** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 12.7 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/11/14 — Date Finished: 4/15/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 97 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 24 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 15	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+12.7				0					
			Gray c-f SAND, so. gravel, tr. brick, tr. silt		1	S-1	SS	5	17, 17, 24, 28	41
					2					
			Brown/Gray c-f SAND, so. gravel, tr. silt, tr. brick, tr. asphalt		3	S-2	SS	8	11, 12, 8, 8	20
					4					
				DRILL	5	S-3	SS	4	3, 2, 3, 2	5
			Brown/Red c-m GRAVEL, so. brick (moist)		6					
					7	S-4	SS	6	7, 7, 4, 5	11
		Class 7	Black f- silty SAND, tr. gravel, tr. brick, strong odor (wet)		8					
					9	S-5	SS	8	4, 12, 11, 12	23
			Black f- silty SAND, tr. gravel, tr. wood, tr. brick, strong odor (wet)		10					
				DRILL	11					
					12					
					13					
					14					
					15					
			Top 10": Gray m-f SAND, tr. silt (moist)[SP]	PUSH	16	S-6	SS	12	16, 9, 6, 6	15
	-3.3				17					
		Class 6	Bottom 2": Black Peat [Pt]		18					
	-5.8				19					
		Class 2a			20					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/11/2014
2:15PM Move truck to borehole location
2:25PM Began drilling through asphalt
Took sample S-1 @ 0.5'
2:35PM Rig controls stopped working
2:50PM Drillers leave
4/14/2014
7:00AM Drillers arrived on site
7:30AM Begain drilling
Took sample S-2 @ 2.5'
Drill to 5'
Rig chatter
Took sample S-3 @5'

Took sample S-4 @ 7'

Installed casing to 10'
Drill to 9'
Took sample S-5 @ 9'

Drill to 15'
Added bentonite
Brown wash
Took sample S-6 @ 15'
Installled casing to 17'

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Log of Boring **B-17** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description
		Class 2a	Black GRAVEL (moist)[GP]
	-9.3	Class 3a	Top 7": Black c-f SAND, so. gravel, tr. silt (moist) Bottom 5": Brown clayey SAND, tr. silt (moist)[SC]
	-11.8	Class 3b	Brown clayey SAND, tr. black m-f sand, tr. silt (moist)[SC]
	-15.8	Class 3a	Brown f- clayey SAND, so. gravel, tr. silt (moist)[SC]
	-20.8	Class 3b	Brown m-f SAND, tr. silt, tr. gravel (moist)[SP]
	-30.8	Class 4a	Brown f- clayey SAND, tr. silt, tr. mica (moist)[SC]

Coring (min)

Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
20	S-7	SS	1	100/2"	100/2"	Drill to 20' Gray wash Took sample S-7 @ 20'
21						
22	S-8	SS	12	21 25 21 13	46	Drill to 22' Took sample S-8 @ 22'
23						
24						
25	S-9	SS	14	6 7 3 4	10	Drill to 25' Brown wash Took sample S-9 @ 25'
26						
27						
28						
29						
30	S-10	SS	8	15 16 28 22	44	Drill to 30' Gray wash Slight rig chatter Took sample S-10 @ 30'
31						
32						
33						
34						
35	S-11	SS	10	13 17 10 40	27	Drill to 35' Gray wash Rig chatter Took sample S-11 @ 35'
36						
37						
38						
39						
40	S-12	SS	14	7 10 15 19	25	Drill to 40' Gray wash Took sample S-12 @ 40'
41						
42						
43						
44						
45						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-17** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 4a	No Recovery		45						Drill to 45' Gray wash Took sample S-13 @ 45'
					46	S-13	SS	0	8 13 20 28	33	
					47						Took sample S-14 @ 47'
			Red/Gray CLAY, tr. silt (moist)[CL]		48	S-14	SS	8	10 13 20 27	33	
	-36.8				49						
					50						Drill to 50' Brown wash
			Red/Gray CLAY, tr. silt (moist)[CL]		51	S-15	SS	14	8 12 17 20	29	Took sample S-15 @ 50'
		Class 4b			52						
					53						
					54						
	-42.5		Top 3": Red/Gray CLAY (moist)[CL]		55						Drill to 55'
			Bottom 13": Brown c-f SAND, tr. silt (moist)[SP]		56	S-16	SS	16	8 21 25 21	46	Brown wash Took sample S-16 @ 55'
					57						
					58						
					59						
					60						Drill to 60'
			Brown c-f SAND, tr. silt, tr. gravel, tr. mica (moist)[SP]		61	S-17	SS	16	17 23 25 25	48	Brown wash Took sample S-17 @ 60'
		Class 3a			62						
					63						
					64						
					65						Drill to 65'
			Brown m-f SAND, tr. silt, tr. clay, tr. gravel, tr. mica (moist)[SP]		66	S-18	SS	14	15 23 28 23	51	Brown wash Took sample S-18 @ 65'
					67						
					68						4/15/2014 7:30AM Began Drilling
					69						
					70						

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Log of Boring **B-17** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Brown f- clayey SAND, tr. silt, tr. mica, (moist)[SC]		70	S-19	SS	18	17 18 22 42	40	Drill to 70' Brown wash Took sample S-19 @ 70'
					71						
					72						
					73						
					74						
					75	S-20	SS	18	30 45 40 57	85	Drill to 75' Brown wash Took sample S-20 @ 75' 8:40AM Hose on the head pump broke 8:55am Pump fixed
			Brown f- clayey SAND, tr. silt, tr. mica (moist)[SC]		76						
					77						
	-65.8				78						
					79						
		Class 3a	Brown m-f SAND, tr. silt, tr. gravel, tr. mica (moist)[SP]		80	S-21	SS	12	20 22 28 30	50	Drill to 80' Brown Wash Took sample S-21 @ 80'
					81						
	-70.8				82						
					83						
					84						
					85	S-22	SS	8	10 22 23 24	45	Drill to 85' Brown wash Took sample S-22 @ 85'
			Brown/Gray CLAY, tr. silt (moist)[CL]		86						
					87						
					88						
		Class 4a			89						
					90	S-23	SS	14	19 28 34 36	62	Drill to 90' Brown wash Took sample S-23 @ 90'
			Gray CLAY (moist)[CL]		91						
					92						
					93						
					94						
	-82.3				95						

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Log of Boring **B-17** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 12.7 (NAVD 88)

Material Symbol	Elev. (ft)		Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-84.3	Class 3a	Gray m-f clayey SAND, tr. silt (moist)[SC]		95	S-24	SS	18	12 28 42 50/4"	70	Drill to 95' Brown wash Hole collapsed Redrilled to 95' Took sample S-24 @ 95'
			End of Boring @ 97'		96						1:30PM Hole collapsed
					97						
					98						
					99						
					100						
					101						
					102						
					103						
					104						
					105						
					106						
					107						
					108						
					109						
					110						
					111						
					112						
					113						
					114						
					115						
					116						
					117						
					118						
					119						
					120						

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Log of Boring **B-18** Sheet 1 of 4

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 14.8 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/16/14 — Date Finished: 4/17/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 77 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 18 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 11	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Deon Dewar
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40
	+14.8				0					
			Brown m-f SAND, some c-f gravel		1	S-1	SS	18	37 41 25 10	66
					2					
			Brown m-f SAND		3	S-2	SS	16	14 40 48 40	88
					4					
				DRILL	5					
		Class 7	Brown m-f SAND, tr. silt		6	S-3	SS	6	4 4 5 4	9
			Brown m-f SAND, some c-f gravel, tr. silt		7	S-4	SS	10	3 8 7 7	15
					8					
			Brown m-f SAND, tr. silt		9	S-5	SS	12	23 25 11 9	36
					10					
	+2.2				11					
					12					
					13					
					14					
		Class 4b	Gray silty CLAY		15	S-6	SS	18	4 6 7 8	13
					16					
	-3.7				17					
		Class 3a			18					
					19					
					20					

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/16/2014
7:00 AM Driller arrive
8:00 AM Drill through asphalt
Took sample S-1 @ 0.5'

Took sample S-2 @ 2.5'

Install casing up to 4'
Drill to 5'
Took sample S-3 @ 5'

Took sample S-4 @ 7'

Install casing up to 9'
Took sample S-5 @ 9'

Install casing up to 11'

Drill to 15'
Brown wash
Took sample S-6 @ 15'

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Log of Boring **B-18** Sheet 2 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.8 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Brown fine SAND, tr. silt, tr. clay		20–21	S-7	SS	16	17 16 15 19	31	Drill to 20' Brown wash Took sample S-7 @ 20'
			Brown fine SAND, tr. silt, tr. clay		25–26	S-8	SS	3	11 15 16 18	31	Drill to 25' Brown wash Took sample S-8 @ 25'
		Class 3a	Brown fine SAND, tr. silt, tr. clay		30–31	S-9	SS	13	16 24 70 46	94	Drill to 30' Brown wash Rig chatter Took sample S-9 @ 30'
			Brown/red fine SAND, tr. silt, so. clay, tr. gravel		35–36	S-10	SS	11	12 15 20 15	35	Drill to 35' Brown wash Rig chatter from 31'-32' slow drilling Took sample S-10 @ 35'
			Brown fine SAND, tr. silt, tr. clay, tr. mica		40–41	S-11	SS	10	26 18 32 50/3"	50	Drill to 40' Brown wash Rig chatter Took sample S-11 @ 40'

N-Value (Blows/ft) scale: 10 20 30 40

Depth Scale: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

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Log of Boring **B-18** Sheet 3 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.8 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Class 3a	Reddish brown SAND, tr. silt, tr. clay, tr. mica		45	S-12	SS	18	15 22 27 37	49	Drill to 45' Brown wash Rig chatter Took sample S-12 @ 45'
					46						
					47						
					48						
					49						
					50	S-13	SS	11	18 23 29 22	52	Drill to 50' Brown wash Slight rig chatter Took sample S-13 @ 50'
			Brown m-f SAND, tr. silt, tr. mica Top 3' brown clayey SAND		51						
	-38.7				52						
					53						
					54						
					55	S-14	SS	12	6 14 14 12	28	Drill to 55' Brown wash Took sample S-14 @ 55'
			Gray/red silty CLAY		56						
					57						
					58						
					59						
		Class 4a			60	S-15	SS	12	10 21 23 25	44	Drill to 60' Brown wash Took sample S-15 @ 60'
			Gray fine SILT, so. f. sand, tr. clay, tr. mica		61						
					62						
					63						
					64						
					65	S-16	SS	21	29 22 39 56	61	Drill to 65' Brown wash 2:45 PM Stop drilling 4/17/2014 7:00 AM Driller arrives 7:20 AM Redrill to 65' Took sample S-16 @ 65'
			Bottom 6" Gray CLAY, tr. silt, tr. sand		66						
	-50.7				67						
			Middle 2" m-f brown SAND, tr. silt Top 13" c-f GRAVEL, so. clay, tr. m-f sand		68						
		Class 3a			69						
					70						

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Log of Boring **B-18** Sheet 4 of 4

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 14.8 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
					70						Drill to 70'
											Casing clogged up
					71	S-17	SS	16	22		Slow drilling
									32	70	Brown wash
					72				38		took sample S-17 @ 70'
									51		
					73						
		Class 3a	Brown m-f SAND, tr. silt, tr. clay, tr. mica		74						
					75						Drill to 75'
											Brown wash
					76						Took sample S-18 @ 75'
			Brown c-f SAND, so. c-f gravel, tr. silt, tr. clay								
	-62.2				77						
			End of Boring @ 77'		78						
					79						
					80						
					81						
					82						
					83						
					84						
					85						
					86						
					87						
					88						
					89						
					90						
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-19** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 15.5 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/28/14 — Date Finished: 5/2/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 25 — Undisturbed — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 19	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Eddie Fontanez
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
	+15.5									
	+15.0		6" CONCRETE		0					
			Brown fine SAND, so. silt, c-f gravel	PUSH	1	S-1	SS	10	2 3 3 5	6
			Brown fine SAND, so. silt, c-f gravel		2	S-2	SS	3	2 3 4 4	7
		Class 7	No Recovery		3	S-3	SS	0	4 6 6 4	12
			Brown m-f SAND, tr. silt, tr. gravel	PUSH	4	S-4	SS	8	1 2 5 7	7
			No Recovery		5	S-5	SS	0	4 7 7 6	14
	+5.5				6					
			Brown m-f SAND, tr. silt, tr. clay		7	S-6	SS	9	2 4 4 5	8
		Class 3b		PUSH	8					
			Top 10" Gray fine SAND, tr. clay, tr. silt, tr. mica Bottom 6" Brown m-f SAND, tr. silt		9	S-7	SS	16	3 5 5 10	10
				200	10					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

4/28/2014
10:30 AM Driller arrive
11:45 AM Problem starting rig
Driller leaves to get filter
12:25 Driller returns
12:30 PM Drill through concrete
Took sample S-1 @ 0.5'
12:50 PM Rig shuts down again
12:56 PM Took sample S-2 @ 2.5'
Took sample S-3 @ 4.5'
Install casing to 4'
Add bentonite

Drill to 6.5'
White to brown wash
1:15 PM Rig shuts down again
1:18PM Continue drilling
1:25 PM Rig shuts down
1:33 PM Took sample S-4 @ 6.5'
Took sample S-5 @ 8.5'

Took sample S-6 @ 10.5'
Install casing up to 9'

Drill to 15'
White to light brown wash
Light brown to gray to brown wash @ approx. 12'
Took sample S-7 @ 15'
2:00-2:10 PM Rig shut down
2:17 PM Took Sample S-7

Install casing to 19'

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Log of Boring **B-19** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Brown m-f SAND, tr. silt, tr. gravel		20	S-8	SS	12	5 7 10 11	17	Drill to 20' Brown wash Brownish white wash between 15' to 20' Rig chatter @ 19' 2:40 PM Stop drilling 2:50 PM Driller leave 4/29/2014 7:30 AM Driller arrives 8:00 AM Took sample S-8 2 20'
					21						
					22						
					23						
					24						
					25	S-9	SS	6	2 7 6 9	13	Drill to 25' Light brown wash Took sample S-9 @ 25'
		Class 3b	Brown fine SAND, tr. silt, tr. gravel		26						
					27						
					28						
					29						
					30	S-10	SS	12	5 7 12 90/3"	19	Drill to 30' Brown wash Rig chatter Took sample S-10 @ 30'
			Brown m-f SAND, tr. silt, tr. gravel		31						
	-18.1				32						
					33						
					34						
					35	S-11	SS	10	14 18 21 26	39	Drill to 30' Brown wash rig chatter Obstruction from 32'-33' Took sample S-11 @ 35'
			Brown m-f SAND, tr. silt, tra. gravel		36						
					37						
					38						
		Class 3a			39						
					40	S-12	SS	10	11 20 14 13	34	Drill to 40' Brown wash Rig chatter @ 39' Took sample S-12 @ 40'
			Brown m-f SAND, so. c-f gravel, tr. silt		41						
					42						
					43						
					44						
					45						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **B-19** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
			Brown m-f SAND, so. c-f gravel, tr. silt
		Class 3a	Brown/gray fine SAND, tr. clay, tr. silt, tr. gravel, tr. mica
			Brown/red fine SAND, some red clay, tr. silt
	-43.5		
			No Recovery
			Gray CLAY, tr. silt
		Class 4b	
			Gray CLAY, tr. silt, tr. sand, tr. mica

Casng blws/ ft

Depth Scale: 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-13	SS	10	50 55 49 40	104
S-14	SS	14	19 35 47 53	82
S-15	SS	10	5 18 17 40	35
S-16	SS	0	5 11 13 17	24
S-17	SS	3	4 8 12 21	20
S-18	SS	12	4 12 15 31	27

N-Value (Blows/ft): 10 20 30 40

Remarks

(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 45'
Brown wash
Rig chatter
Took sample s-13 @ 45'
10:50 AM Driller leaves to fix another rig
11:30 AM Driller returns
11:40 Took sample S-13 @ 45'

Drill to 50'
Brown wash
rig chatter 45'-49'
Break through @ 49'
Rig chatter @ 49.5'
Took sample S-14 @ 50'

Drill to 55'
Gray wash
Rig chatter from 52'--53' and 54'-54.5'
Took sample S-15 @ 55'

Drill to 60'
Gray to brown wash
Took sample S-16 @ 60'

Drill to 62'
Brown wash
Took sample S-17 @ 62'

Drill to 65'
Gray wash
Took sample S-18 @ 65'

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Log of Boring **B-19** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
			Top 6" gray CLAY, tr. silt, tr. sand, tr. mica
	-55.0		Bottom 8" Brown fine SAND, tr. clay, tr. silt, tr. mica
			Brown m-f SAND, tr. silt, tr. gravel, moist
		Class 3a	Light brown f-SAND, so. clay, tr. silt
			Light brown m-f SAND, tr. clay, tr. silt, tr. gravel, wet
	-73.0		
		Class 4a	Gray CLAY

Casng blws/ ft

Depth Scale: 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-19	SS	14	6 22 39 50	61
S-20	SS	14	21 37 50 62	87
S-21	SS	12	14 22 26 34	48
S-22	SS	6	30 46 84 50/3"	130
S-23	SS	19	15 27 31 50	58

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 70'
Gray wash
Slight rig chatter
Took sample S-19 @ 70'

Drill to 75'
Gray wash
took sample S-20 @ 75'
2:50 PM Stop working

5/1/14
7:54 am: Drillers arrive
Trouble starting rig
8:35 am: Rig started
8:44 am: Collect S-20

Drill to 80'
Brown wash
Took sample S-21 @ 80'
9:07 am: Problem with rig
9:07 am to 12:40 pm: Rig Break Down
12:50 pm: Collect S-21

Drill to 85'
Brown wash
Took sample S-22 @ 85'
Difficulty advancing casing beyond 50'
Redrill from 50'
Rig chatter
Brown to light brown wash at around 75'

2:01 pm: Drill to 90'
Light brown wash
Rig chatter
Took sample S-23 @ 90'

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Log of Boring **B-19** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.5 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 4a	Gray CLAY, tr. silt, moist
	-83.0		
		Class 3a	Gray/white m-f SAND, so. clay, tr. silt, tr. gravel, moist
	-86.5		End of borehole at 102'

Casng blws/ ft

Depth Scale: 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-24	SS	8	21 57 51 40	108
S-25	SS	12	22 38 50 50/4"	88

N-Value (Blows/ft): 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 95'
Light brown to light gray wash
2:40 pm: Stop drilling

5/2/14
8:00 am: Drillers arrive
Difficulty starting rig
8:54 am: Rig started
8:59 am: Redrill to 95'
Brown to gray wash
9:08 am: Took sample S-24 @ 95'

Drill to 100'
Gray wash
Took sample S-25 @ 100'

End of borehole at 102'
5/2/14 at 10:45 am

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Log of Boring **B-20** Sheet 1 of 5

Project: 19 Kent Avenue	Project No.: 170285701
Location: New York, NY	Elevation and Datum: Approx. El. 15.6 (NAVD 88)
Drilling Company: Warren George Inc.	Date Started: 4/13/14 — Date Finished: 4/14/14
Drilling Equipment: CME Truck Mounted Rig	Completion Depth: 102 ft — Rock Depth: N/A
Size and Type of Bit: 3-7/8" Tri-cone Roller Bit	Number of Samples: Disturbed 22 — Undisturbed 1 — Core
Casing Diameter (in): 4" O.D. Flush Joint — Casing Depth (ft): 19	Water Level (ft.): First ▽ — Completion ▼ — 24 HR. ▼
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Cesar Moreira
Sampler: 2" O.D. Split Spoon	Inspecting Engineer: Shreya Bhat
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casing blws/ ft or Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
	+15.6									
	+15.1		Concrete		0					
			Black c-f SAND, so. c-f gravel, tr. silt, moist [FILL]		1	S-1	SS	8	9 7 60/1"	60/1"
			Black/gray/white c-f GRAVEL, so. m-f sand, tr. silt, moist [FILL]		2 3	S-2	SS	6	100/6"	100/6"
			Black c-f GRAVEL, tr. sand, tr. silt, moist [FILL]	PUSH	4 5	S-3	SS	12	7 14 12 14	26
		Class 7	Top 12": Black c-f GRAVEL Bottom 10": Brown m-f SAND, tr. silt, tr. gravel, tr. clay, moist [FILL]		6 7 8	S-4	SS	22	8 4 4 6	8
			Black m-f SAND, c-f GRAVEL, tr. silt, moist [FILL]		9 10	S-5	SS	24	21 15 20 19	35
	+2.6			PUSH	11 12 13 14					
		Class 3b	Brown m-f SAND, so silt, moist [SP]	PUSH	15 16	S-6	SS	14	3 5 7 14	12
				121	17 18 19 20					

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

5/13/14
7:50 am: Drillers arrive
8:20 am: Set up at borehole location
8:43 am: Drillers leave to get magnets to establish water connection
10:23 am: Drillers return
10:30 am: Drill through concrete
10:40 am: Take S-1 at 1'
Drill to 3'
No return
Take S-2 at 3'
Drill to 5'
No return
Take S-3 at 5'

Take S-4 at 7'

Take S-5 at 9'
Install casing upto 14'

Drill to 15'
Brown wash
Take S-6 at 15'

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Log of Boring **B-20** Sheet 2 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description
		Class 3b	Brown, m-f SAND, tr. silt, tr. gravel, moist [SP]
			Brown, m-f SAND, tr. silt, tr. clay, tr. gravel, moist [SP]
	-12.9		
		Class 4b	Gray sandy CLAY, tr. mica, moist [CL]
			red/Gray CLAY [CL]
	-20.2		Top 4": Red/Gray sandy CLAY [CL] Bottom 10": Brown m-f SAND, tr. silt, tr. mica, moist [SP]
		Class 3a	Top 10": Brown m-f SAND, tr. silt, tr. clay, tr. mica, moist [SP] Bottom 4": Gray m-f SAND, tr. clay, tr. silt, tr. gravel, moist [SP]

Casng blws/ ft
Coring (min)

Depth Scale: 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-7	SS	14	11 13 16 17	29
S-8	SS	3	10 9 13 17	22
S-9	SS	13	2 5 7 12	12
S-10	SH	12		
S-11	SS	14	12 19 28 28	47
S-12	SS	14	14 17 23 24	40

N-Value (Blows/ft) 10 20 30 40

Remarks
(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Drill to 20'
Brown wash
Take S-7 at 20'

Drill to 25'
Brown wash
Take S-8 at 25'
Install casing upto 19'
(Casing hammered with a 300 lbs safety hammer)

Drill to 30'
Brown wash
Take S-9 at 30'

Drill to 33'
Brown wash
1:02 pm: Take S-10 at 33' with shelby tube
1:20 pm to 1:40 pm: Drillers take a lunch break
1:45 pm: Collect sample
1:53 pm: Take S-11 at 35' with split spoon

Drill to 40'
Reddish brown wash
Take S-12 at 40'

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Log of Boring **B-20** Sheet 3 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.6 (NAVD 88)

Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		Gray m-f SAND, tr. clay, tr. c-f gravel, tr. mica, moist [SP]	45	S-13	SS	12	22 21 30 39	51	Drill to 45' Reddish brown wash Take S-13 at 45'
			46						
			47						
			48						
			49						
			50	S-14	SS	18	20 32 37 55	69	Drill to 50' Brown wash 2:37 pm: Rig shuts down (Trouble starting rig) 2:43 pm: Fix problem and start rig again Take S-14 at 50' 2:51 pm: Stop working
	Class 3a	Top 2": Gray clayey SAND, tr. silt, tr. mica, moist [SC] Bottom 6": Brown m-f SAND, tr. silt, tr. mica, moist [SP]	51						
			52						
			53						
			54						
			55						5/14/14 8:04 am: Drillers arrive 8:10 am: Start working 8:17 am: Collect S-14 8:30 am: Drill to 55' Brown wash Take S-15 at 55'
		Reddish brown f-SAND, so. silt, tr. mica [SP]	56	S-15	SS	12	9 12 22 30	34	
			57						
			58						
-42.9			59						
	Class 3b	Gray f-clayey SAND, tr. mica, moist [SC]	60	S-16	SS	23	9 12 16 25	28	Drill to 60' Brown wash Take S-16 at 60'
			61						
-47.9			62						
			63						
			64						
	Class 4b	Gray sandy CLAY, tr. mica, moist [CL]	65	S-17	SS	23	4 7 10 19	17	Drill to 65' Brown wash Slight rig chatter Take S-17 at 65'
			66						
			67						
			68						
-52.9			69						
	Class 3a		70						

Casng blws/ ft
Coring (min)

N-Value (Blows/ft): 10 20 30 40

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Log of Boring **B-20** Sheet 4 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.6 (NAVD 88)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Gray f-clayey SAND, tr. mica [SC]		70	S-18	SS	20	7 13 18 30	31	Drill to 70' Brown wash Take S-18 at 70'
					71						
					72						
					73						
					74						
			Top 2": Gray clayey SAND, tr. mica [SC] Bottom 14": Brown m-f SAND, tr. m-f gravel, tr. silt, tr. mica, moist [SP]		75	S-19	SS	18	19 42 53 50/4"	95	Drill to 75' Brown wash Take S-19 at 75'
					76						
					77						
					78						
					79						
			Brown m-f SAND, tr. m-f gravel, tr. silt, moist [SP]		80	S-20	SS	16	50 64 50/3"	50/3"	Drill to 80' Brown wash Take S-20 at 80'
		Class 3a			81						
					82						
					83						
					84						
			Brown m-f SAND, tr. gravel, tr. silt, moist [SP]		85	S-21	SS	12	59 80 50/4"	50/4"	Drill to 85' Brown wash Take S-21 at 85'
					86						
					87						
					88						
					89						
			Brown m-f SAND, tr. silt, tr. gravel, moist [SP]		90	S-22	SS	6	50 50/3"	50/3"	Drill to 90' Brown wash 10:40 am: Stop to fill fuel 10:48 am: Start working again Take S-22 at 90'
					91						
					92						
					93						
					94						
					95						

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Log of Boring **B-20** Sheet 5 of 5

Project	Project No.
19 Kent Avenue	170285701
Location	**Elevation and Datum**
New York, NY	Approx. El. 15.6 (NAVD 88)

MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Casng blws/ ft Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-81.4	Class 3a	Brown m-f SAND, tr. silt, tr. gravel, moist [SP]		95	S-23	SS	14	36 69 50/2"	50/2"	Drill to 95' Brown wash Take S-23 at 95'
			End of borehole at 97' 5/14/14 at 12:30 pm		96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120						Difficulty advancing casing beyond 80' Redrill from 80' Drill to 100' Brown wash Difficulty advancing casing beyond 87' to collect sample (Hole collapsed) 12:30 pm: End of borehole at 97' Borehole backfilled with soil cuttings and converted into an observation well upon completion.

WELL CONSTRUCTION SUMMARY
Well No. LB-1

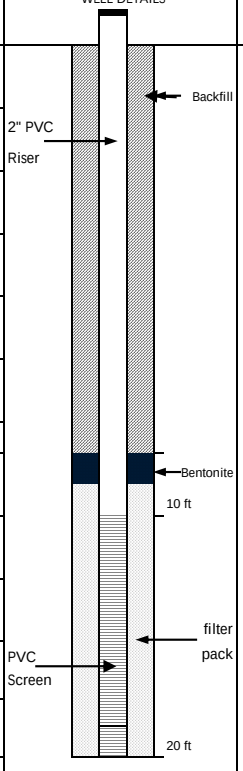
PROJECT 19 Kent Avenue	PROJECT NO. / PERMIT 170285701
LOCATION Brooklyn, NY	ELEVATION AND DATUM 12.9 NAVD 88
DRILLING AGENCY Warren George, Inc.	DATE STARTED / DATE FINISHED 4/7/2014 / 4/7/2014
DRILLING EQUIPMENT CME Truck Mounted Drill Rig	DRILLER Deon
SIZE AND TYPE OF BIT 3 7/8" Tri-Cone Roller Bit	INSPECTOR Maria Mis

METHOD OF INSTALLATION

A 2-inch PVC screen (10') and riser (10') were installed and the annular space was filled with No. 1 filter sand, sealed with bentonite 2 feet above the PVC screen and backfilled to the surface.

METHOD OF WELL DEVELOPMENT

TYPE OF CASING PVC		DIAMETER 2-inch-ID	TYPE OF BACKFILL MATERIAL Sand/Bentonite	
TYPE OF SCREEN PVC		DIAMETER 2-inch-ID	TYPE OF SEAL MATERIAL Bentonite	
BOREHOLE DIAMETER 3"-4"			TYPE OF FILTER MATERIAL # 1 Sand	
TOP OF CASING	ELEVATION 12.90	DEPTH (ft) 0.00	WELL DETAILS	SUMMARY SOIL CLASSIFICATION / DEPTH (FT) bgs
TOP OF SEAL	ELEVATION 2.90	DEPTH (ft) 10.00		
TOP OF FILTER	ELEVATION	DEPTH (ft)		
TOP OF SCREEN	ELEVATION 2.90	DEPTH (ft) 10.00		
BOTTOM OF WELL	ELEVATION -7.10	DEPTH (ft) 20.00		
SCREEN LENGTH 10 ft				
SLOT SIZE 0.01-in				



Fill (11-65)

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
7.90	4/21/14	5.00
6.10	4/24/14	6.80
5.90	4/28/14	7.00
5.50	4/29/14	7.40
4.00	5/1/14	8.90
7.90	5/2/14	5.00

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WELL CONSTRUCTION SUMMARY
Well No. LB-15 (OW)

PROJECT 19 Kent Avenue	PROJECT NO. PERMIT 170285701
LOCATION Brooklyn, NY	ELEVATION AND DATUM 17.2 NAVD 88
DRILLING AGENCY Warren George, Inc.	DATE STARTED DATE FINISHED 4/21/2014 4/21/2014
DRILLING EQUIPMENT CME Truck Mounted Drill Rig	DRILLER Dave
SIZE AND TYPE OF BIT 3 7/8" Tri-Cone Roller Bit	INSPECTOR Shreya Bhat

METHOD OF INSTALLATION

A 2-inch PVC screen (10') and riser (10') were installed and the annular space was filled with No. 1 filter sand, sealed with bentonite 2 feet above the PVC screen and backfilled to the surface.

METHOD OF WELL DEVELOPMENT

TYPE OF CASING PVC	DIAMETER 2-inch-ID	TYPE OF BACKFILL MATERIAL Sand/Bentonite	
TYPE OF SCREEN PVC	DIAMETER 2-inch-ID	TYPE OF SEAL MATERIAL Bentonite	
BOREHOLE DIAMETER 3"-4"		TYPE OF FILTER MATERIAL # 1 Sand	

	ELEVATION	DEPTH (ft)
TOP OF CASING	17.20	0.00
TOP OF SEAL	7.20	10.00
TOP OF FILTER		
TOP OF SCREEN	7.20	10.00
BOTTOM OF WELL	-2.80	20.00

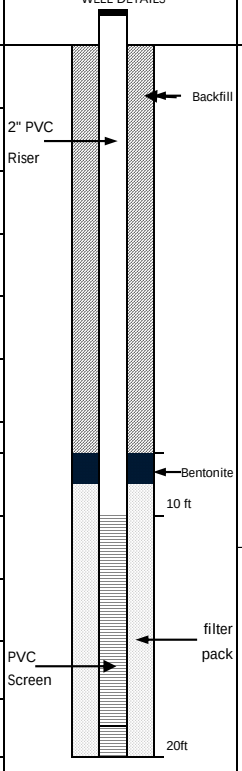
SCREEN LENGTH
10 ft

SLOT SIZE
0.01-in

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
11.40	4/21/14	5.80
8.50	5/1/14	8.70
8.50	5/2/14	8.70
7.70	5/5/14	9.50
7.40	5/7/14	9.80
7.20	5/8/14	10.00

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT) bgs
Fill (Class 7)	
Sand (Class 3)	

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WELL CONSTRUCTION SUMMARY
Well No. LB-16 (OW)

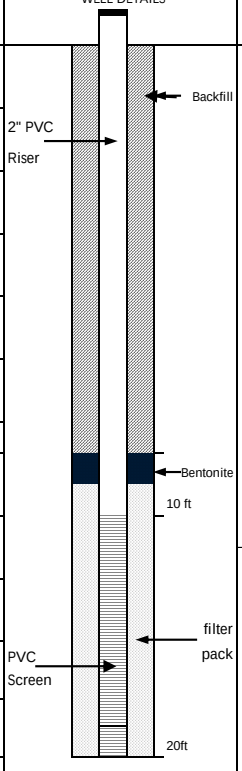
PROJECT 19 Kent Avenue	PROJECT NO. / PERMIT 170285701
LOCATION Brooklyn, NY	ELEVATION AND DATUM 12.7 NAVD 88
DRILLING AGENCY Warren George, Inc.	DATE STARTED / DATE FINISHED 4/11/2014 / 4/11/2014
DRILLING EQUIPMENT CME Truck Mounted Drill Rig	DRILLER Deon
SIZE AND TYPE OF BIT 3 7/8" Tri-Cone Roller Bit	INSPECTOR Shreya Bhat

METHOD OF INSTALLATION

A 2-inch PVC screen (10') and riser (10') were installed and the annular space was filled with No. 1 filter sand, sealed with bentonite 2 feet above the PVC screen and backfilled to the surface.

METHOD OF WELL DEVELOPMENT

TYPE OF CASING PVC		DIAMETER 2-inch-ID	TYPE OF BACKFILL MATERIAL Sand/Bentonite	
TYPE OF SCREEN PVC		DIAMETER 2-inch-ID	TYPE OF SEAL MATERIAL Bentonite	
BOREHOLE DIAMETER 3"-4"			TYPE OF FILTER MATERIAL # 1 Sand	
TOP OF CASING	ELEVATION 12.70	DEPTH (ft) 0.00	WELL DETAILS	SUMMARY SOIL CLASSIFICATION / DEPTH (FT) bgs
TOP OF SEAL	ELEVATION 2.70	DEPTH (ft) 10.00		
TOP OF FILTER	ELEVATION	DEPTH (ft)		
TOP OF SCREEN	ELEVATION 2.70	DEPTH (ft) 10.00		
BOTTOM OF WELL	ELEVATION -7.30	DEPTH (ft) 20.00		
SCREEN LENGTH 10 ft				
SLOT SIZE 0.01-in				



Fill (Class 7)

Sand (Class 3)

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
5.00	4/24/14	7.70
4.70	4/29/14	8.00
5.70	5/1/14	7.00
5.40	5/2/14	7.30
5.10	5/5/14	7.60
5.10	5/6/14	7.60

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APPENDIX B

SOIL TESTING RESULTS

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	---	Sample Type:	---	Tested By:	jek
Sample ID:	---	Test Date:	06/16/14	Checked By:	jdt
Depth :	---	Test Id:	297874		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content, %
B-10	S- 14	50-52 ft	Moist, brown clay	27.4
B-11	S- 14	50-52 ft	Moist, mottled brown and red clay with sand	22.9
B-13	S- 16	52-54 ft	Moist, dark grayish brown clay	25.8
B-20	S- 10	32-35 ft	Moist, red clay	35.2

Notes: Temperature of Drying : 110° Celsius

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	---	Sample Type:	---	Tested By:	md
Sample ID:	---	Test Date:	06/06/14	Checked By:	jdt
Depth :	---	Test Id:	297863		

Density of Soil In Place by the Drive Cylinder Method - ASTM D2937

Boring ID	Sample ID	Depth	Visual Description	Sample Dia. in	Sample Height in	Bulk Density pcf	Moisture Content %	Dry Density pcf	*
B-13	S-16	52-54 ft	Moist, dark grayish brown clay	2.85	6.00	122	28.2	95.6	(1)
B-20	S-10	32-35 ft	Moist, red clay	2.87	6.60	119	47.4	80.5	(2)

* Sample Comments

(1): ---

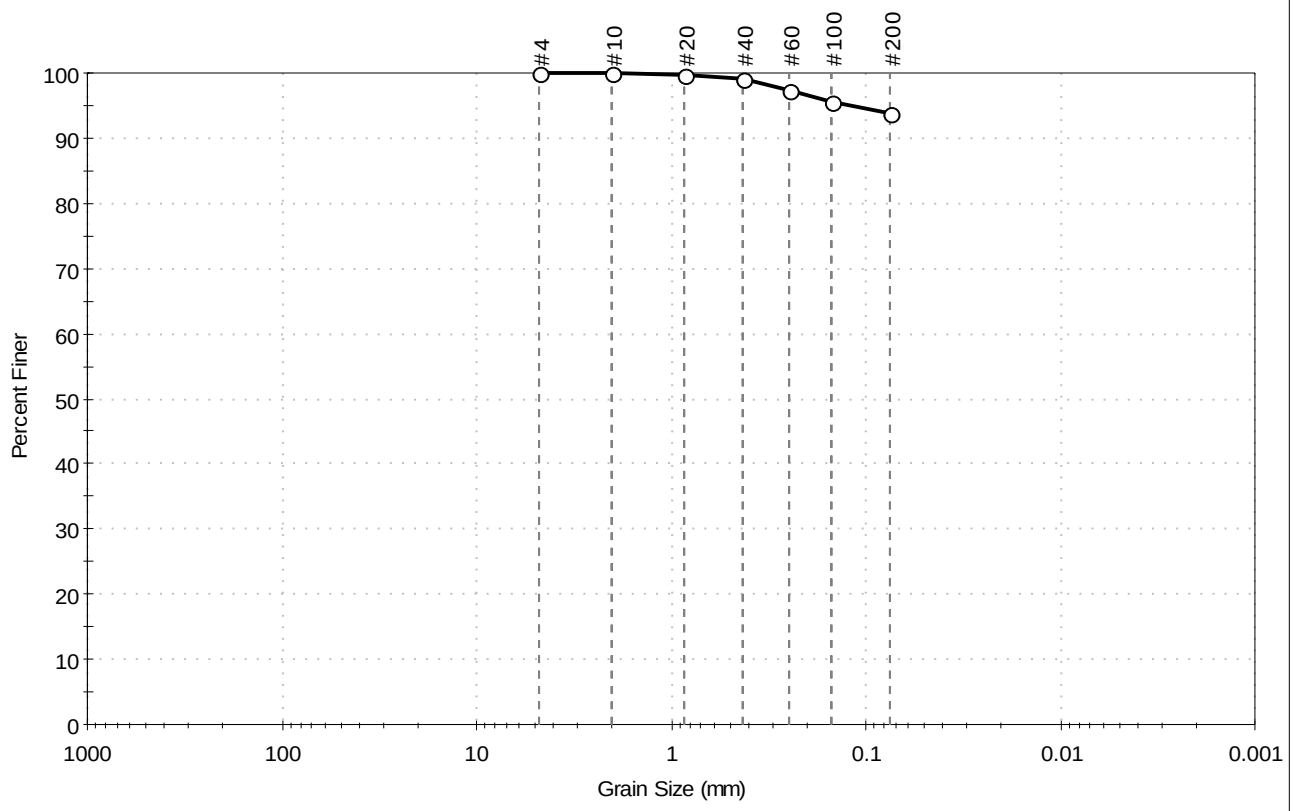
(2): ---

Notes: Density determined on undisturbed samples provided to GeoTesting Express.

Moisture Content determined by ASTM D 2216.

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-10	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-14	Test Date:	06/16/14	Checked By:	jdt
Depth :	50-52 ft	Test Id:	297866		
Test Comment:	---				
Sample Description:	Moist, brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	0.0	6.1	93.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	97		
#100	0.15	96		
#200	0.075	94		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean clay (CL)

AASHTO Clayey Soils (A-6 (17))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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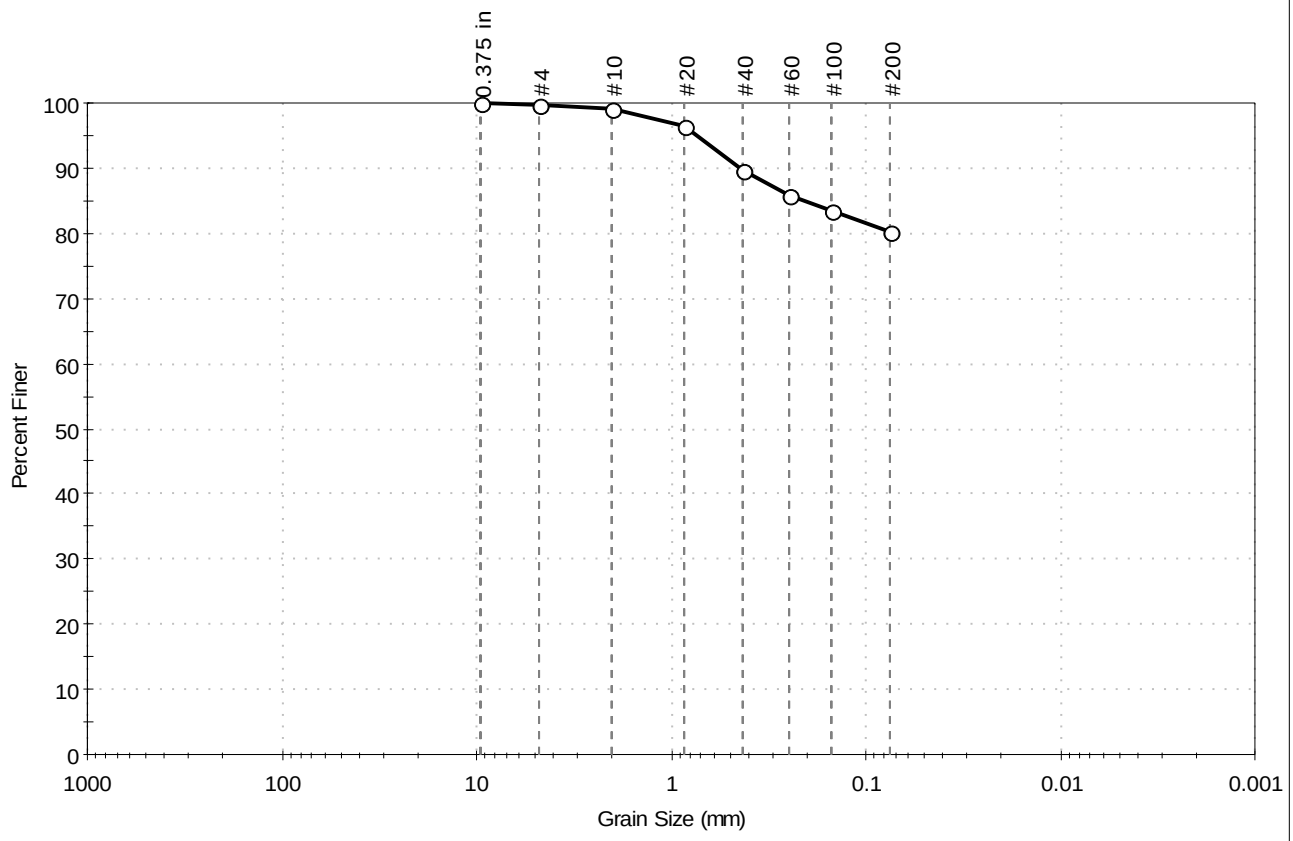
Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-11	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-14	Test Date:	06/16/14	Checked By:	jdt
Depth :	50-52 ft	Test Id:	297865		
Test Comment:	---				
Sample Description:	Moist, mottled brown and red clay with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	0.4	19.3	80.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	90		
#60	0.25	86		
#100	0.15	84		
#200	0.075	80		

Coefficients

D_{85} = 0.2081 mm	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean clay with sand (CL)

AASHTO Clayey Soils (A-7-6 (16))

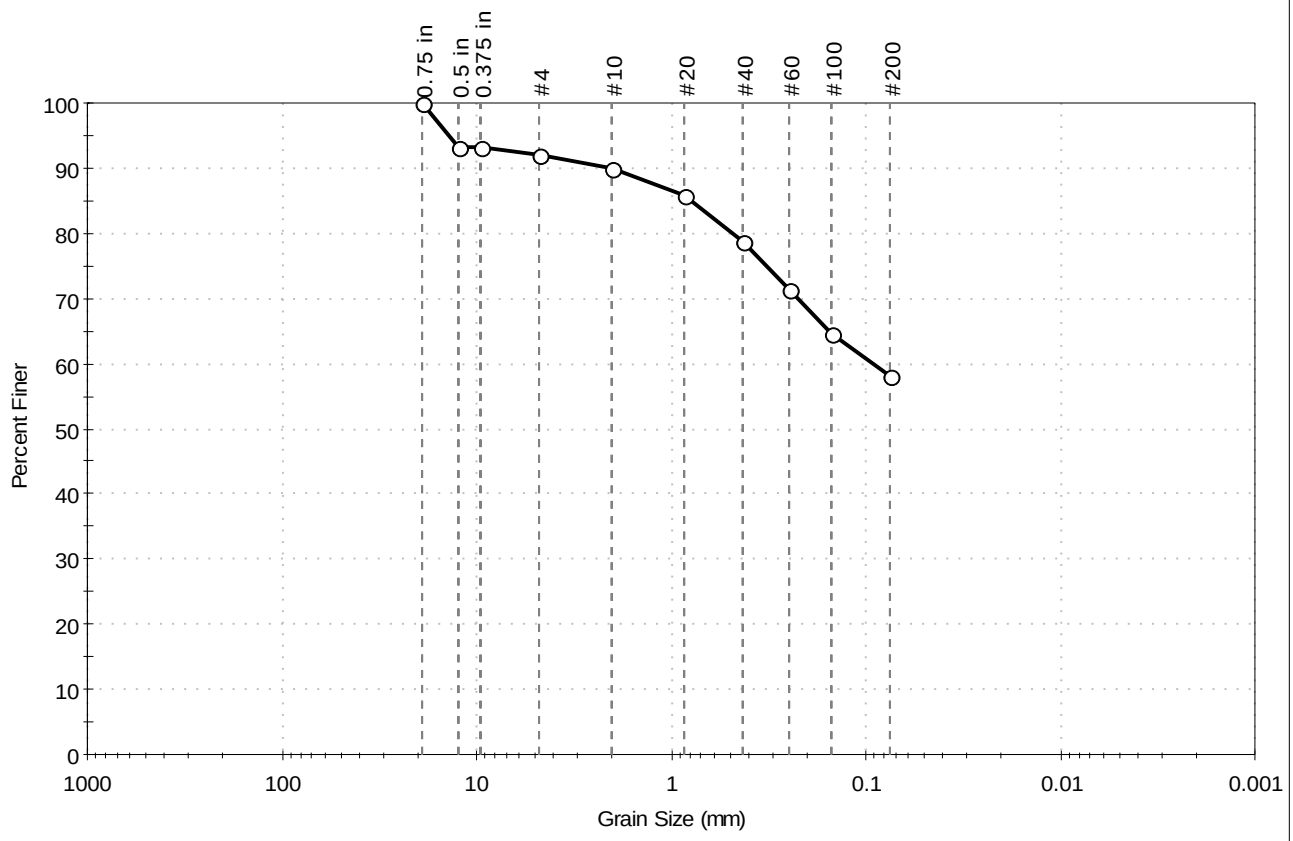
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-12	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-9	Test Date:	06/16/14	Checked By:	jdt
Depth :	25-27 ft	Test Id:	297864		
Test Comment:	---				
Sample Description:	Moist, olive sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	8.1	33.7	58.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	93		
0.375 in	9.50	93		
#4	4.75	92		
#10	2.00	90		
#20	0.85	86		
#40	0.42	79		
#60	0.25	71		
#100	0.15	64		
#200	0.075	58		

Coefficients

D_{85} = 0.7930 mm	D_{30} = N/A
D_{60} = 0.0911 mm	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

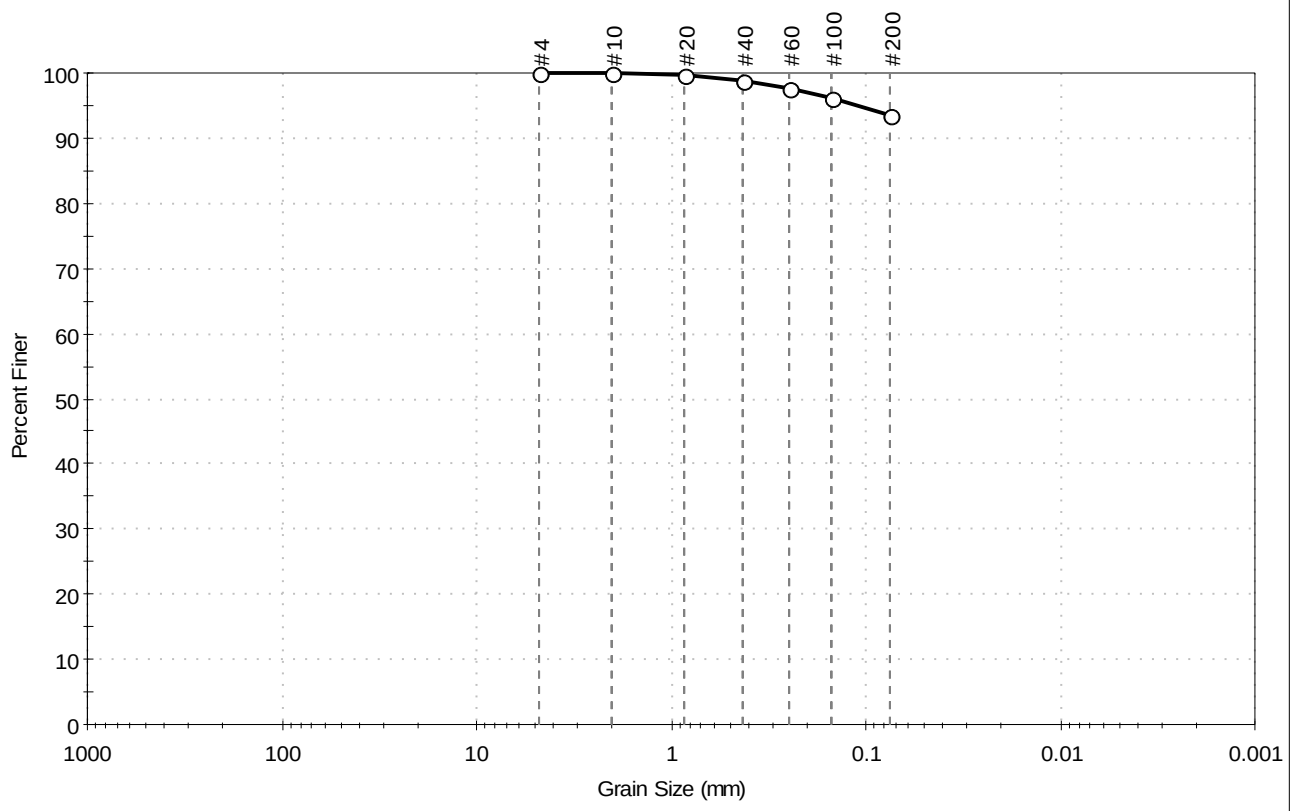
Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-13	Sample Type:	tube	Tested By:	jbr
Sample ID:	S-16	Test Date:	06/16/14	Checked By:	jdt
Depth :	52-54 ft	Test Id:	297867		
Test Comment:	---				
Sample Description:	Moist, dark grayish brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	0.0	6.6	93.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	98		
#100	0.15	96		
#200	0.075	93		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Lean clay (CL)

AASHTO Clayey Soils (A-6 (18))

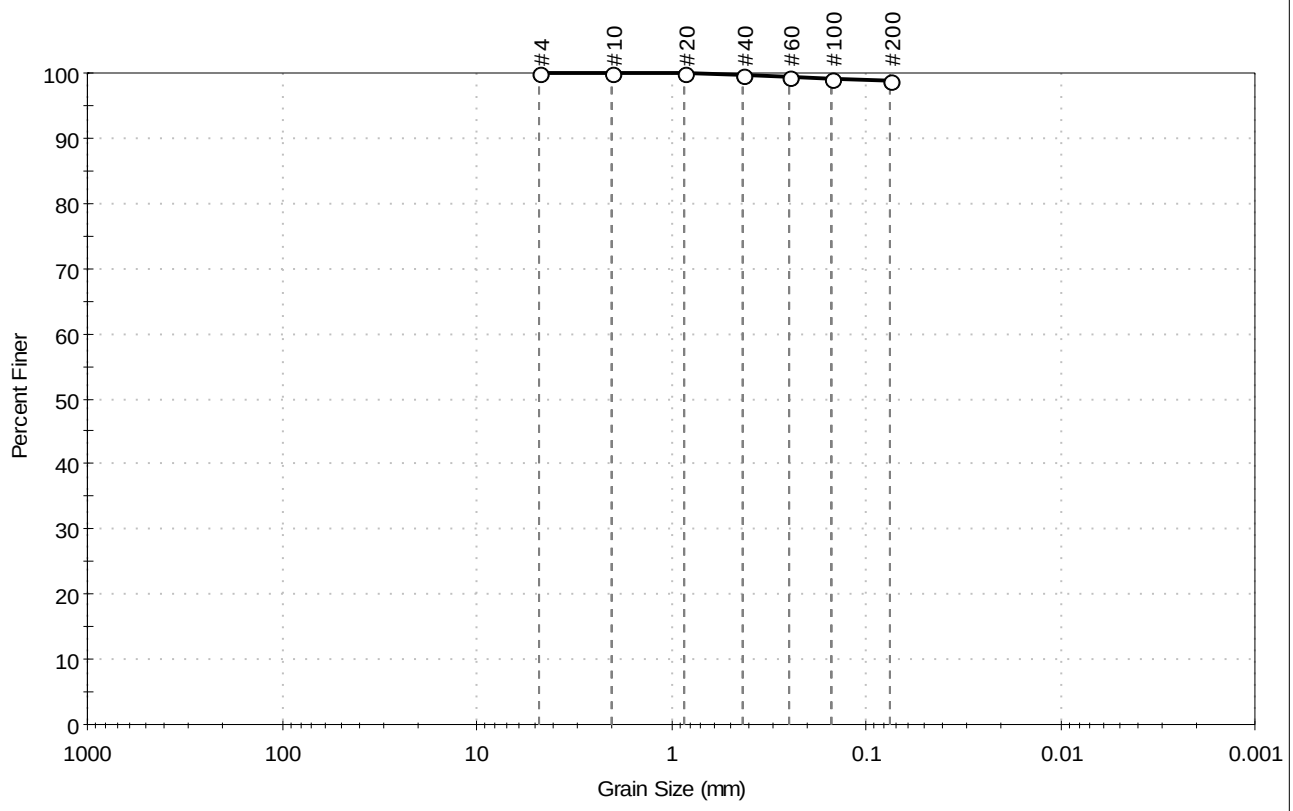
Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-20	Sample Type:	tube	Tested By:	jbr
Sample ID:	S-10	Test Date:	06/16/14	Checked By:	jdt
Depth :	32-35 ft	Test Id:	297868		
Test Comment:	---				
Sample Description:	Moist, red clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	0.0	1.1	98.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	99		
#200	0.075	99		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM Fat clay (CH)

AASHTO Clayey Soils (A-7-5 (36))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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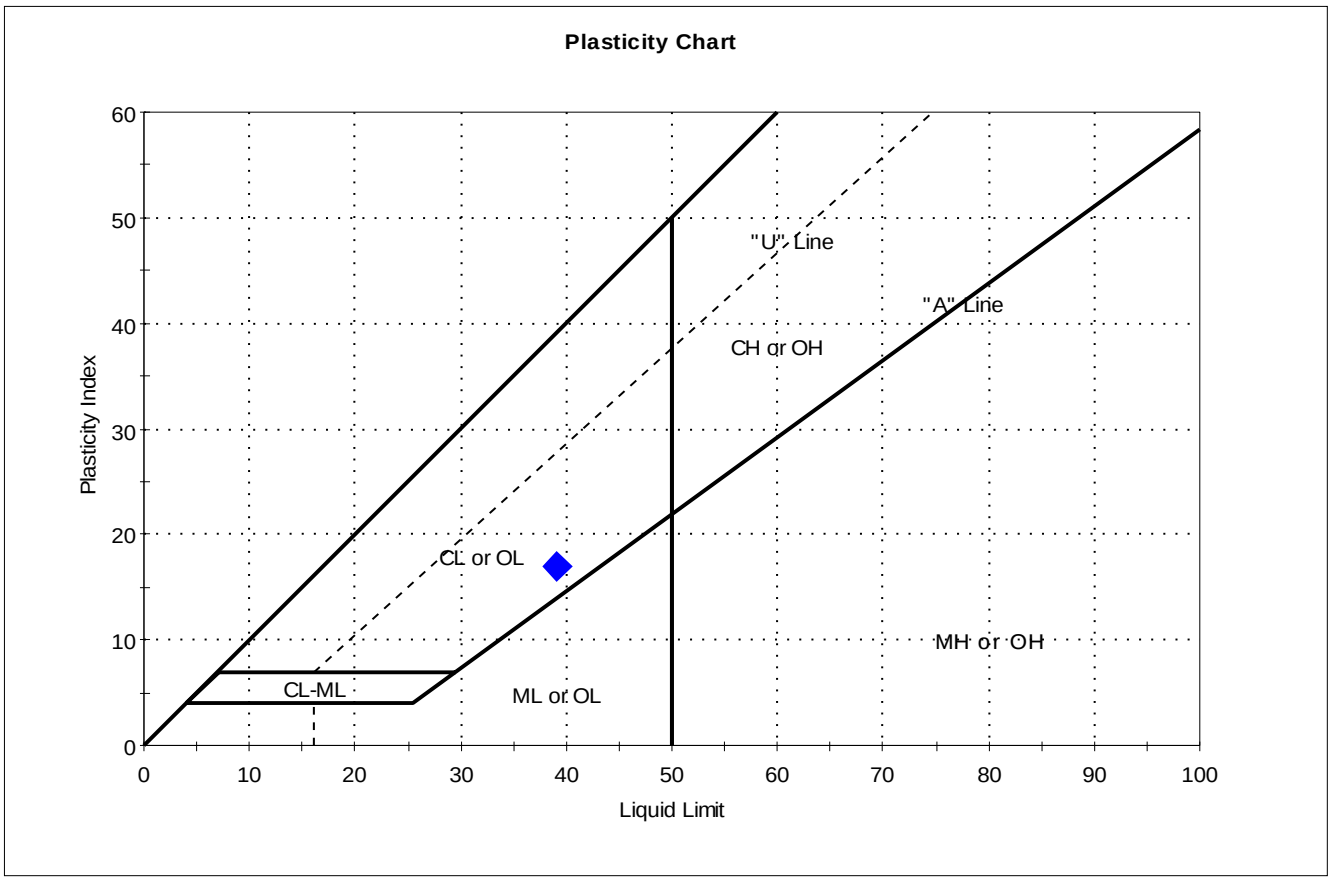
Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-10	Sample Type:	jar	Tested By:	cam
Sample ID:	S-14	Test Date:	06/13/14	Checked By:	jdt
Depth :	50-52 ft	Test Id:	297859		
Test Comment:	---				
Sample Description:	Moist, brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

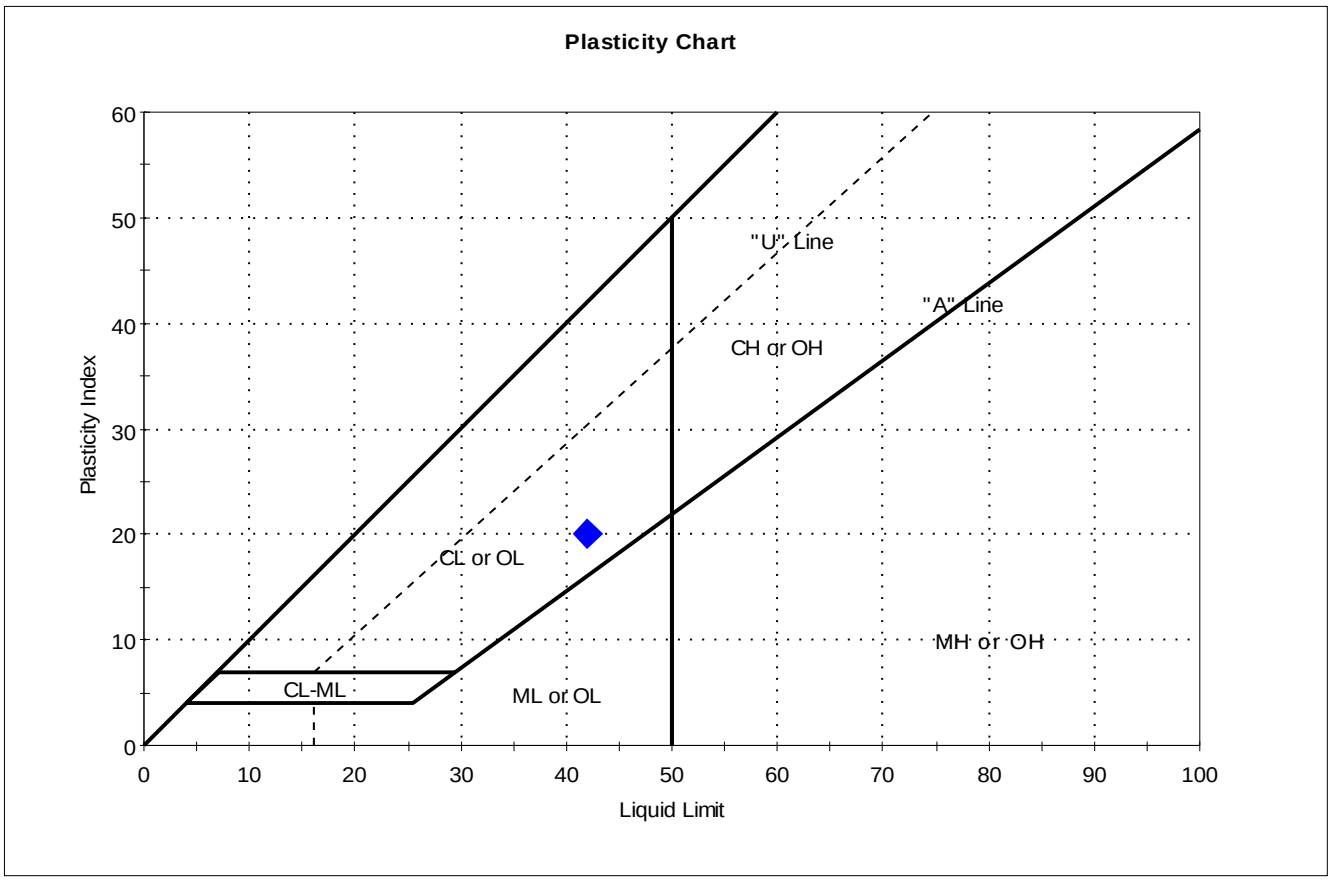


Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-14	B-10	50-52 ft	27	39	22	17	0.3	Lean clay (CL)

Sample Prepared using the WET method
1% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: LOW

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-11	Sample Type:	jar	Tested By:	cam
Sample ID:	S-14	Test Date:	06/13/14	Checked By:	jdt
Depth :	50-52 ft	Test Id:	297858		
Test Comment:	---				
Sample Description:	Moist, mottled brown and red clay with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

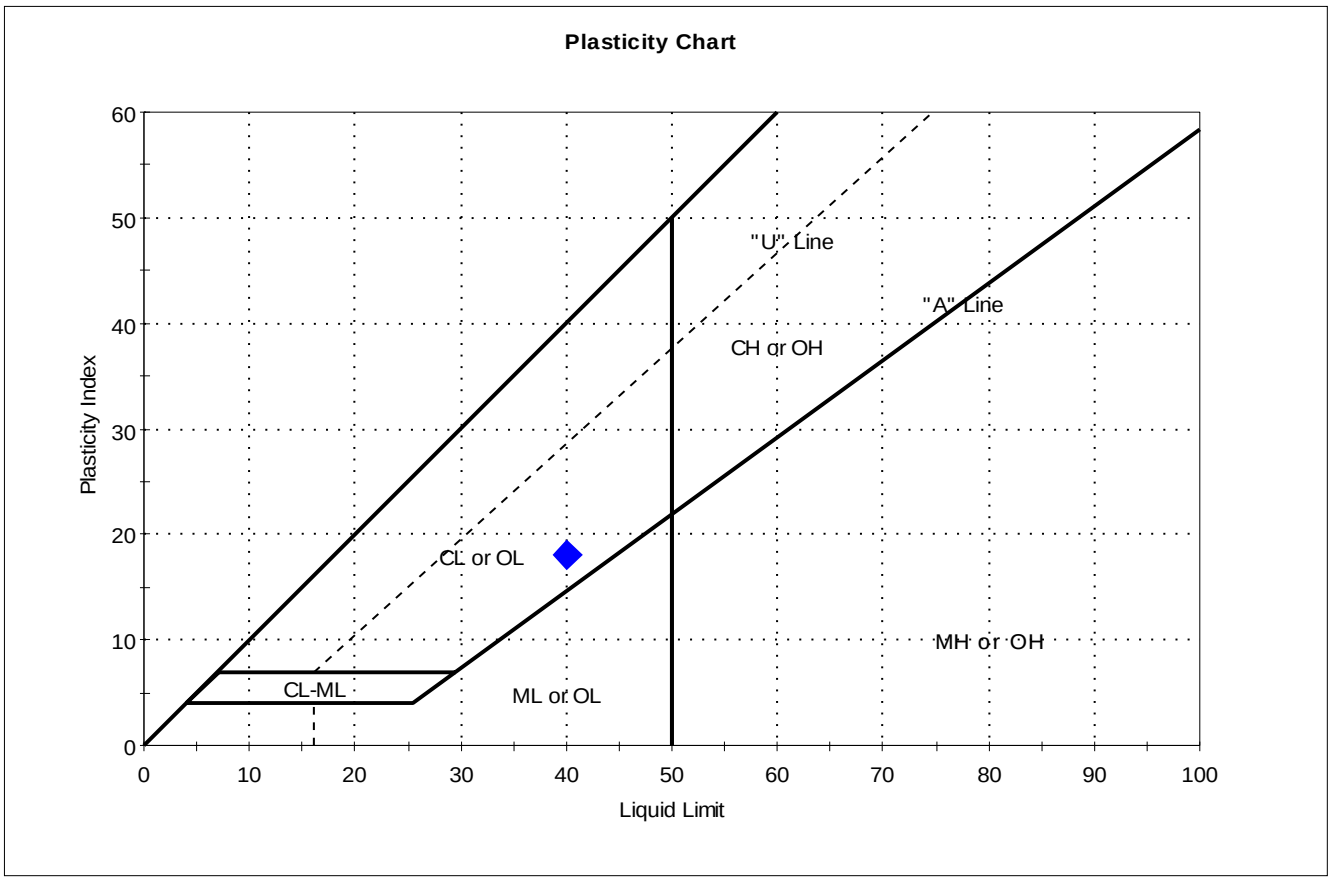


Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-14	B-11	50-52 ft	23	42	22	20	0	Lean clay with sand (CL)

Sample Prepared using the WET method
10% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilatancy: SLOW
Toughness: LOW

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-13	Sample Type:	tube	Tested By:	cam
Sample ID:	S-16	Test Date:	06/16/14	Checked By:	jdt
Depth :	52-54 ft	Test Id:	297860		
Test Comment:	---				
Sample Description:	Moist, dark grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-16	B-13	52-54 ft	1659	40	22	18	91	Lean clay (CL)

Sample Prepared using the WET method

1% Retained on #40 Sieve

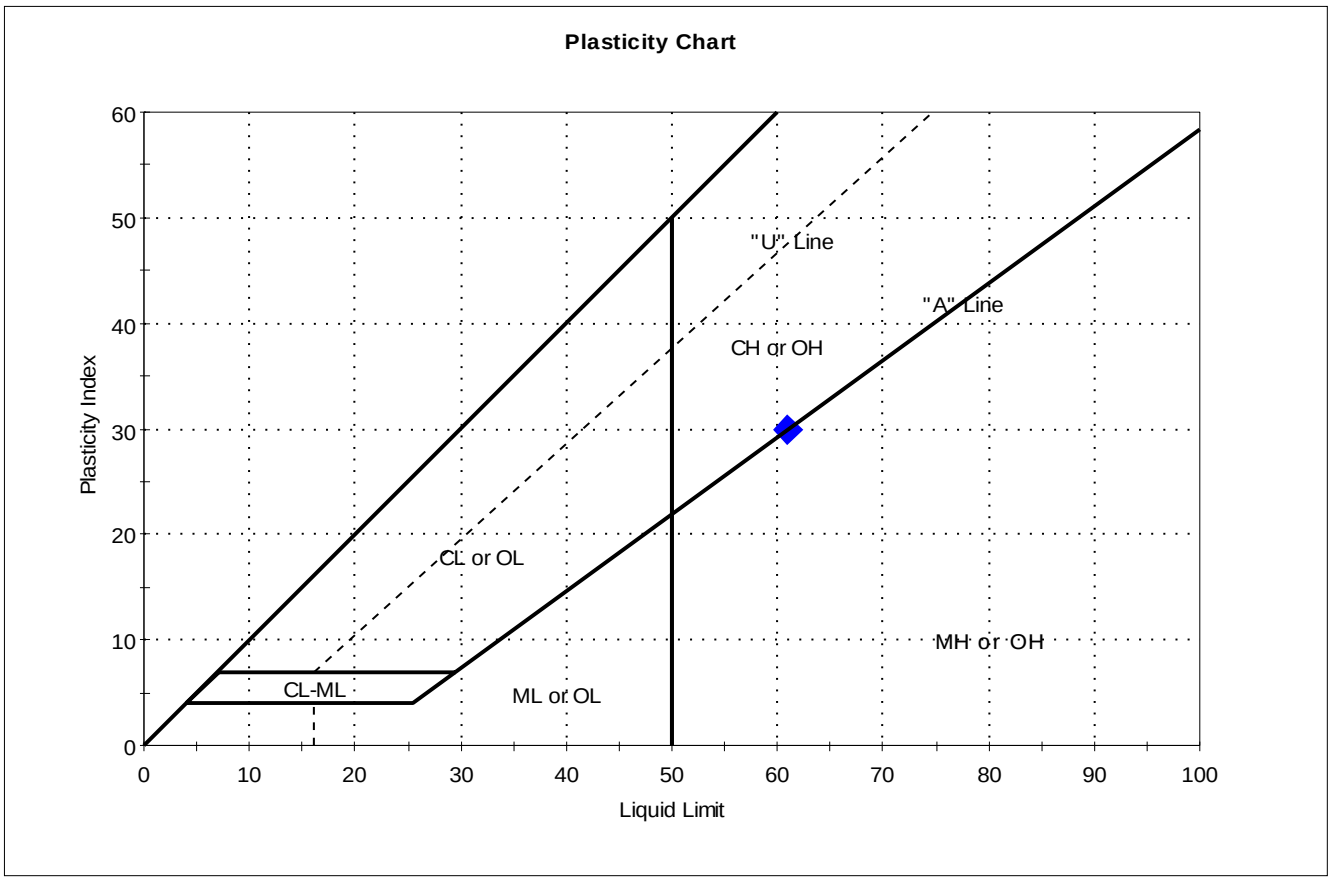
Dry Strength: HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	Langan Engineering				
Project:	19 Kent Ave				
Location:	Brooklyn, NY			Project No:	GTX-301904
Boring ID:	B-20	Sample Type:	tube	Tested By:	cam
Sample ID:	S-10	Test Date:	06/16/14	Checked By:	jdt
Depth :	32-35 ft	Test Id:	297861		
Test Comment:	---				
Sample Description:	Moist, red clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-10	B-20	32-35 ft	35	61	31	30	0.1	Fat clay (CH)

Sample Prepared using the WET method
0% Retained on #40 Sieve
Dry Strength: HIGH
Dilatancy: SLOW
Toughness: LOW

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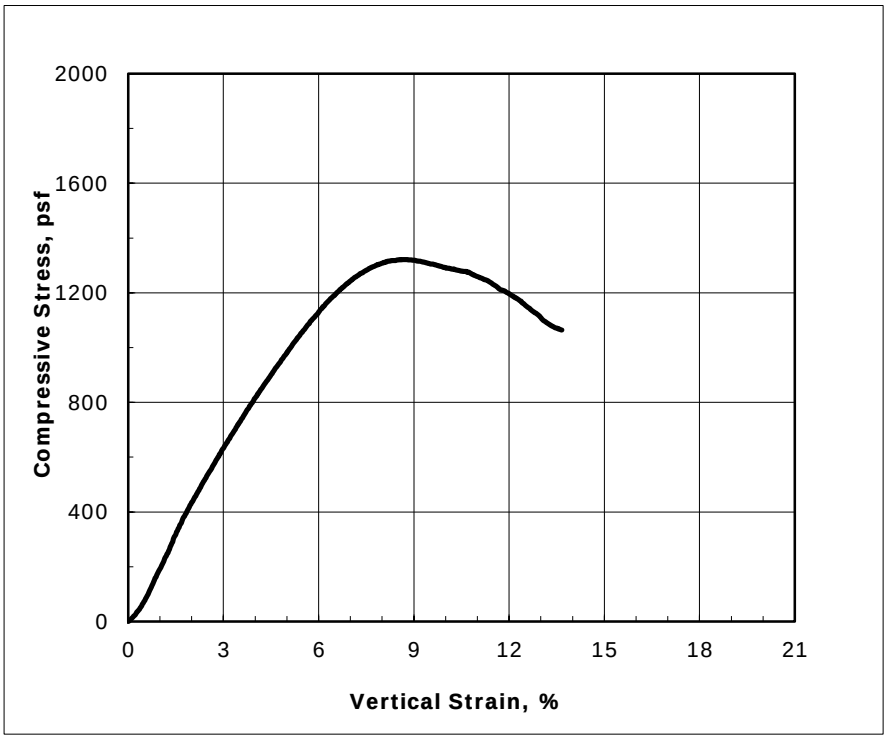
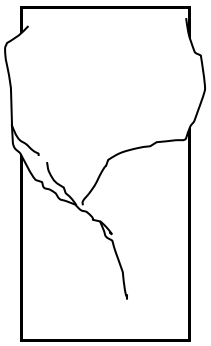
GeoTesting EXPRESS

Client:	Langan Engineering
Project Name:	19 Kent Ave
Project Location:	Brooklyn, NY
GTX #:	301904
Test Date:	06/16/14
Tested By:	md
Checked By:	jdt
Boring ID:	B-20
Sample ID:	S-10
Depth, ft:	32-35
Visual Description:	Moist, red clay
Test No.:	UC-1

Unconfined Compressive Strength by ASTM D2166





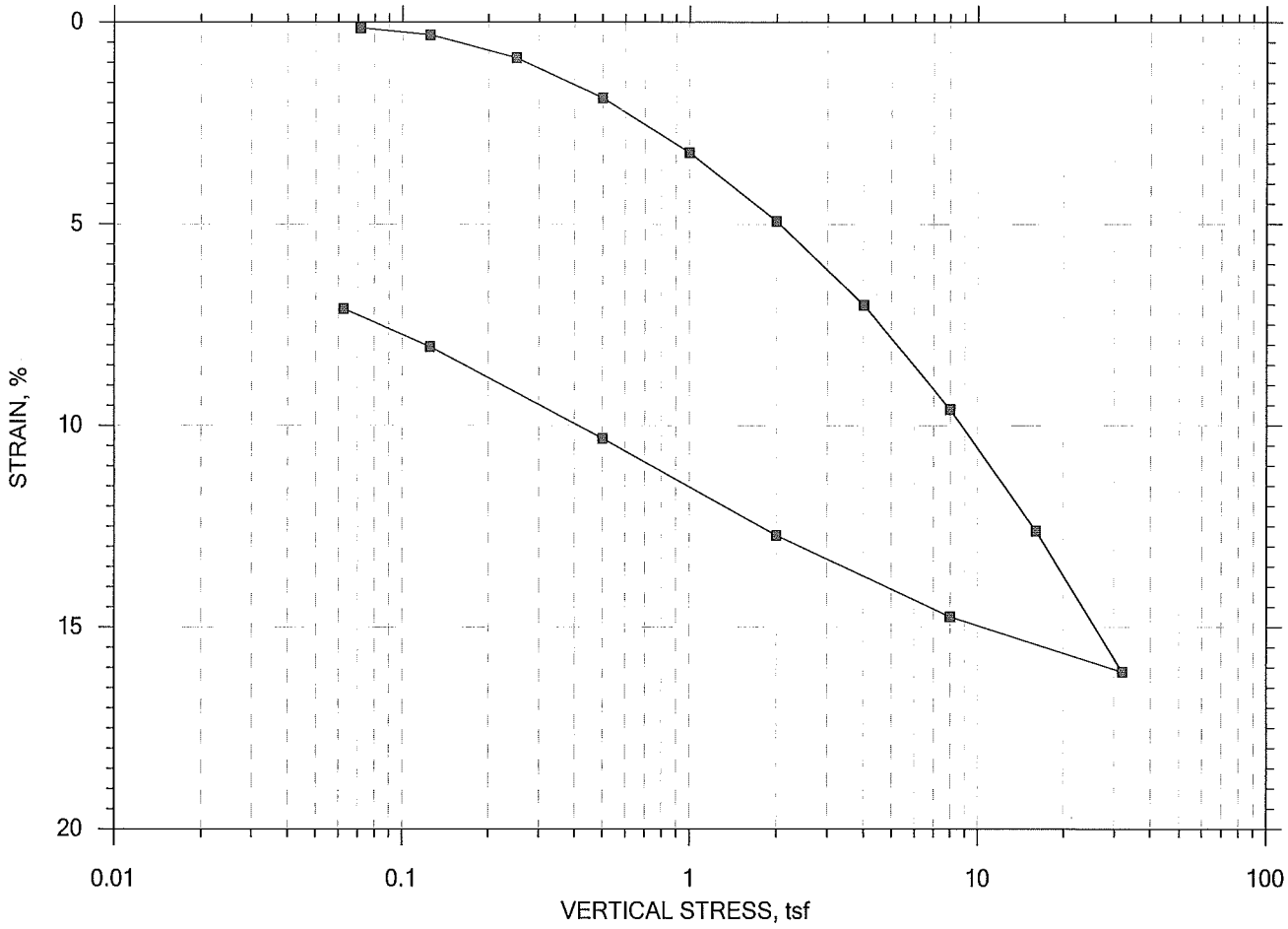
Failure Sketch

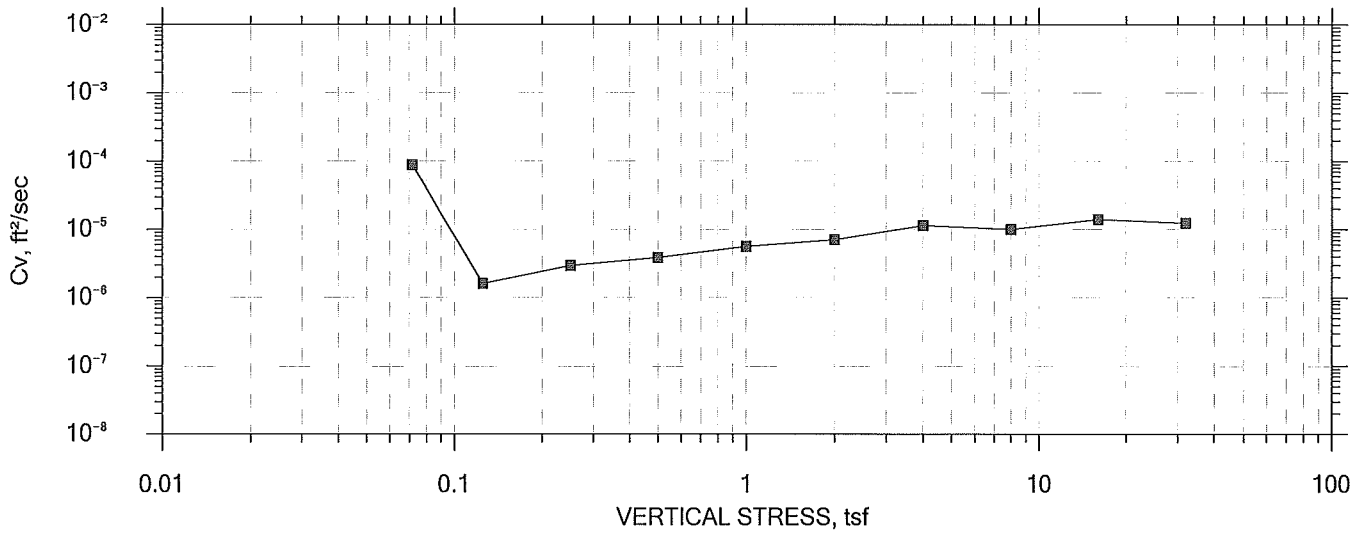
Initial Diameter, in:	2.87	Shear Strength, psf:	660.8
Initial Height, in:	5.98	Strain Rate, %/min:	1
Height to Diameter Ratio:	2.08	Strain at Failure, %:	8.7
Initial Mass, grams:	1208	Sample Type:	Intact
Initial Bulk Density, pcf:	119	Liquid Limit:	61
Initial Moisture Content, %:	34.7	Plastic Limit:	31
Initial Dry Density, pcf:	88.3	Plasticity Index:	30
Initial Degree of Saturation:	99.3	% Passing #200 sieve:	98.9
Initial Void Ratio:	0.98	Soil Classification:	Fat Clay
Estimated Specific Gravity:	2.8	Group Symbol:	CH

Notes:
Moisture content obtained before shear from sample trimmings
Moisture Content determined by ASTM D2216
Percent passing #200 sieve determined by ASTM D422
Atterberg Limits determined by ASTM D4318

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT

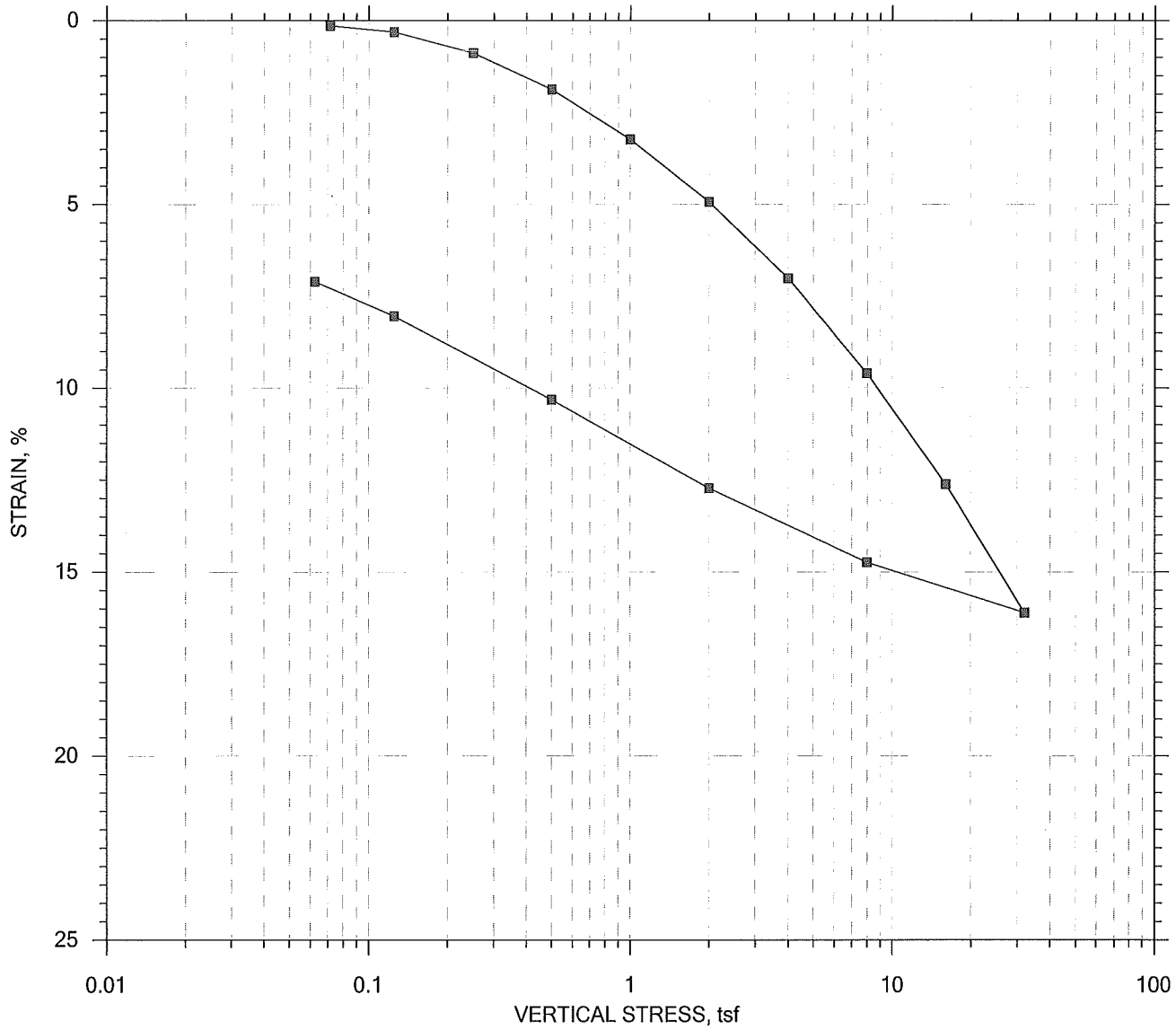




GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT



				Before Test	After Test
Current Vertical Effective Stress: ---			Water Content, %	29.23	26.38
Preconsolidation Stress: ---			Dry Unit Weight, pcf	94.598	100.64
Compression Ratio: ---			Saturation, %	96.33	100.00
Diameter: 2.5 in		Height: 1 in	Void Ratio	0.85	0.74
LL: 40	PL: 22	PI: 18	GS: 2.81		

GeoTesting EXPRESS

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		
Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Depth: 52-54 ft
Test No.: IP-2	Sample Type: intact	Elevation: ---

Soil Description: Moist, dark grayish brown clay
Remarks: System V, Swell Pressure = 0.0714 tsf

Estimated Specific Gravity: 2.81	Liquid Limit: 40	Specimen Diameter: 2.50 in
Initial Void Ratio: 0.851	Plastic Limit: 22	Initial Height: 1.00 in
Final Void Ratio: 0.740	Plasticity Index: 18	Final Height: 0.94 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	11730	RING		13541
Wt. Container + Wet Soil, gm	164.61	266.95	263.48	162.15
Wt. Container + Dry Soil, gm	130.06	231.32	231.32	130.05
Wt. Container, gm	7.5900	109.43	109.43	8.3800
Wt. Dry Soil, gm	122.47	121.89	121.89	121.67
Water Content, %	28.21	29.23	26.38	26.38
Void Ratio	---	0.851	0.740	---
Degree of Saturation, %	---	96.33	100.00	---
Dry Unit Weight, pcf	---	94.598	100.64	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: 19 Kent Ave
Boring No.: B-13
Sample No.: S-16
Test No.: IP-2

Location: Brooklyn, NY
Tested By: md
Test Date: 06/07/14
Sample Type: intact

Project No.: GTX-301904
Checked By: jdt
Depth: 52-54 ft
Elevation: ---

Soil Description: Moist, dark grayish brown clay
Remarks: System V, Swell Pressure = 0.0714 tsf

Displacement at End of Increment

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt T90 min	Cv ft²/sec	Mv 1/tsf	k ft/day
1	0.0714	0.001383	0.849	0.138	0.690	3.55e-005	1.94e-002	1.85e-003
2	0.125	0.003064	0.845	0.306	25.003	9.77e-007	3.14e-002	8.27e-005
3	0.250	0.008830	0.835	0.883	6.510	3.72e-006	4.61e-002	4.63e-004
4	0.500	0.01869	0.817	1.87	5.437	4.39e-006	3.95e-002	4.67e-004
5	1.00	0.03231	0.791	3.23	5.061	4.60e-006	2.72e-002	3.38e-004
6	2.00	0.04937	0.760	4.94	2.651	8.52e-006	1.71e-002	3.92e-004
7	4.00	0.07014	0.721	7.01	2.042	1.06e-005	1.04e-002	2.98e-004
8	8.00	0.09597	0.673	9.60	2.172	9.50e-006	6.46e-003	1.65e-004
9	16.0	0.1262	0.618	12.6	1.660	1.17e-005	3.77e-003	1.19e-004
10	32.0	0.1611	0.553	16.1	1.454	1.24e-005	2.18e-003	7.28e-005
11	8.00	0.1474	0.578	14.7	0.387	4.54e-005	5.71e-004	6.99e-005
12	2.00	0.1272	0.616	12.7	4.611	3.96e-006	3.35e-003	3.58e-005
13	0.500	0.1032	0.660	10.3	11.895	1.61e-006	1.60e-002	6.99e-005
14	0.125	0.08040	0.702	8.04	81.632	2.48e-007	6.07e-002	4.06e-005
15	0.0625	0.07095	0.720	7.09	78.857	2.66e-007	1.51e-001	1.08e-004

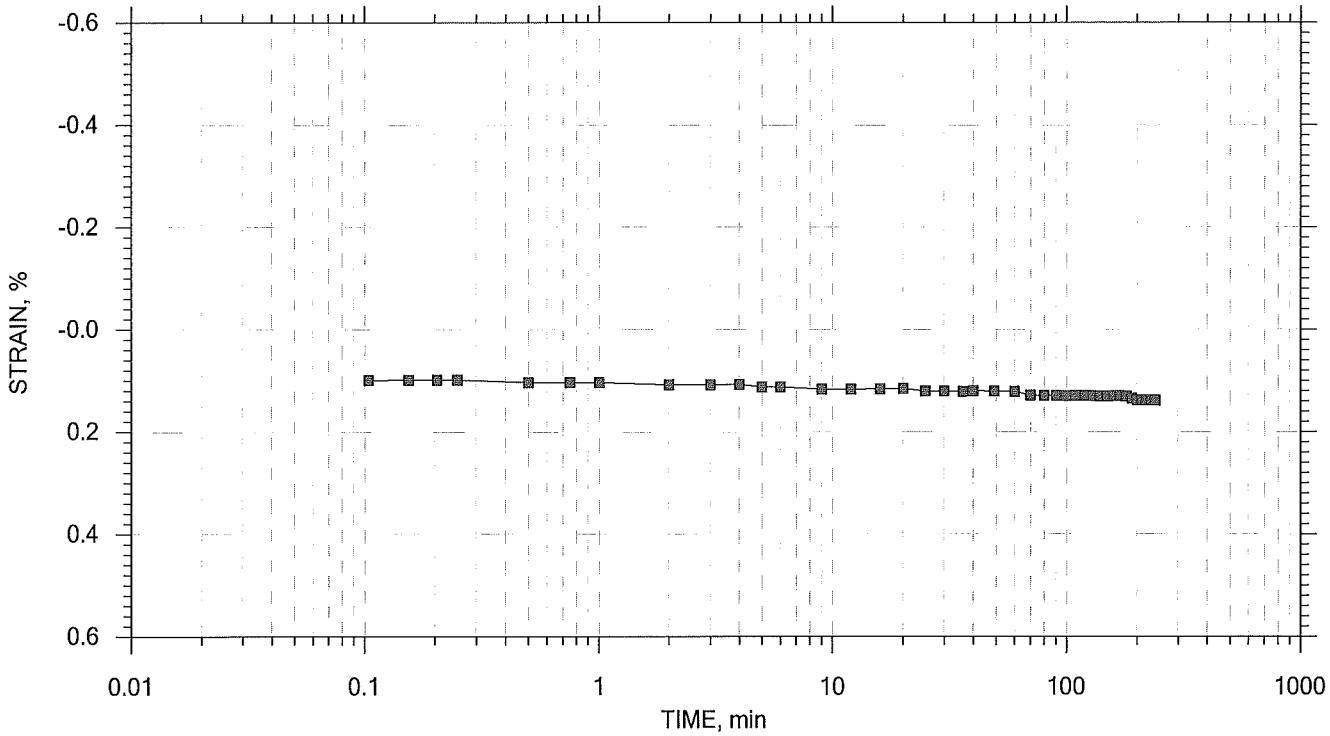
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv ft²/sec	Mv 1/tsf	k ft/day	Ca %
1	0.0714	0.001383	0.849	0.138	0.000	0.00e+000	1.94e-002	0.00e+000	0.00e+000
2	0.125	0.003064	0.845	0.306	0.515	1.10e-005	3.14e-002	9.33e-004	0.00e+000
3	0.250	0.008830	0.835	0.883	2.270	2.48e-006	4.61e-002	3.09e-004	0.00e+000
4	0.500	0.01869	0.817	1.87	1.563	3.55e-006	3.95e-002	3.78e-004	0.00e+000
5	1.00	0.03231	0.791	3.23	0.000	0.00e+000	2.72e-002	0.00e+000	0.00e+000
6	2.00	0.04937	0.760	4.94	0.831	6.31e-006	1.71e-002	2.90e-004	0.00e+000
7	4.00	0.07014	0.721	7.01	0.434	1.16e-005	1.04e-002	3.26e-004	0.00e+000
8	8.00	0.09597	0.673	9.60	0.444	1.08e-005	6.46e-003	1.88e-004	0.00e+000
9	16.0	0.1262	0.618	12.6	0.284	1.59e-005	3.77e-003	1.62e-004	0.00e+000
10	32.0	0.1611	0.553	16.1	0.332	1.26e-005	2.18e-003	7.41e-005	0.00e+000
11	8.00	0.1474	0.578	14.7	0.000	0.00e+000	5.71e-004	0.00e+000	0.00e+000
12	2.00	0.1272	0.616	12.7	0.882	4.81e-006	3.35e-003	4.35e-005	0.00e+000
13	0.500	0.1032	0.660	10.3	3.884	1.15e-006	1.60e-002	4.97e-005	0.00e+000
14	0.125	0.08040	0.702	8.04	17.301	2.72e-007	6.07e-002	4.45e-005	0.00e+000
15	0.0625	0.07095	0.720	7.09	20.706	2.35e-007	1.51e-001	9.60e-005	0.00e+000

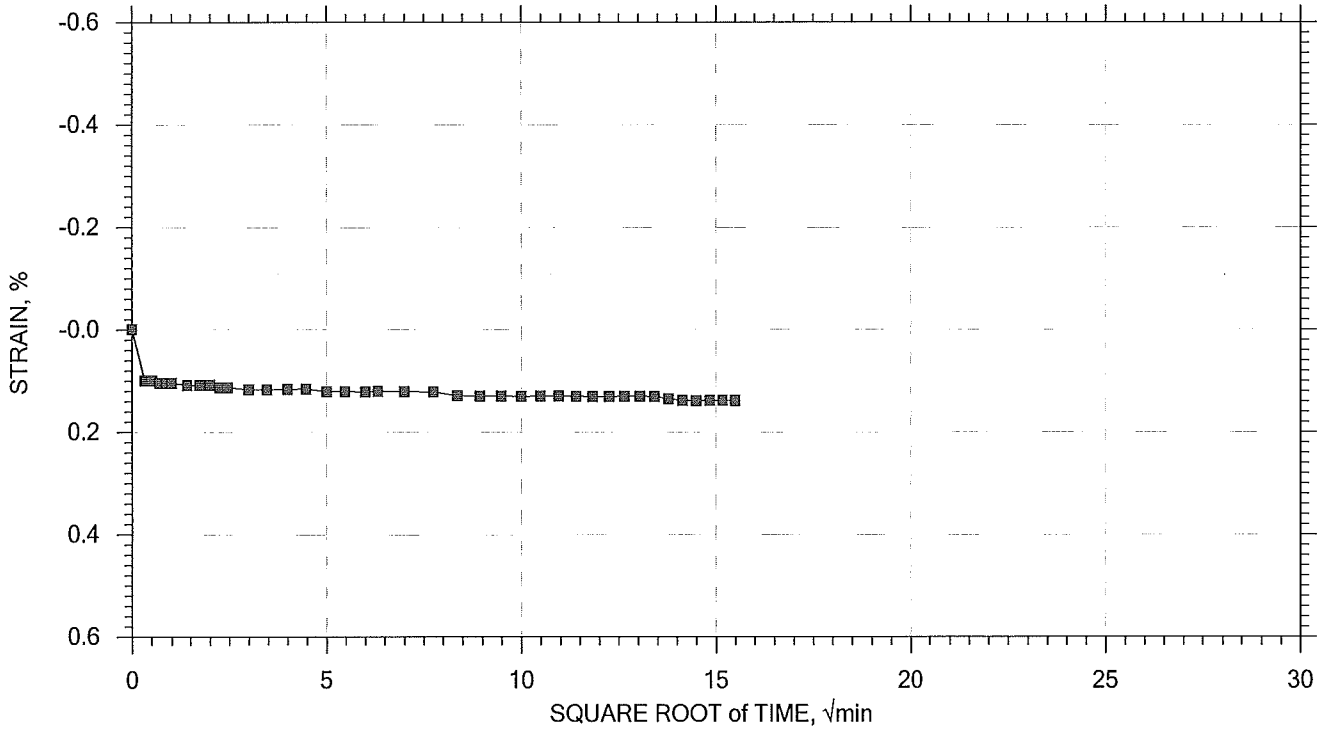
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Volume Step 1 of 15

Stress: 0.071447 tsf





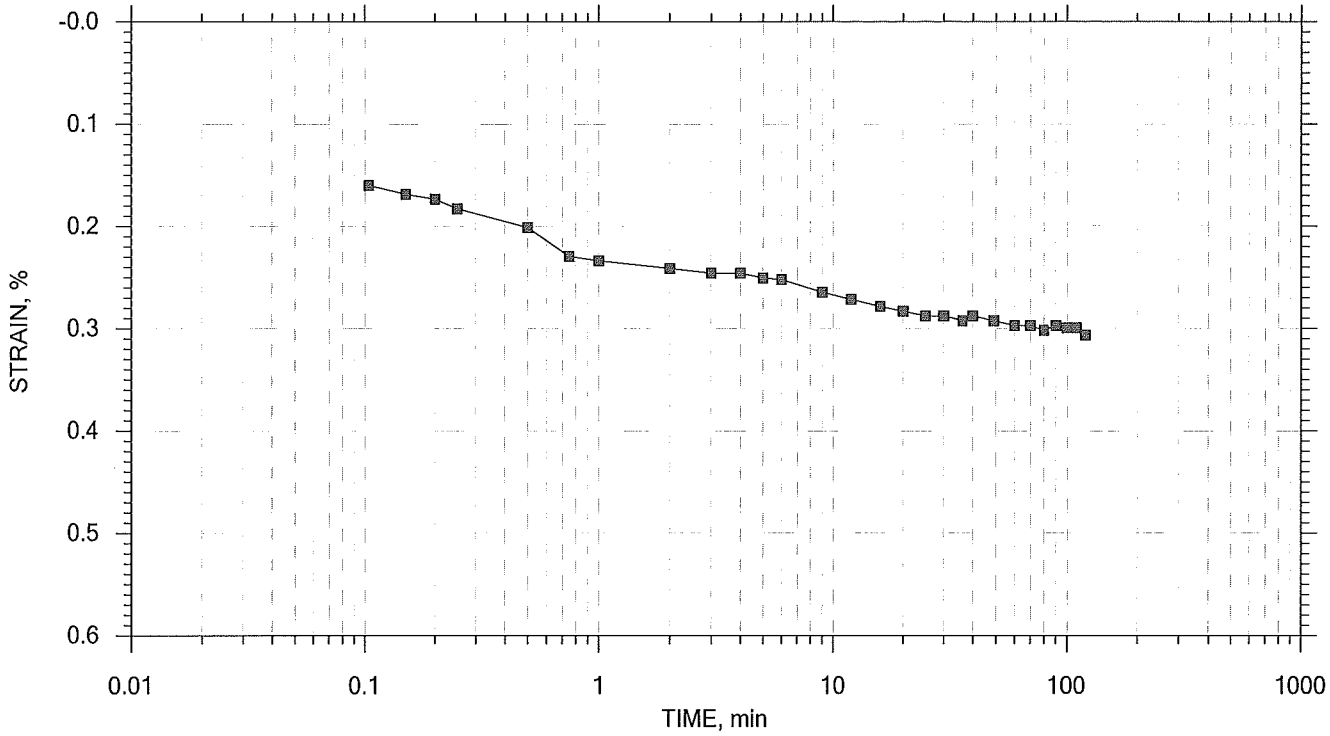
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		

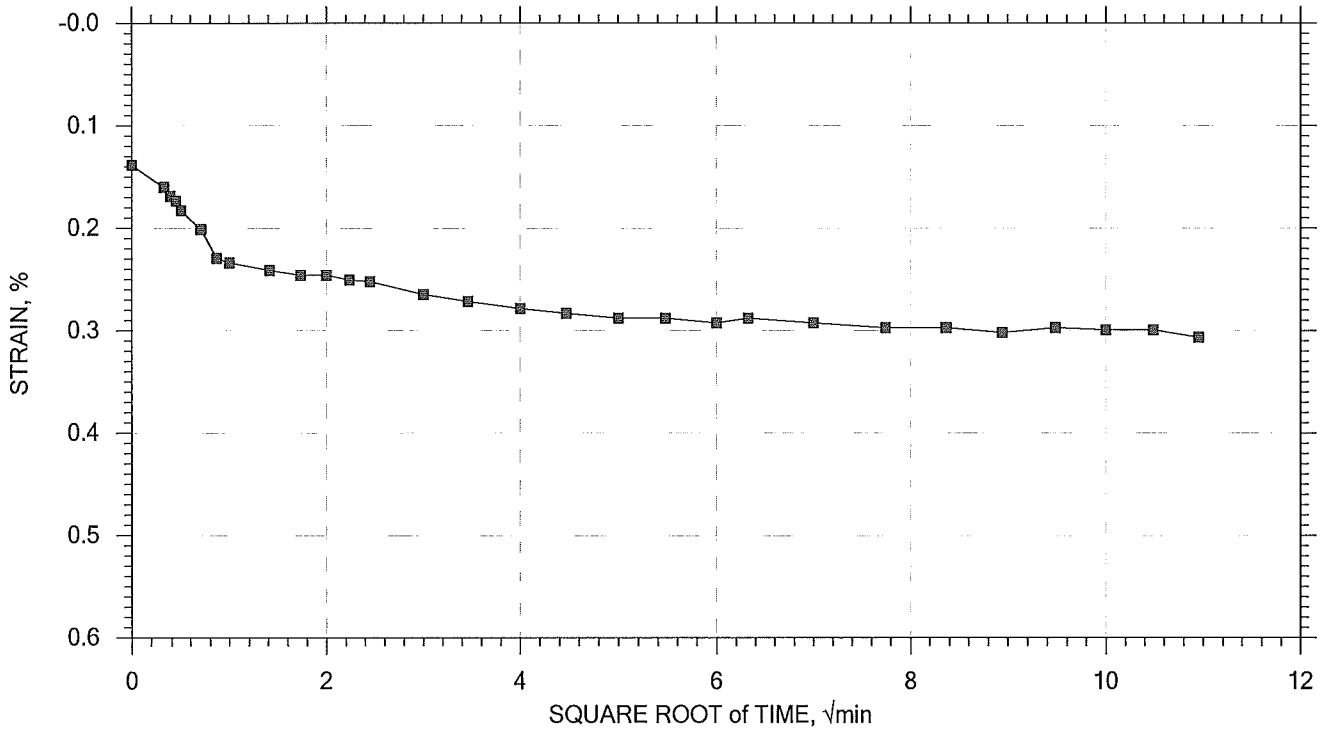
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 2 of 15

Stress: 0.125 tsf





GeoTesting EXPRESS

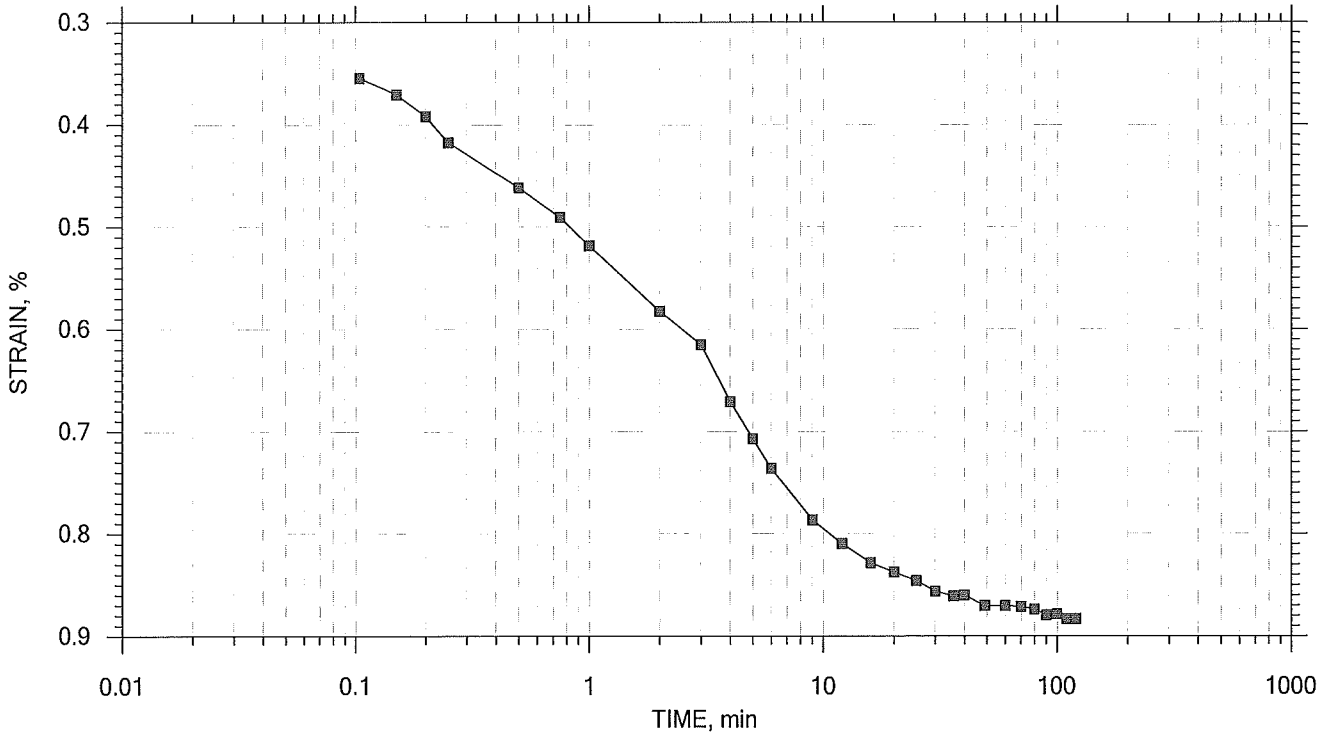
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

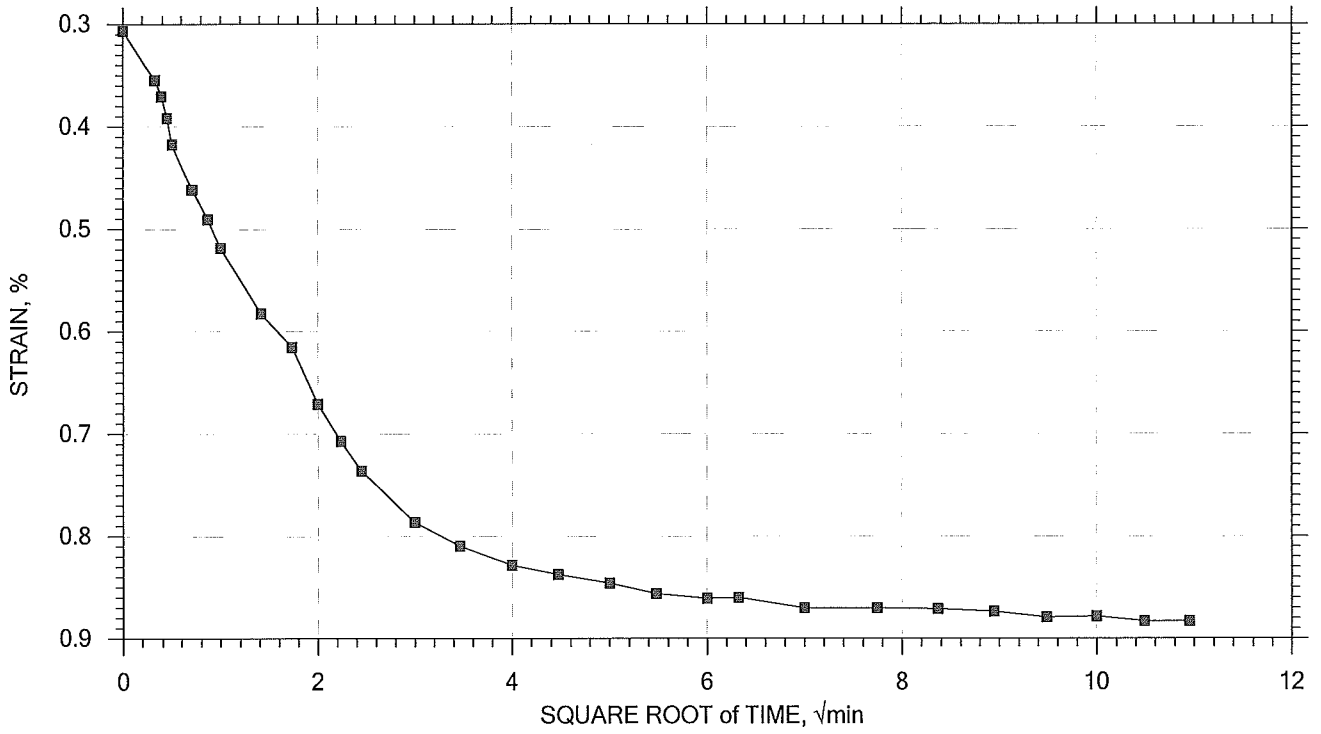
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 3 of 15

Stress: 0.25 tsf





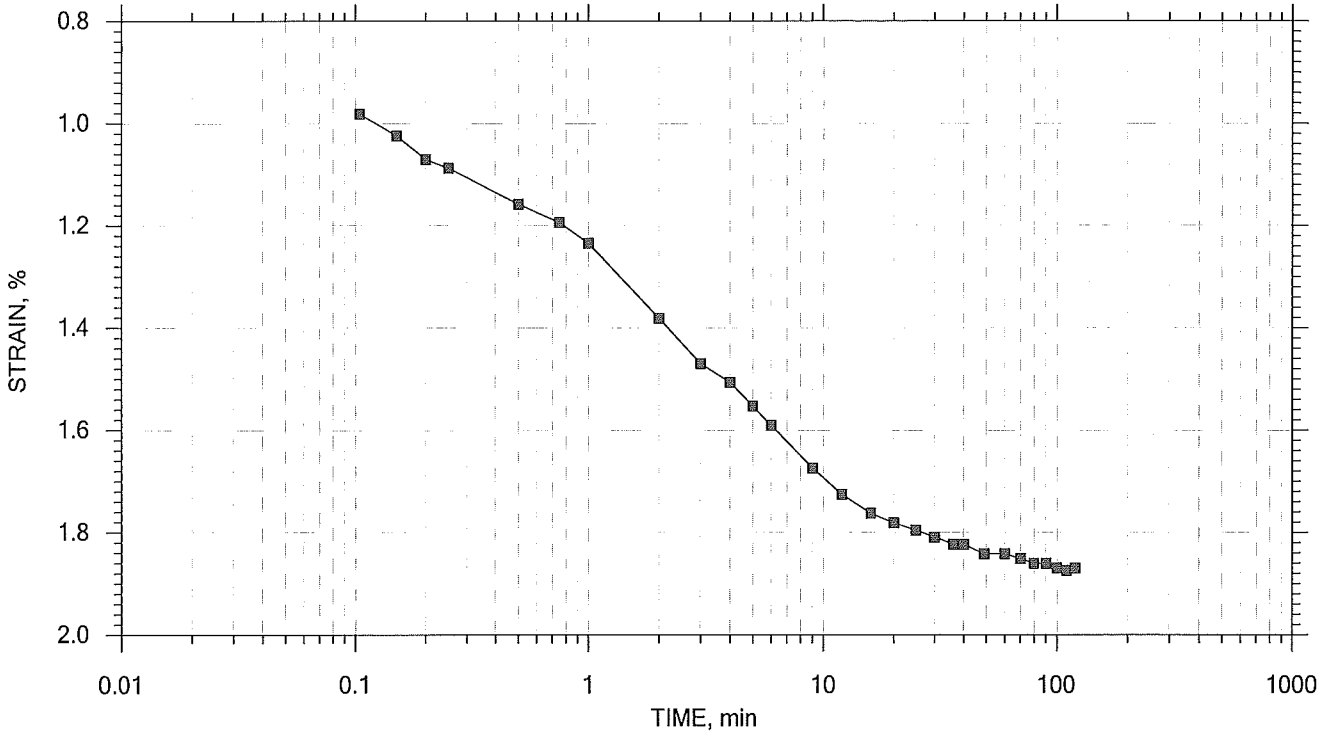
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		

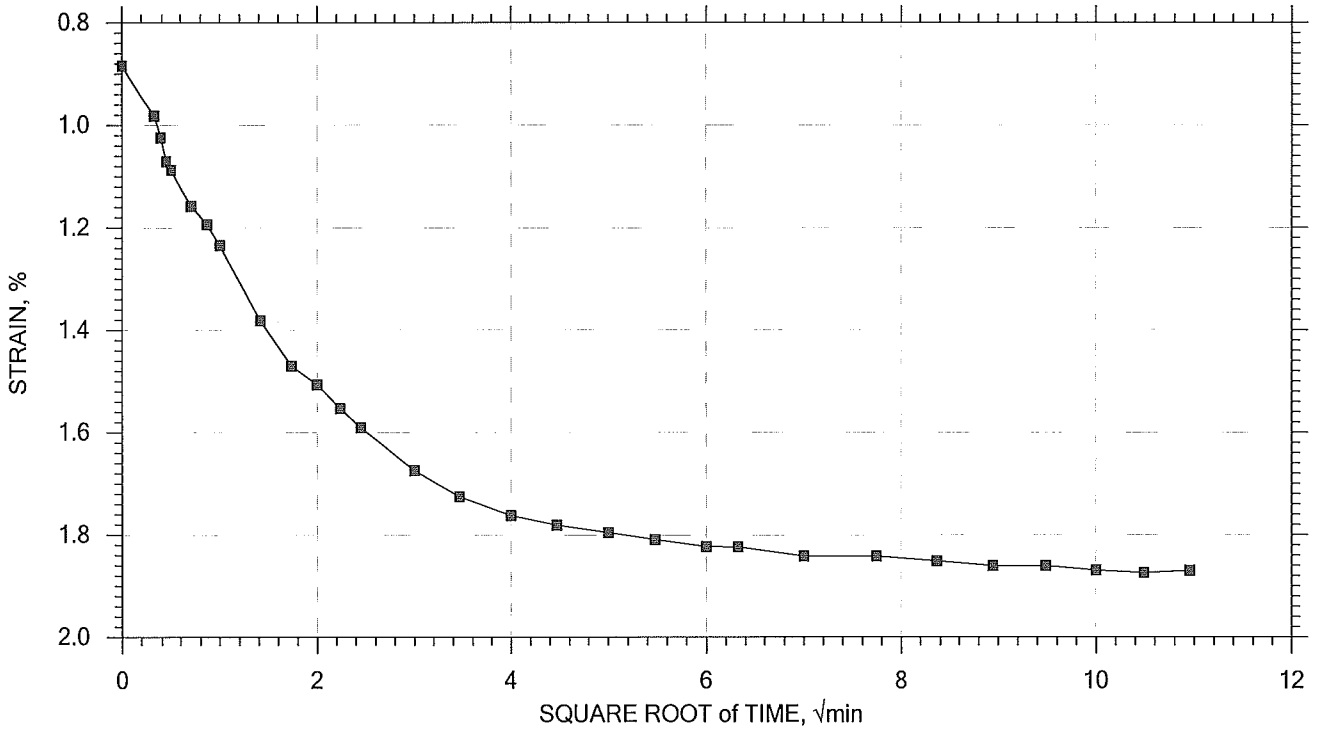
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 4 of 15

Stress: 0.5 tsf





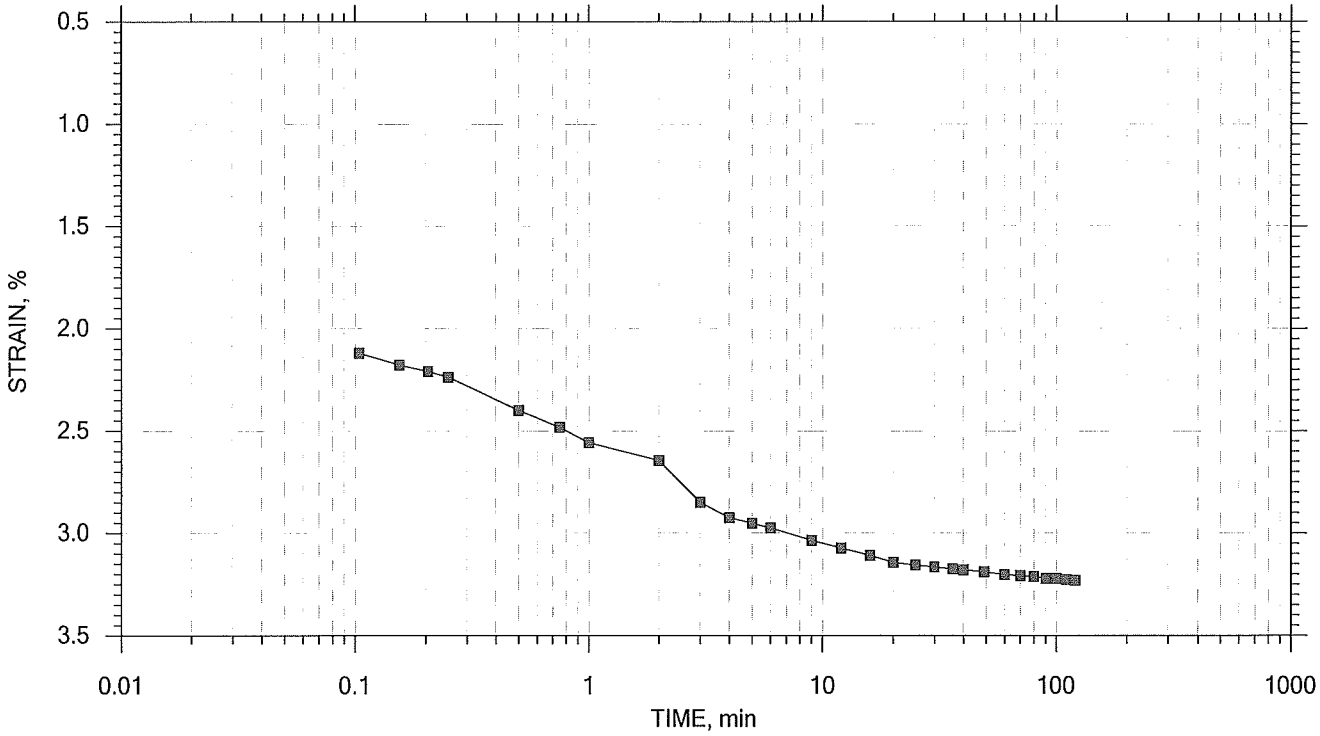
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		

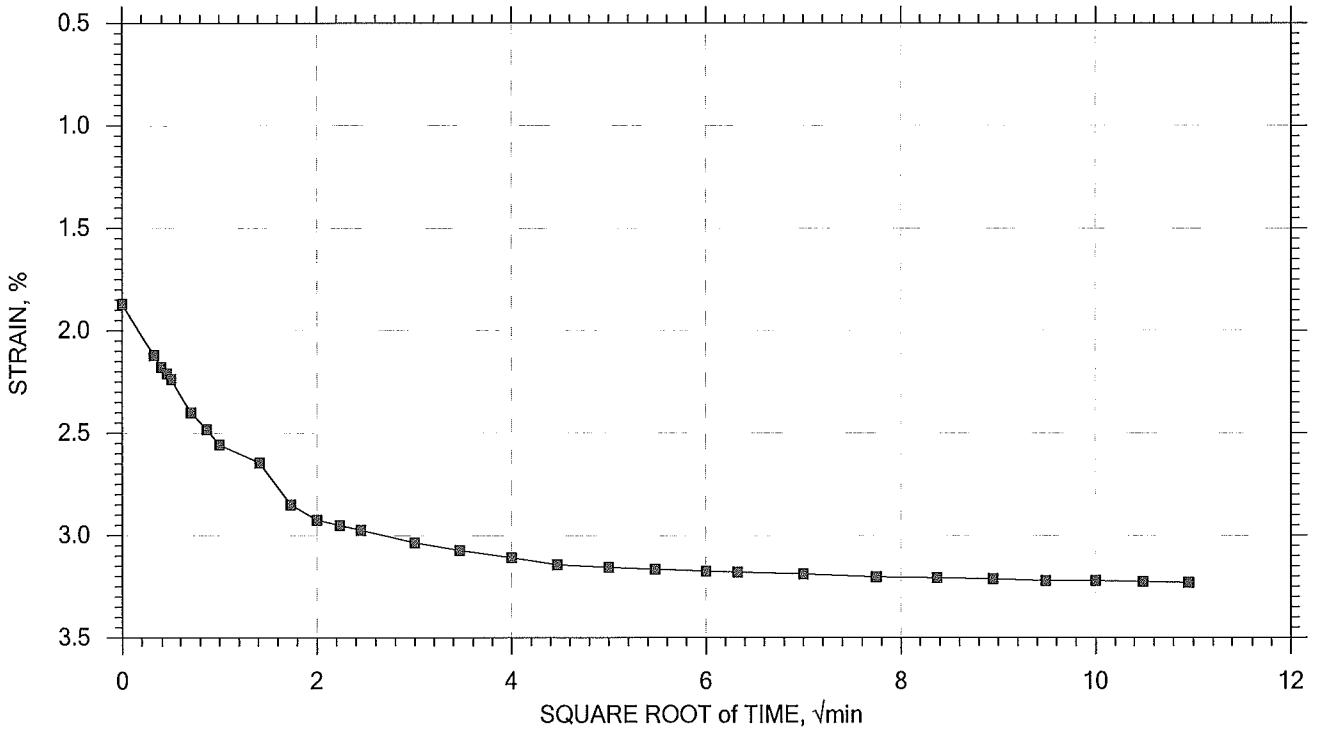
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 5 of 15

Stress: 1 tsf





GeoTesting EXPRESS

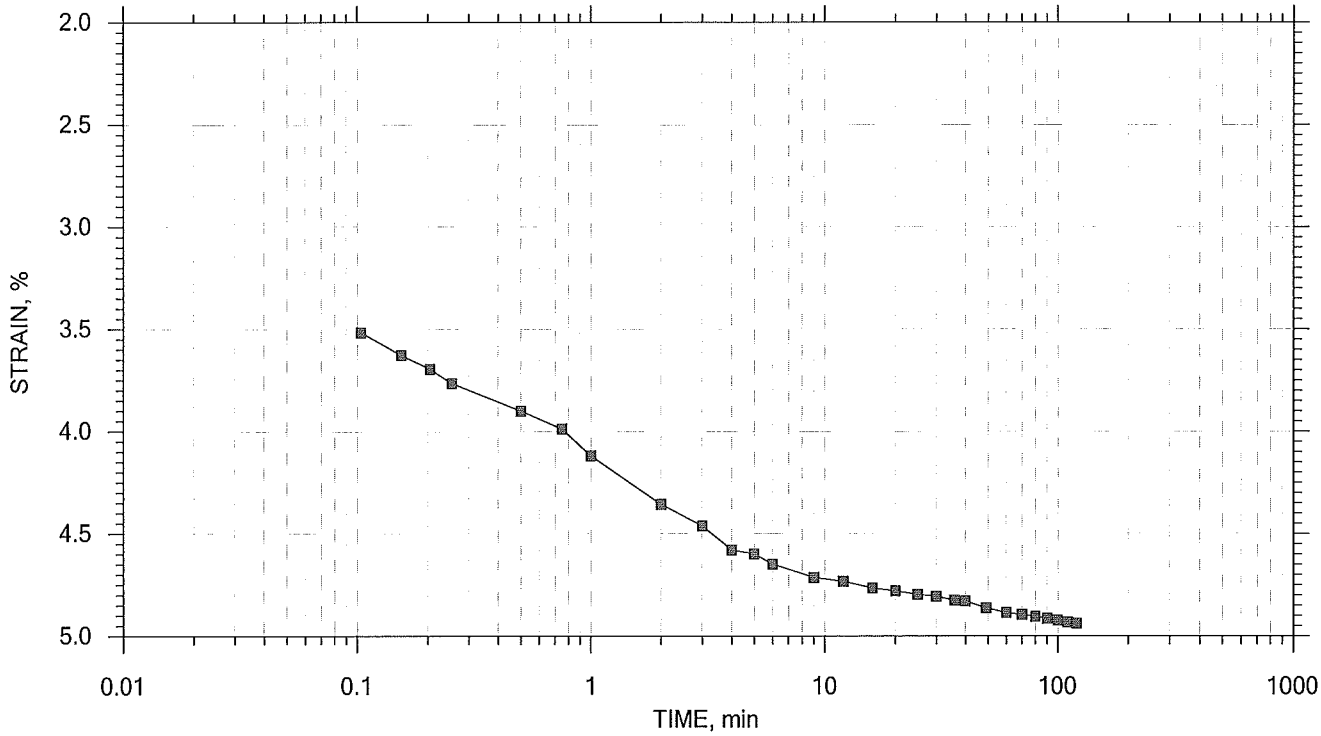
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

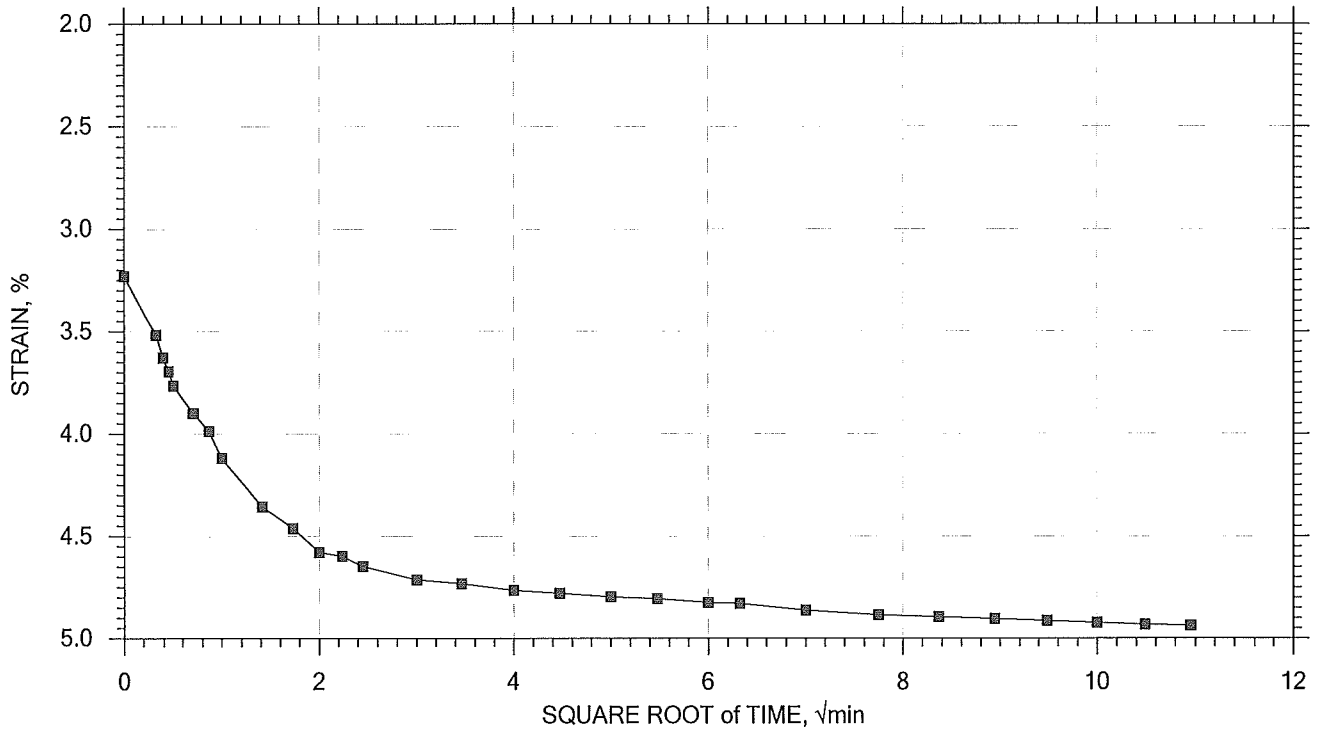
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 6 of 15

Stress: 2 tsf





GeoTesting EXPRESS

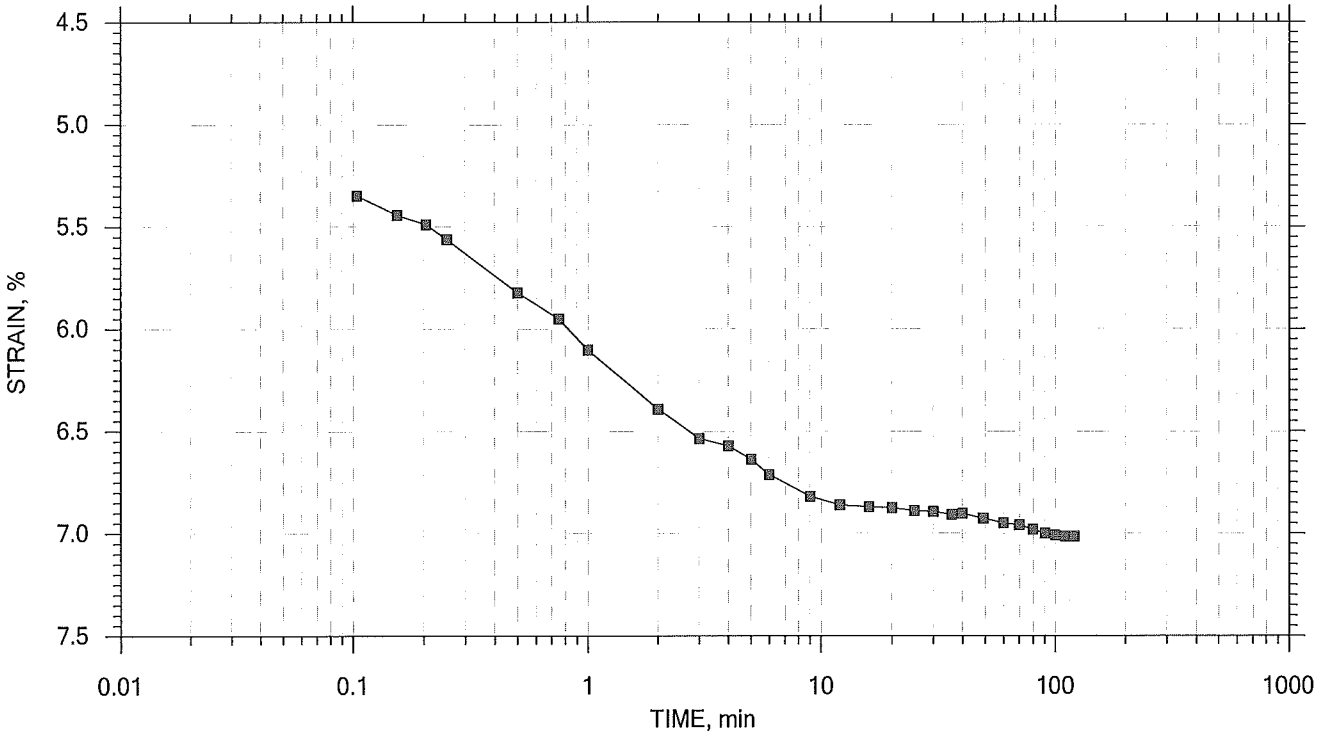
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

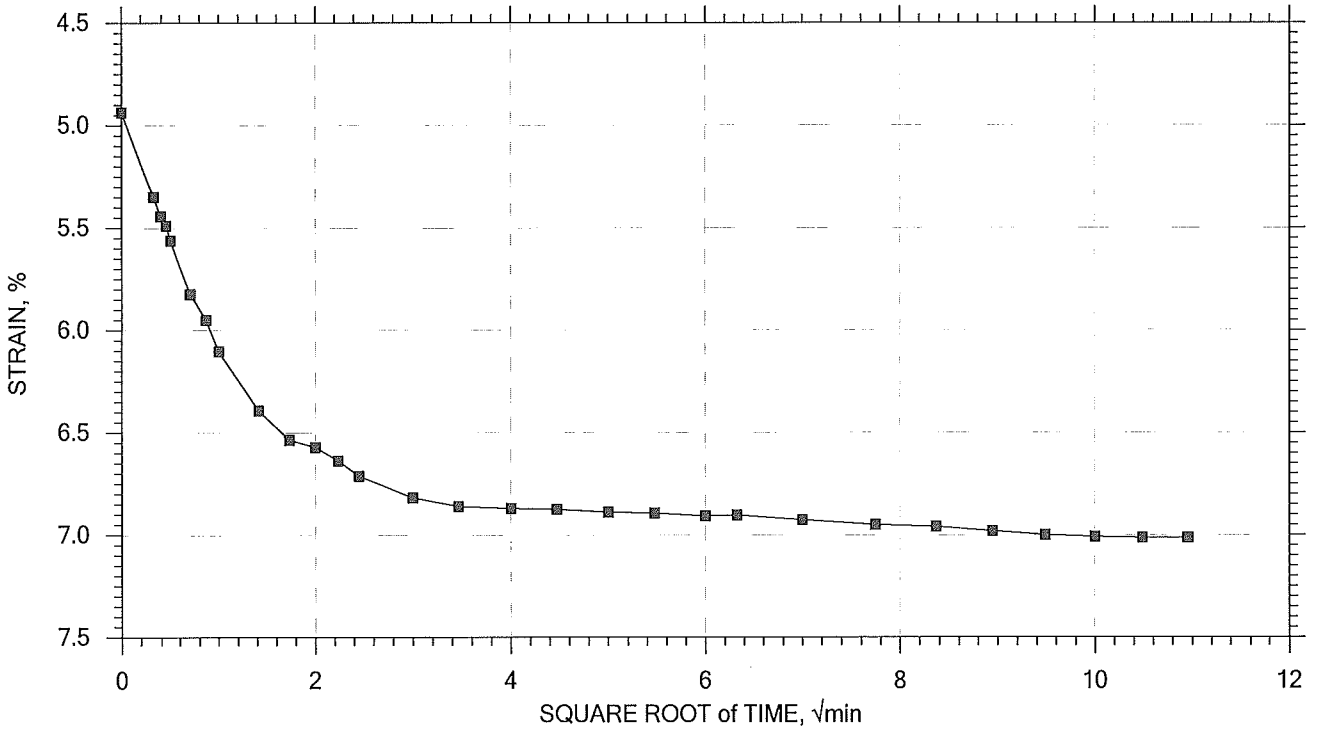
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 7 of 15

Stress: 4 tsf





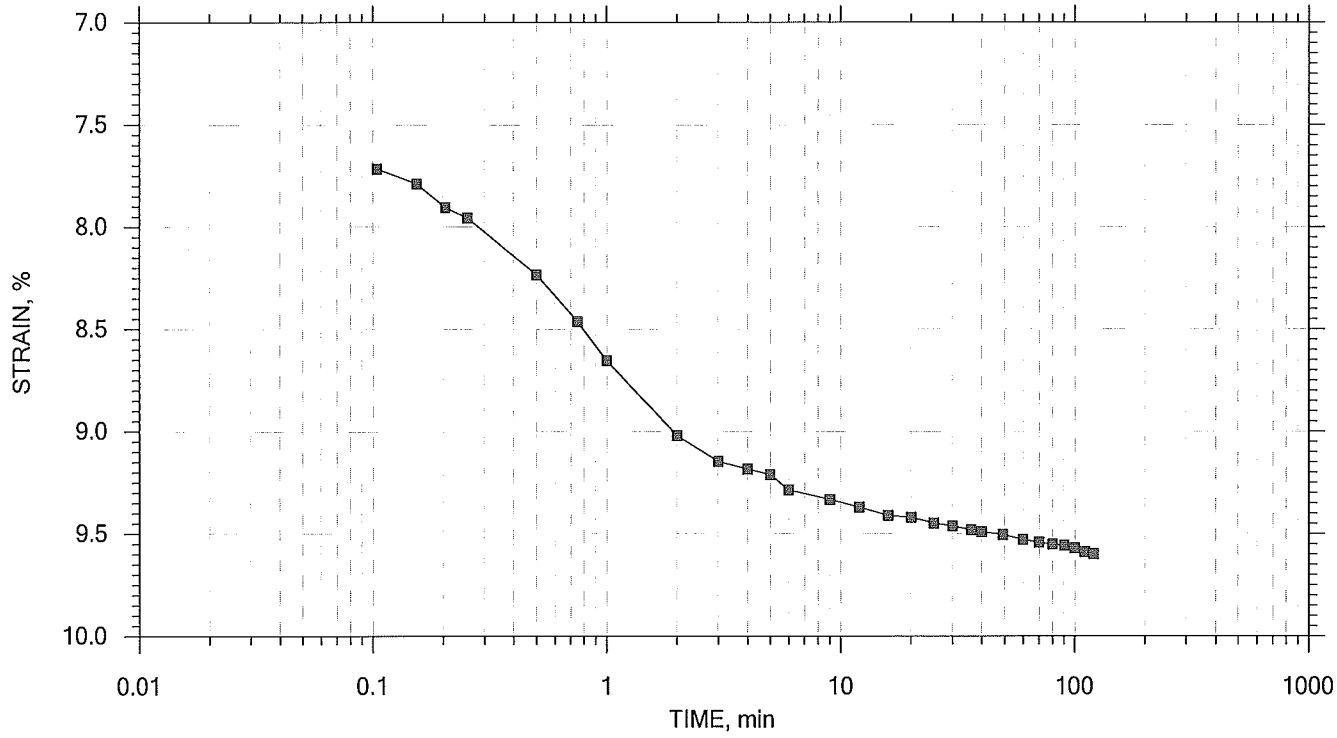
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		

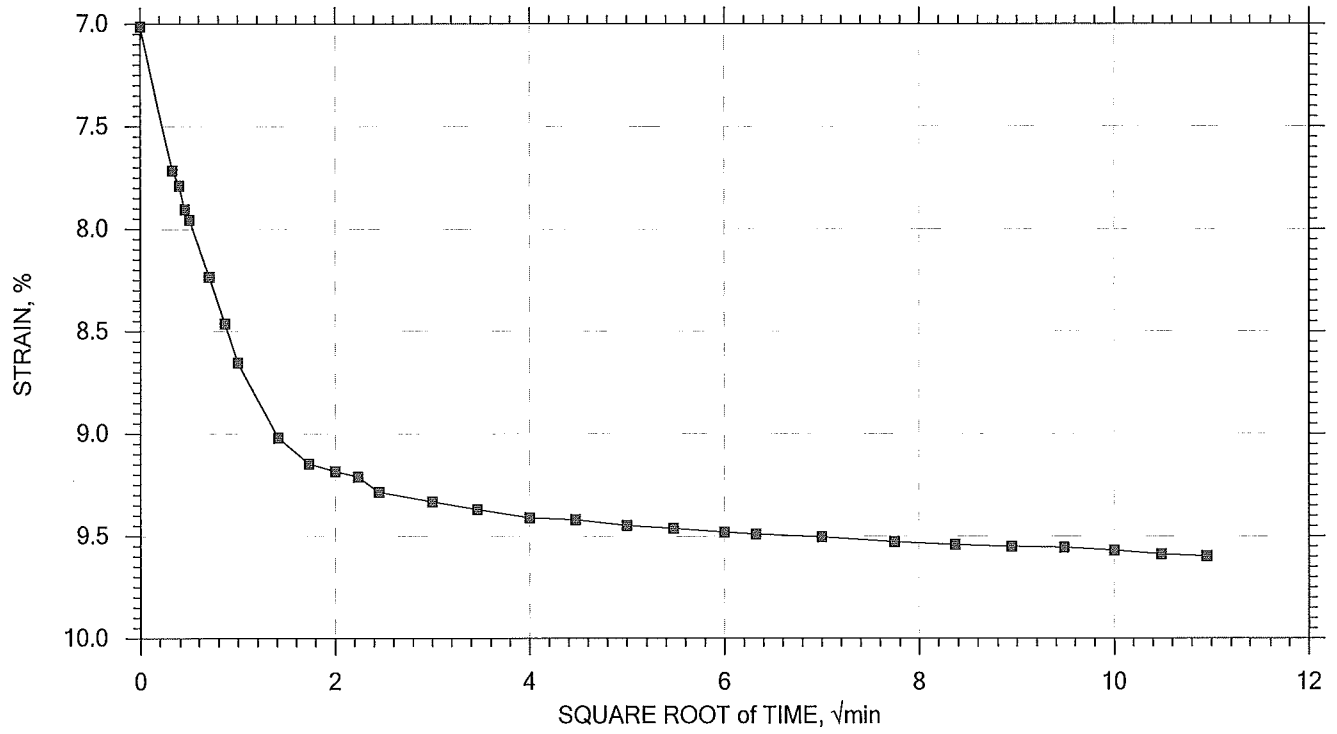
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 8 of 15

Stress: 8 tsf





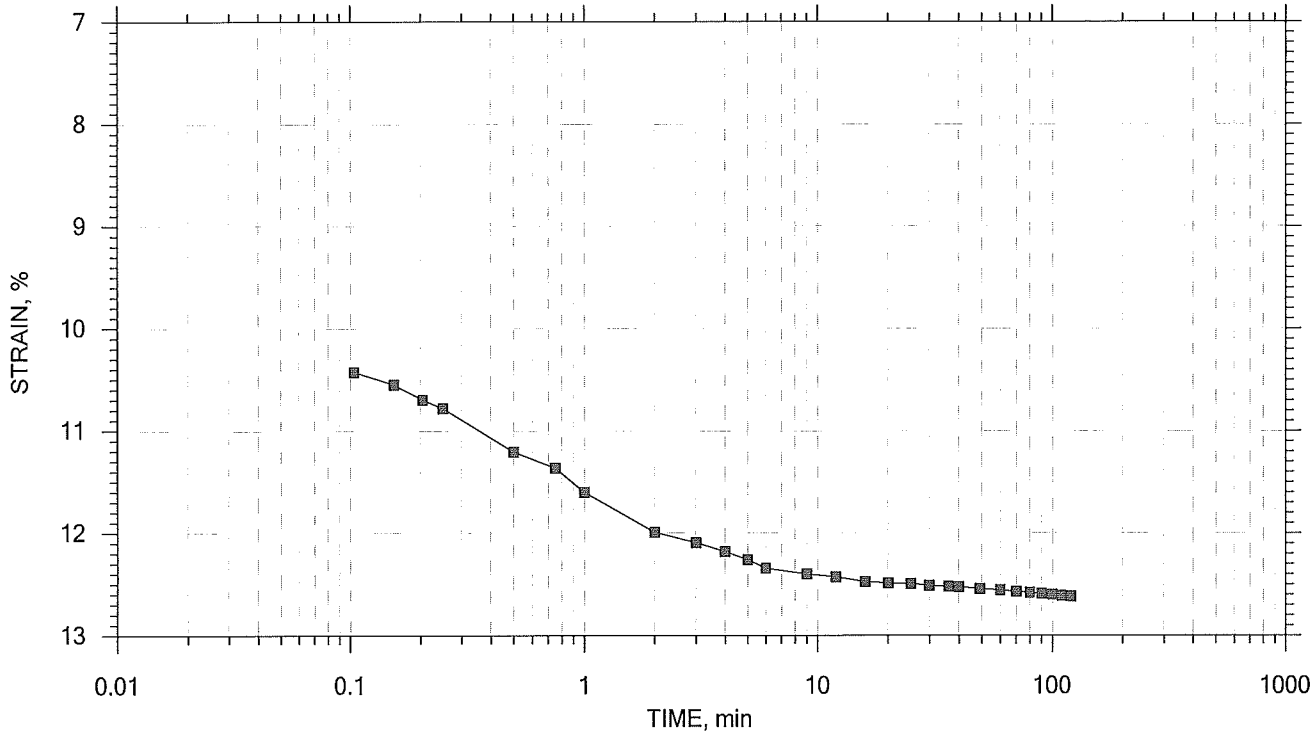
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-13	Tested By: md	Checked By: jdt
	Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
	Depth: 52-54 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0714 tsf		

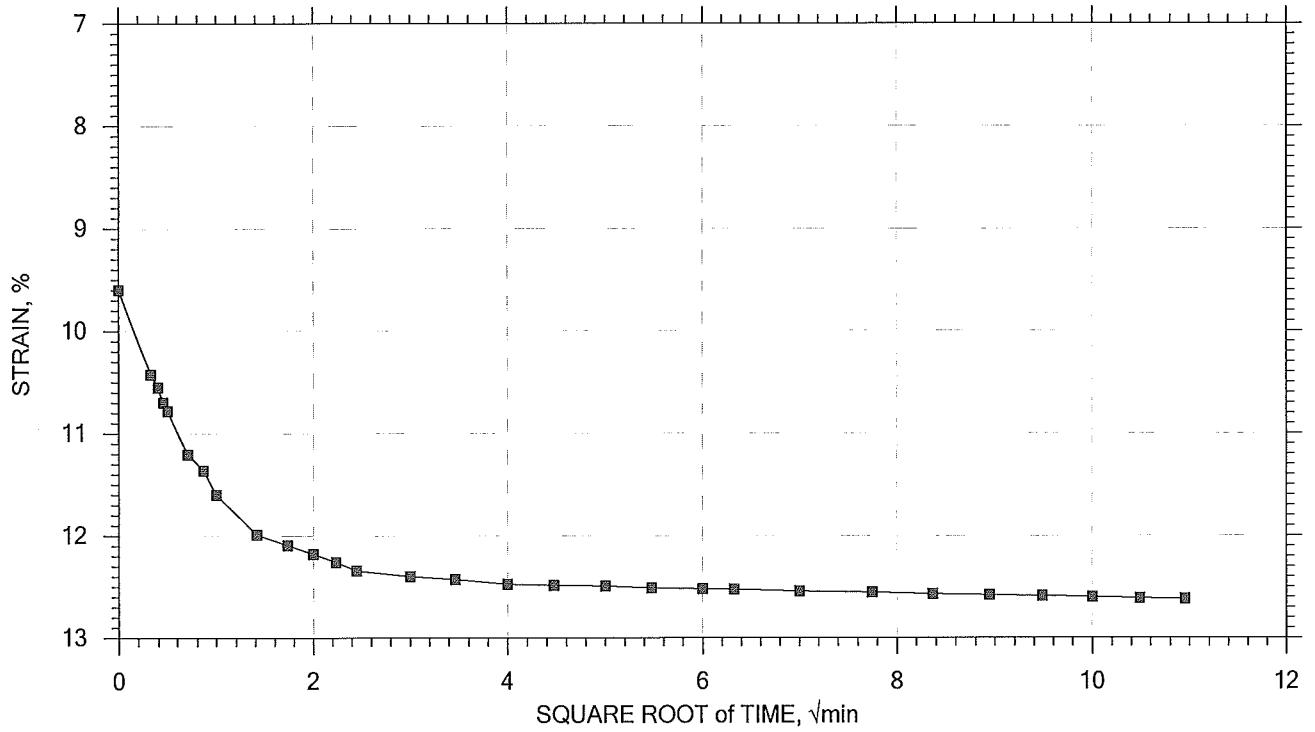
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 9 of 15

Stress: 16 tsf





GeoTesting EXPRESS

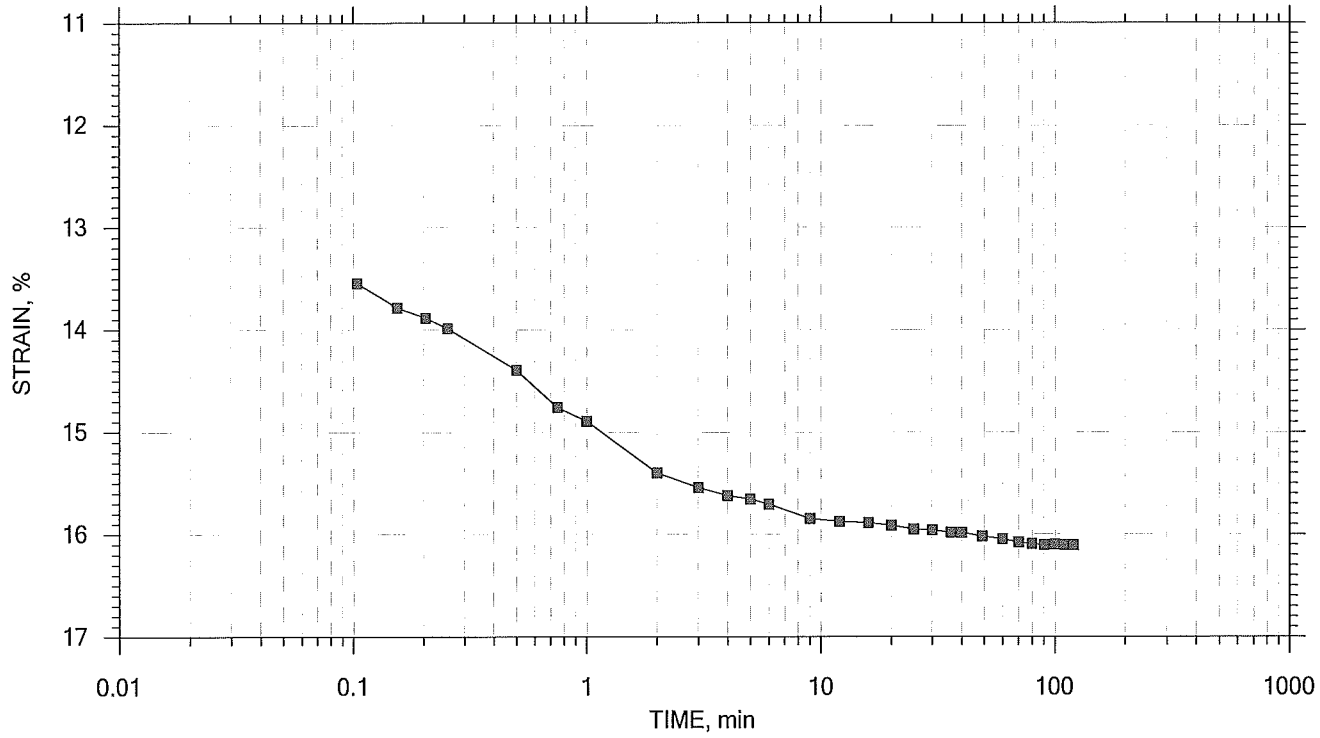
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

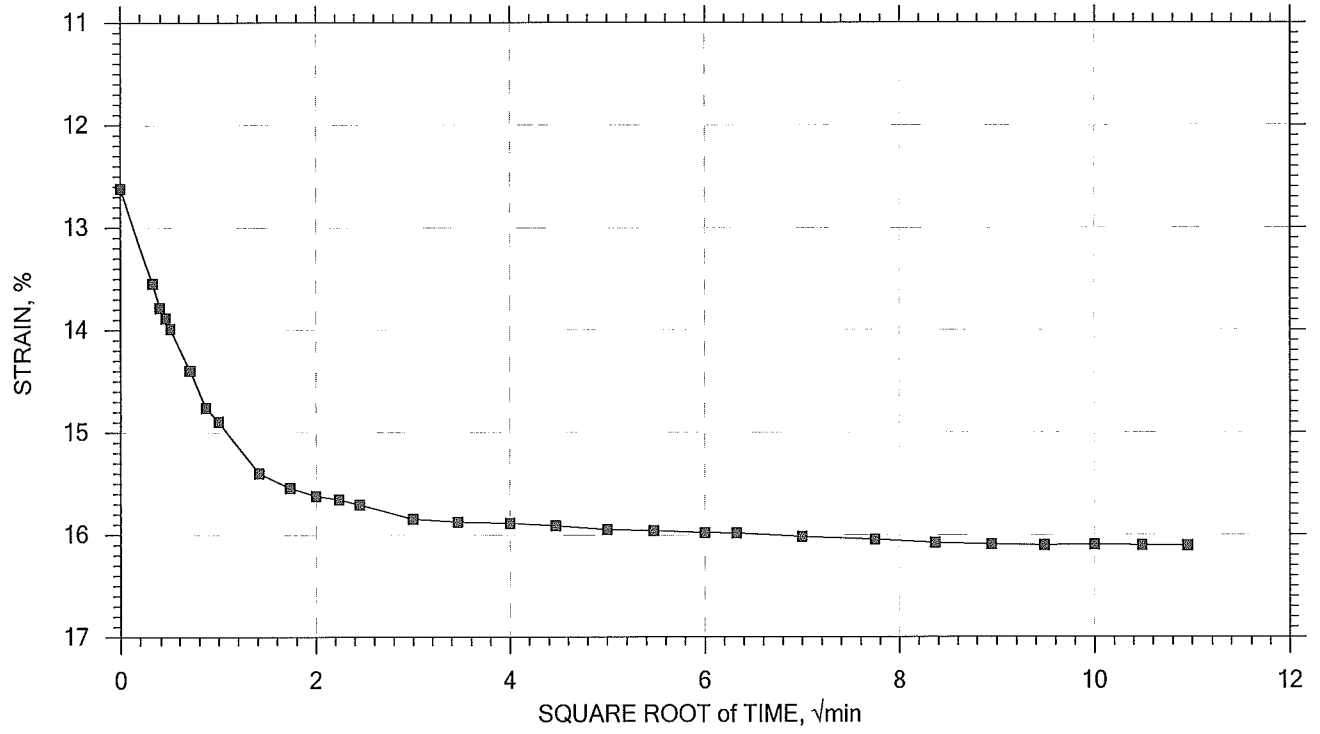
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 10 of 15

Stress: 32 tsf





GeoTesting EXPRESS

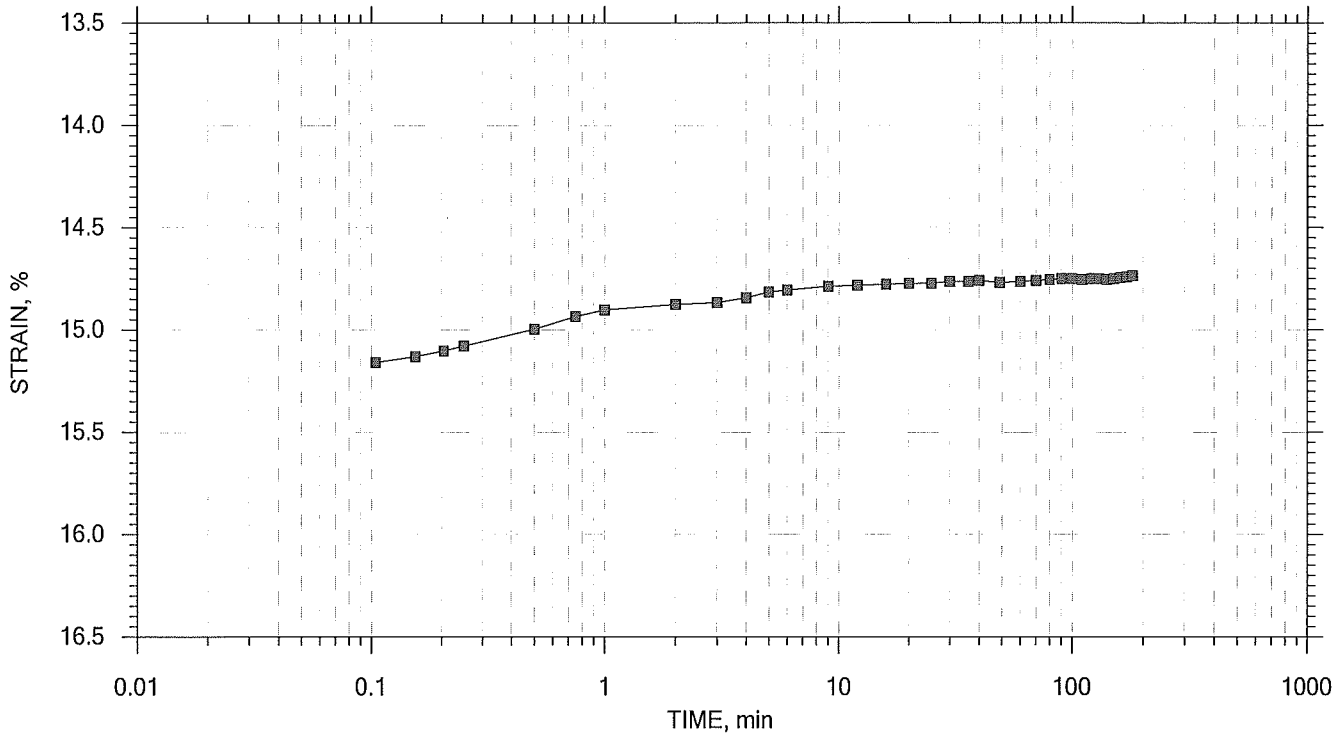
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

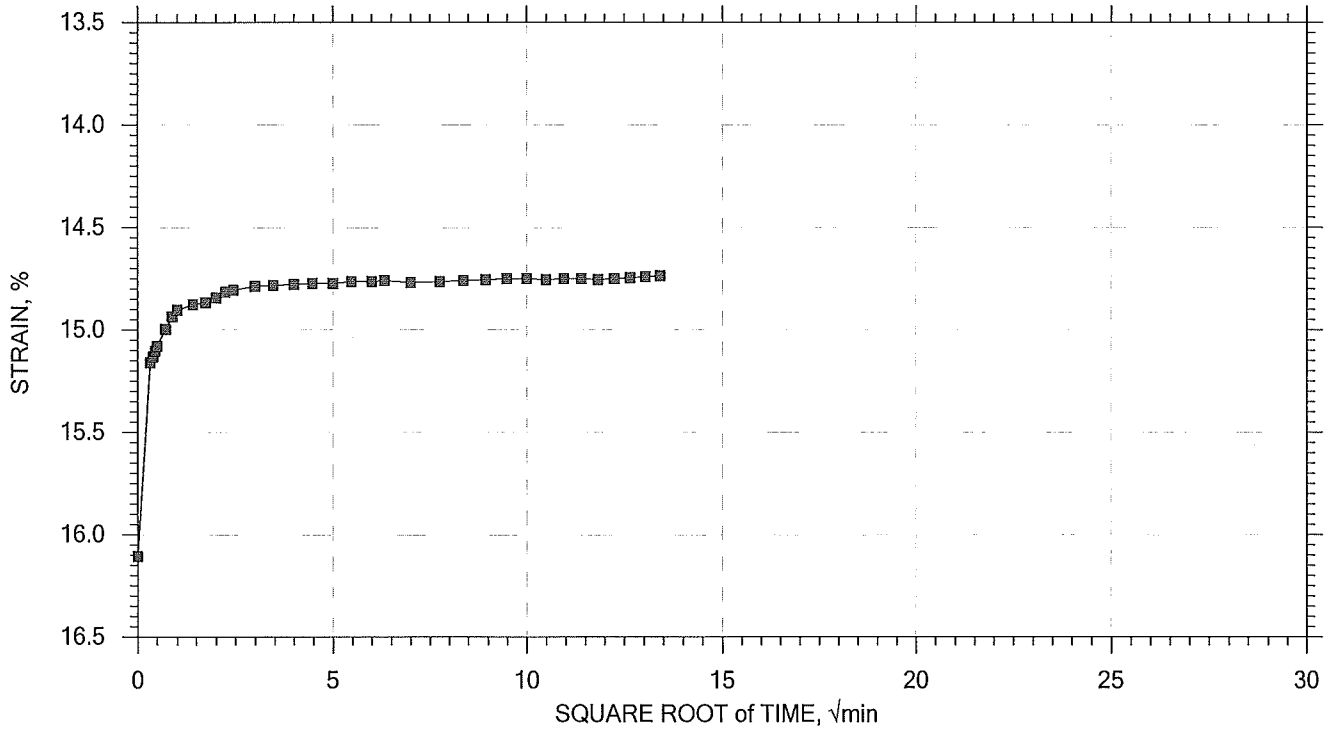
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 11 of 15

Stress: 8 tsf





GeoTesting EXPRESS

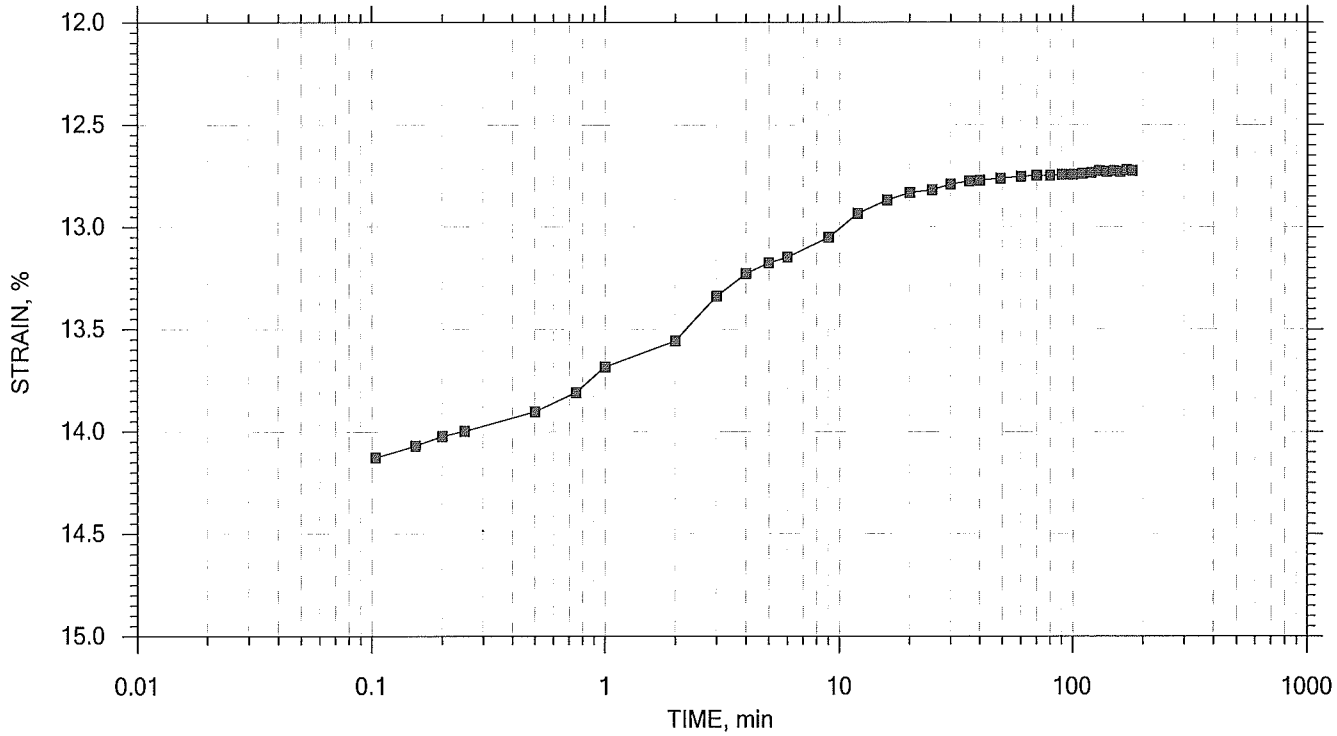
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

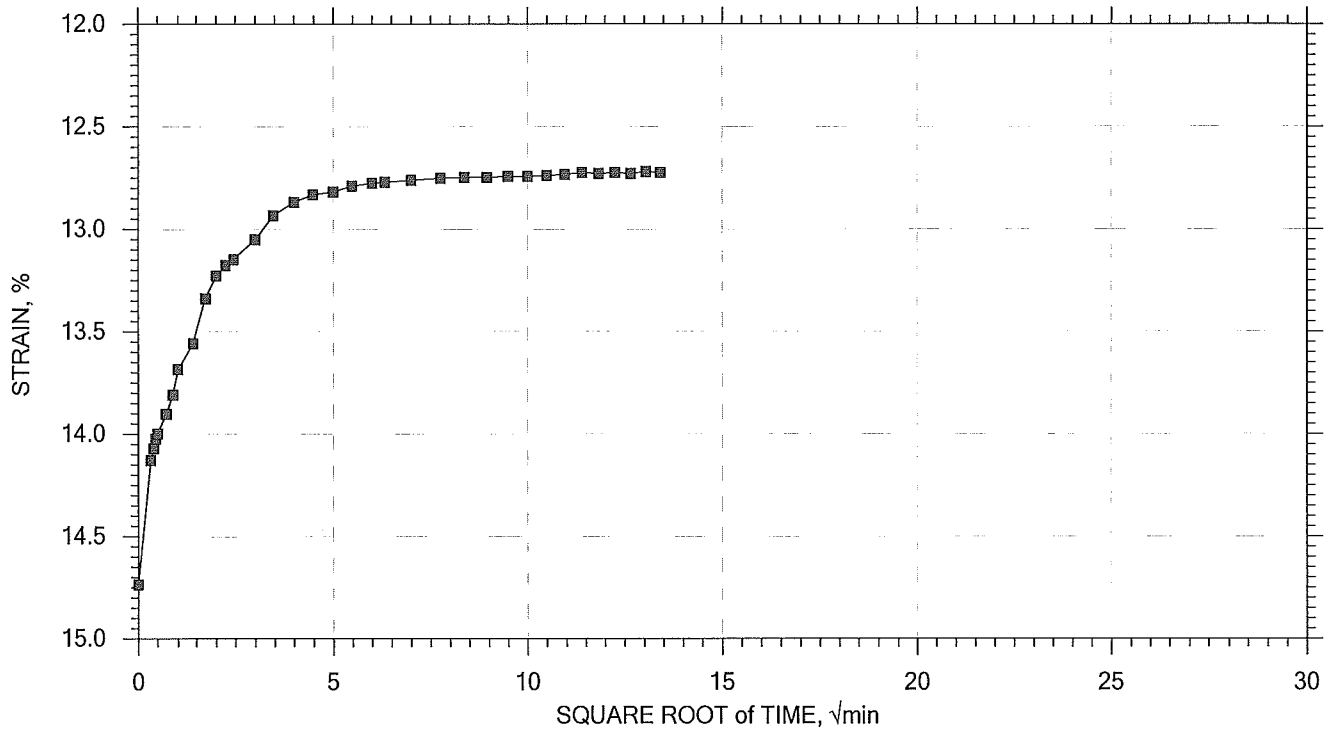
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 12 of 15

Stress: 2 tsf





GeoTesting EXPRESS

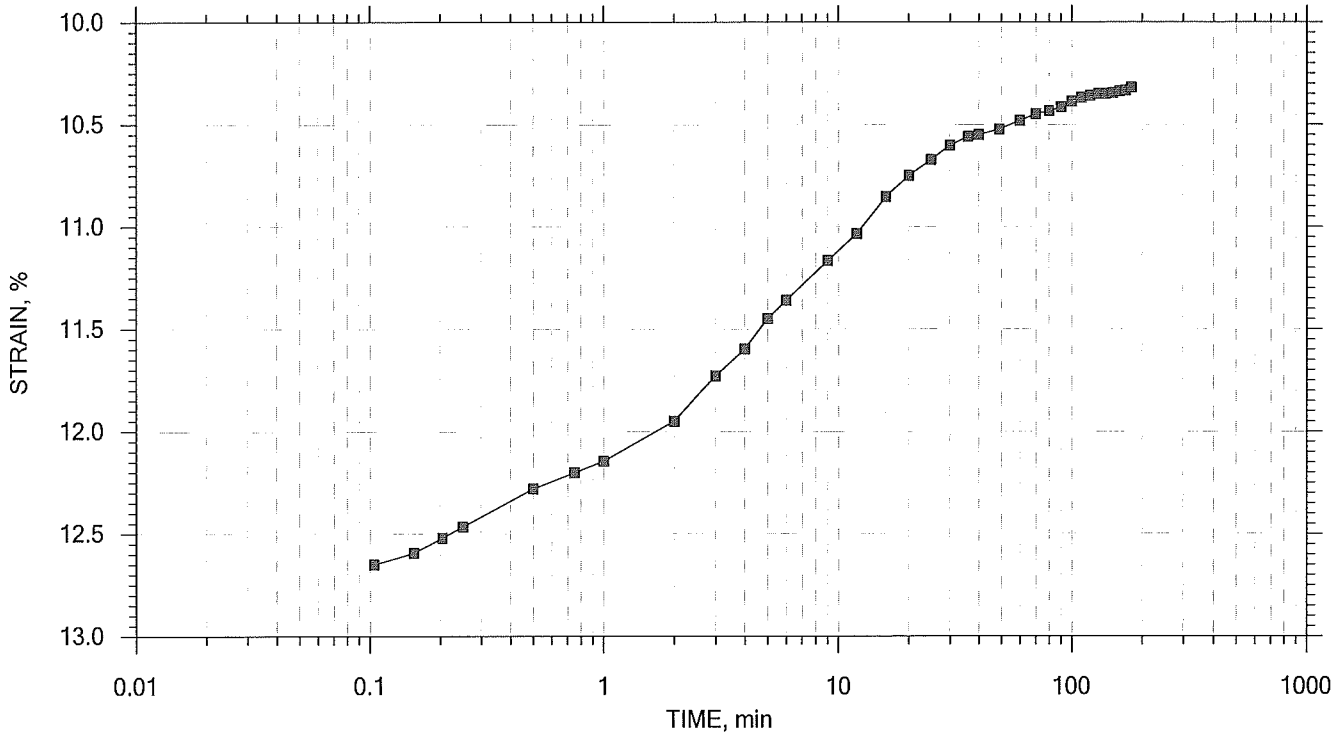
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

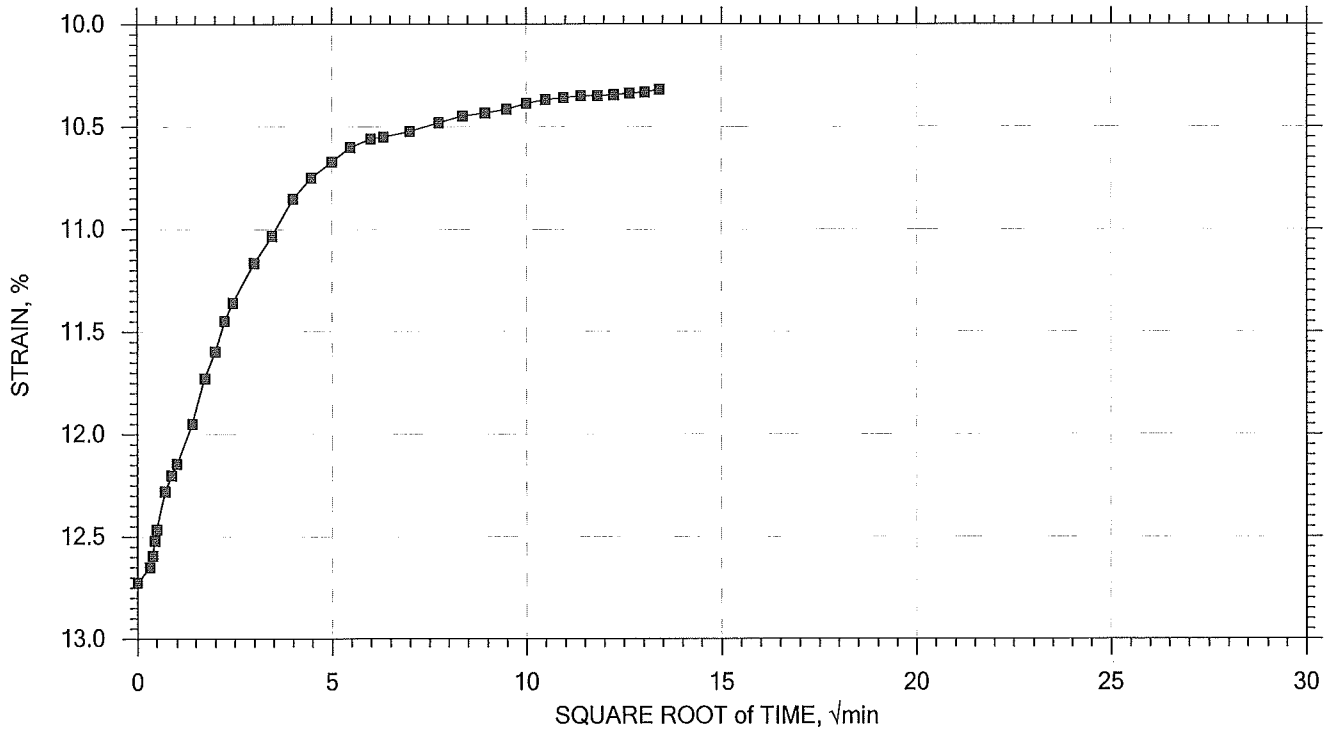
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 13 of 15

Stress: 0.5 tsf





GeoTesting EXPRESS

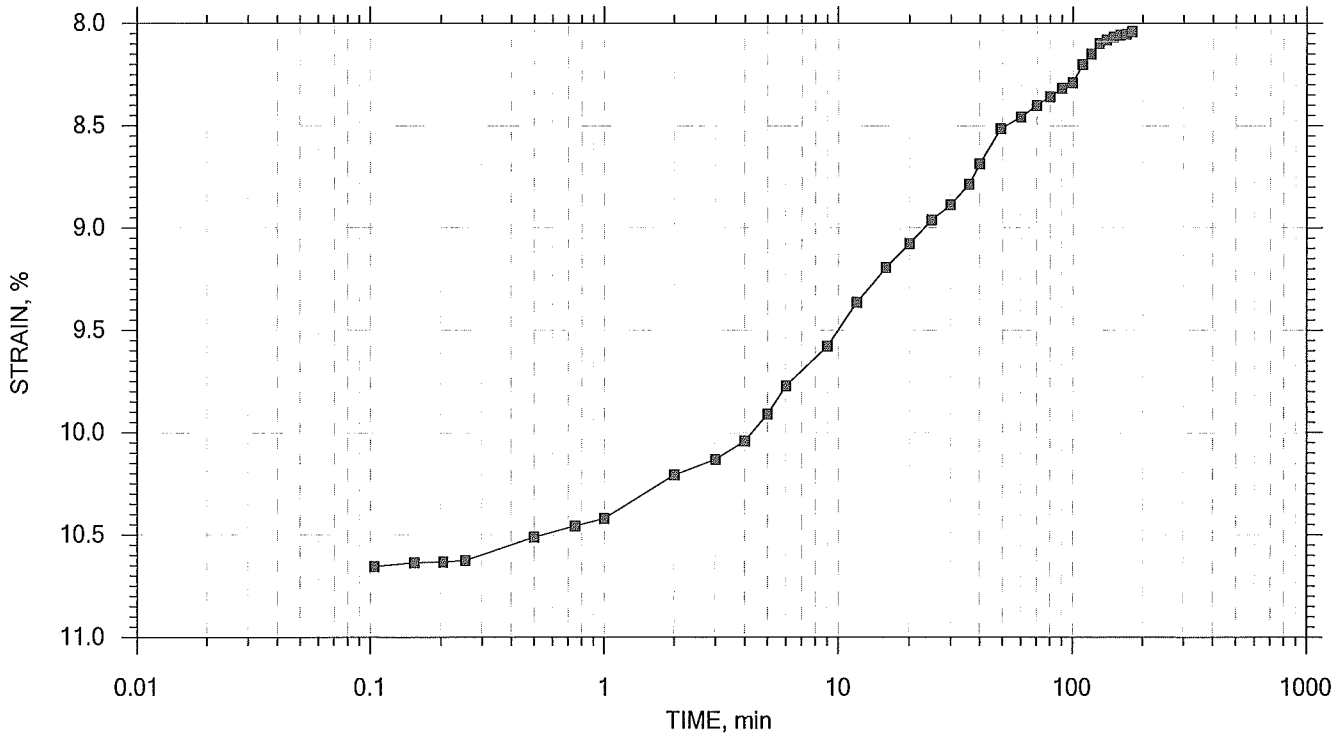
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

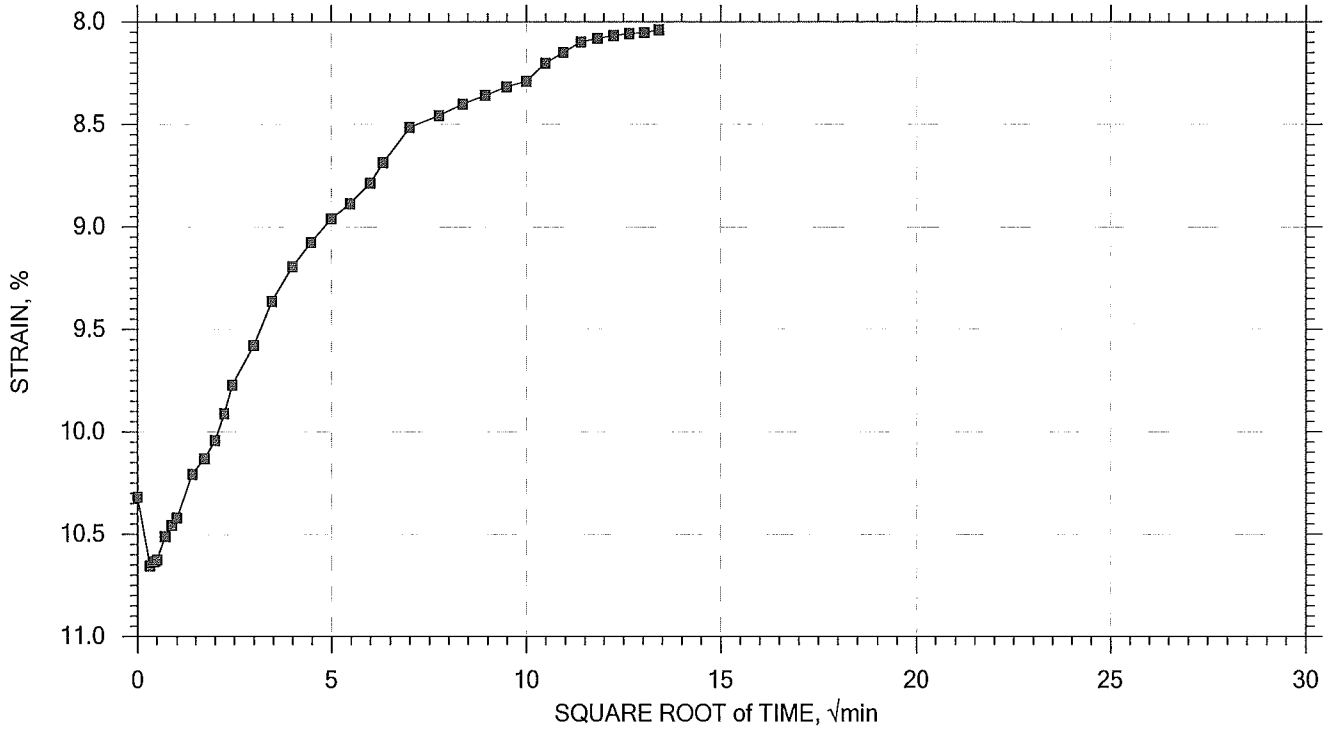
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 14 of 15

Stress: 0.125 tsf





GeoTesting EXPRESS

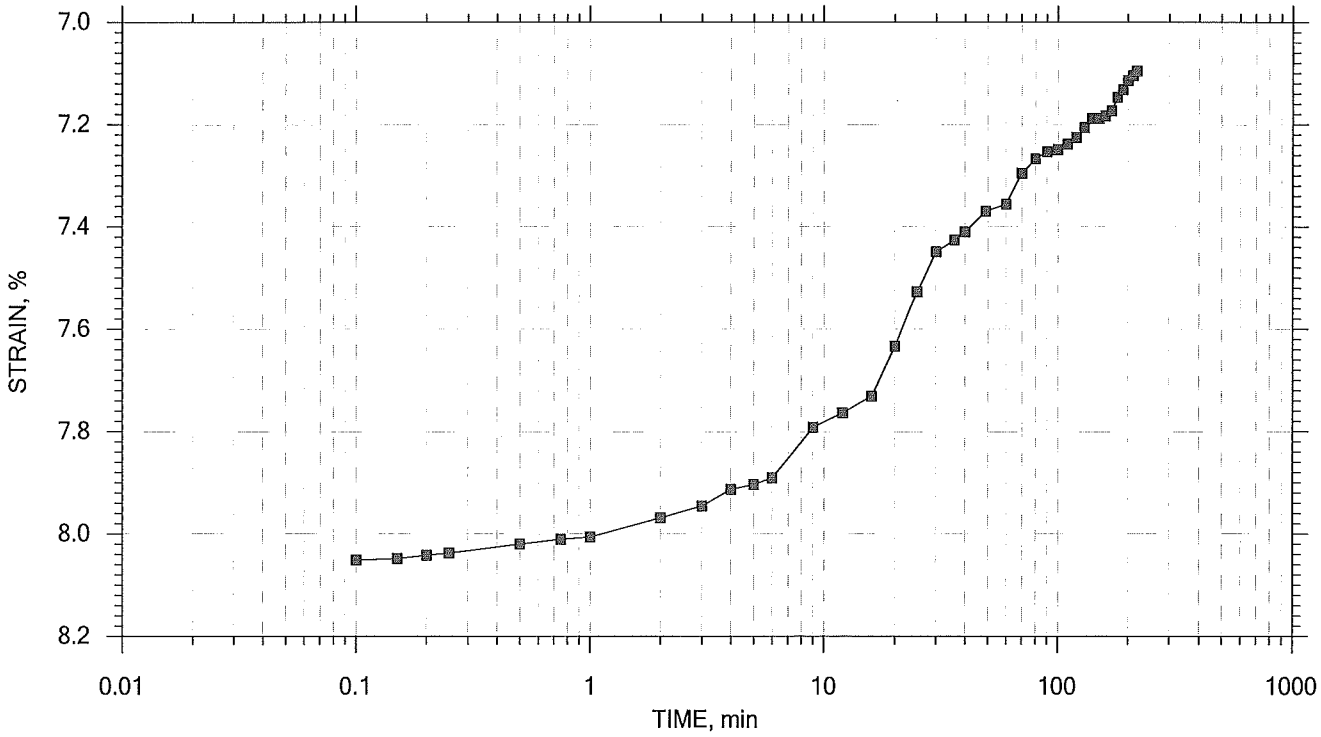
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

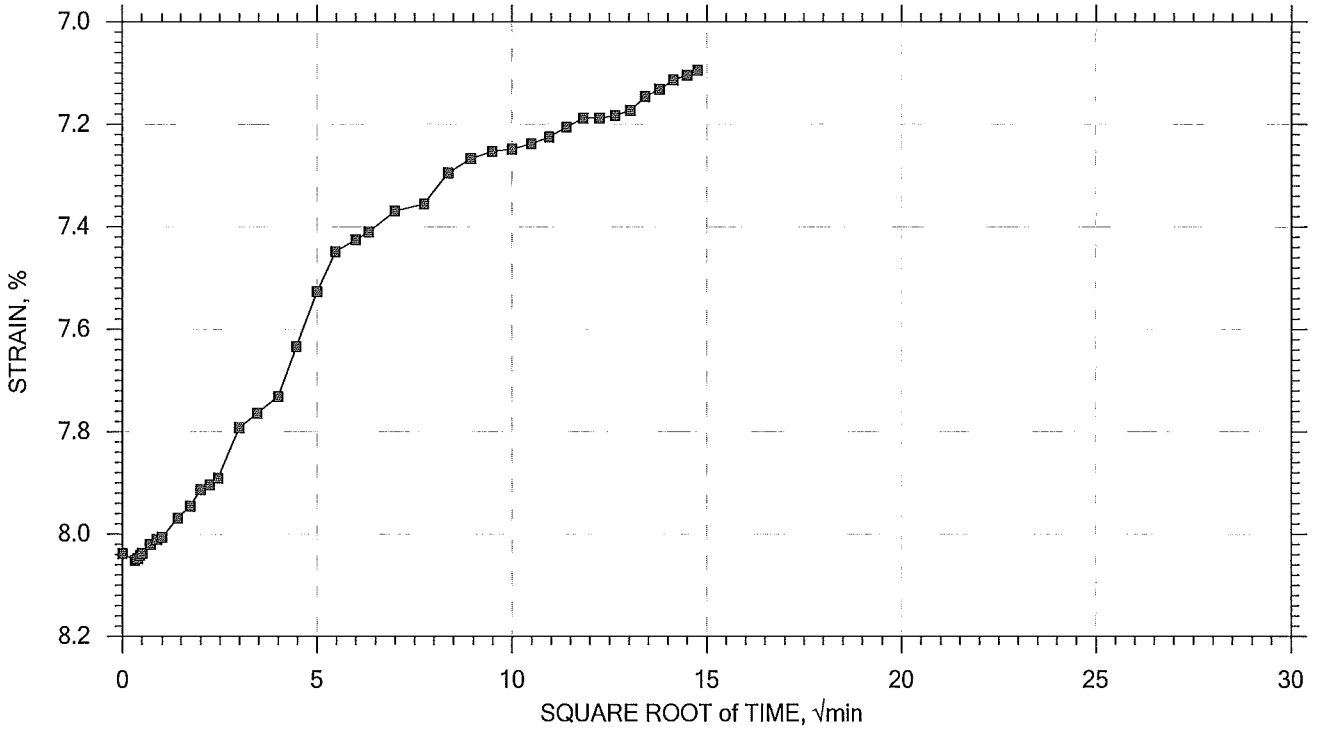
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 15 of 15

Stress: 0.0625 tsf



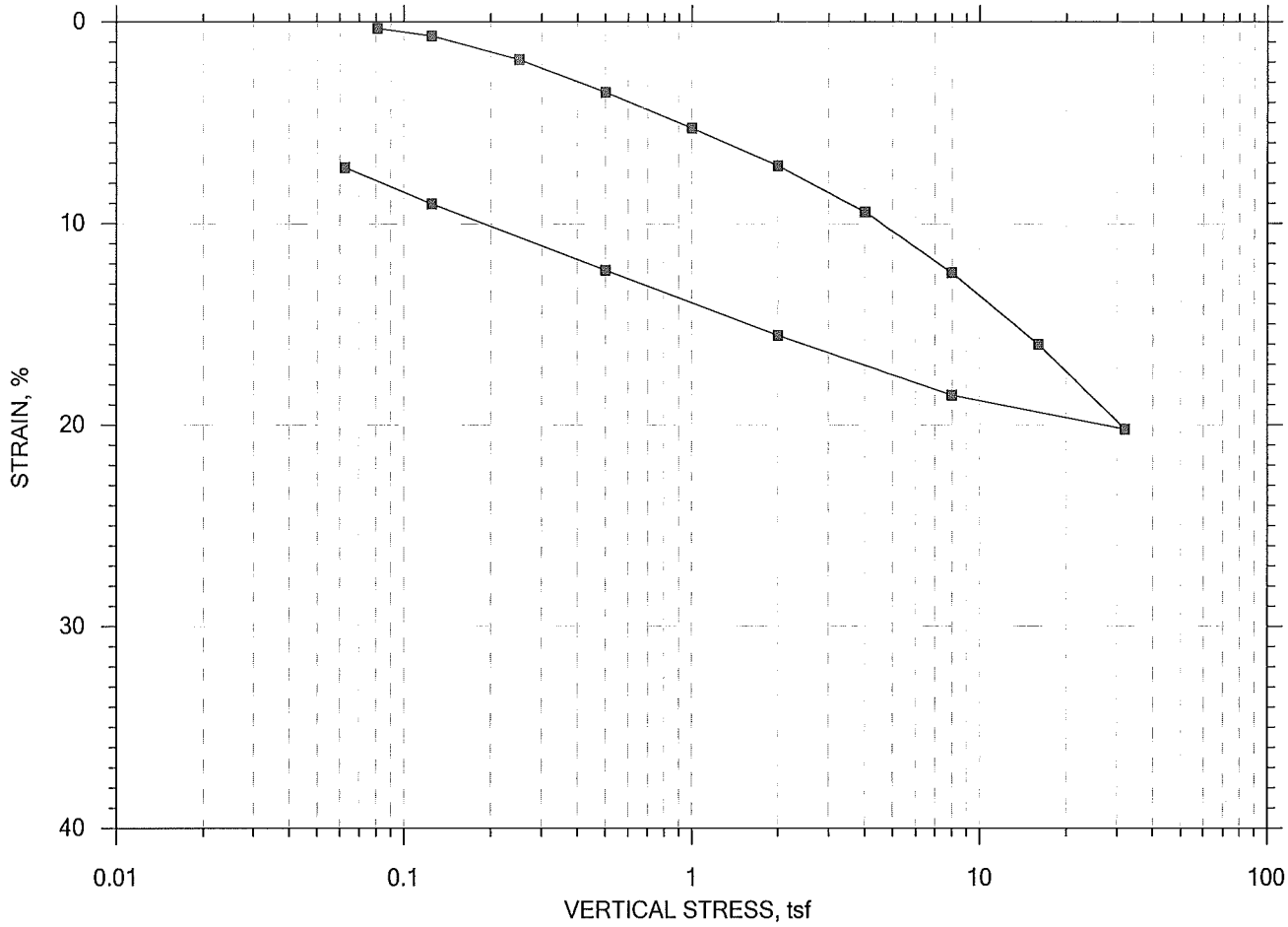


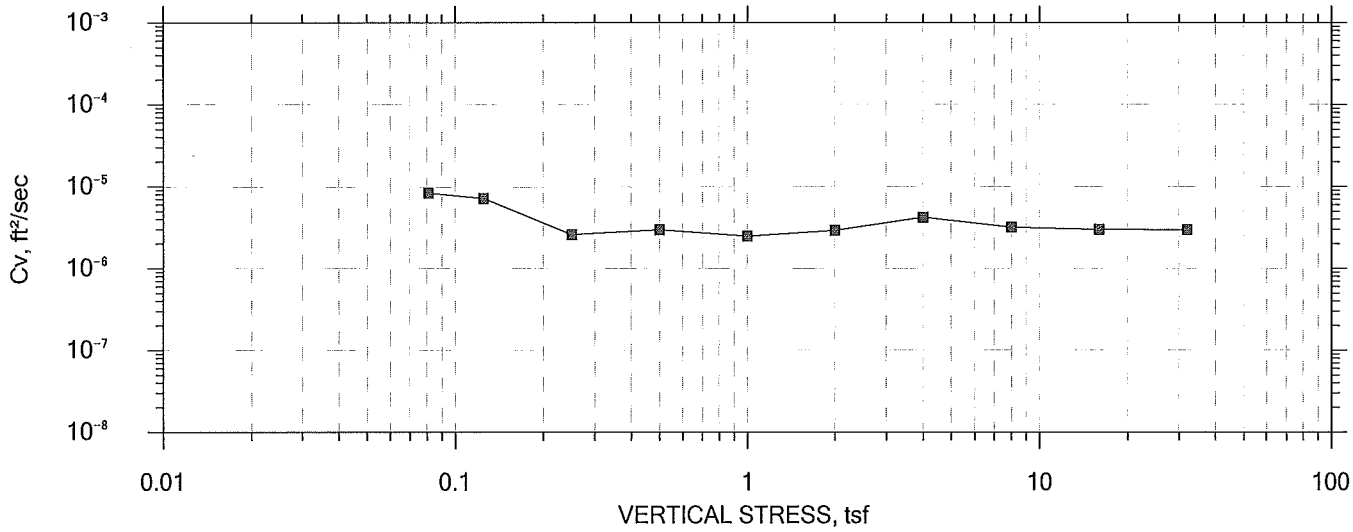
GeoTesting EXPRESS

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-13	Tested By: md	Checked By: jdt
Sample No.: S-16	Test Date: 06/07/14	Test No.: IP-2
Depth: 52-54 ft	Sample Type: intact	Elevation: ---
Description: Moist, dark grayish brown clay		
Remarks: System V, Swell Pressure = 0.0714 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT



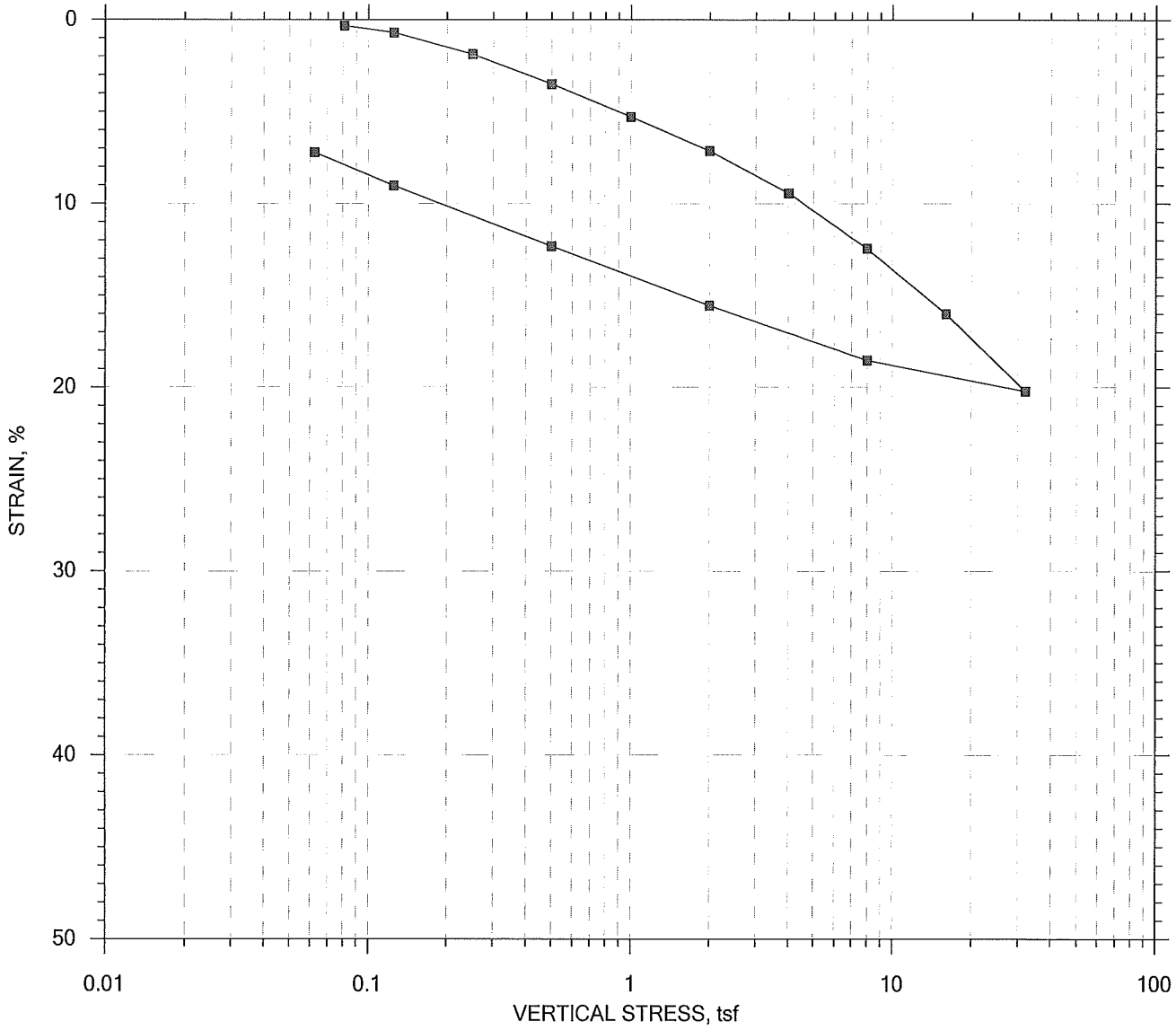


GeoTesting EXPRESS

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		
Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT



					Before Test	After Test
Current Vertical Effective Stress: ---				Water Content, %	30.90	28.15
Preconsolidation Stress: ---				Dry Unit Weight, pcf	93.98	98.927
Compression Ratio: ---				Saturation, %	98.18	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	0.90	0.81
LL: 61	PL: 31	PI: 30	GS: 2.86			

GeoTesting EXPRESS

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		
Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Depth: 32-35 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---

Soil Description: Moist, red clay
Remarks: System K, Swell Pressure = 0.0809 tsf

Estimated Specific Gravity: 2.86	Liquid Limit: 61	Specimen Diameter: 2.50 in
Initial Void Ratio: 0.900	Plastic Limit: 31	Initial Height: 1.00 in
Final Void Ratio: 0.805	Plasticity Index: 30	Final Height: 0.95 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	14025	RING		14049
Wt. Container + Wet Soil, gm	180.11	267.77	264.44	164.36
Wt. Container + Dry Soil, gm	138.47	230.36	230.36	130.10
Wt. Container, gm	8.1900	109.26	109.26	8.3800
Wt. Dry Soil, gm	130.28	121.10	121.10	121.72
Water Content, %	31.96	30.90	28.15	28.15
Void Ratio	---	0.900	0.805	---
Degree of Saturation, %	---	98.18	100.00	---
Dry Unit Weight, pcf	---	93.980	98.927	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: 19 Kent Ave
Boring No.: B-20
Sample No.: S-10
Test No.: IP-1

Location: Brooklyn, NY
Tested By: md
Test Date: 06/07/14
Sample Type: intact

Project No.: GTX-301904
Checked By: jdt
Depth: 32-35 ft
Elevation: ---

Soil Description: Moist, red clay
Remarks: System K, Swell Pressure = 0.0809 tsf

Displacement at End of Increment

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt T90 min	Cv ft²/sec	Mv 1/tsf	k ft/day
1	0.0809	0.003180	0.894	0.318	3.084	7.93e-006	3.93e-002	8.41e-004
2	0.125	0.006968	0.887	0.697	4.118	5.90e-006	8.59e-002	1.37e-003
3	0.250	0.01860	0.865	1.86	11.599	2.06e-006	9.31e-002	5.17e-004
4	0.500	0.03500	0.834	3.50	6.901	3.37e-006	6.56e-002	5.96e-004
5	1.00	0.05280	0.800	5.28	10.358	2.17e-006	3.56e-002	2.08e-004
6	2.00	0.07140	0.764	7.14	6.556	3.29e-006	1.86e-002	1.65e-004
7	4.00	0.09432	0.721	9.43	4.388	4.70e-006	1.15e-002	1.45e-004
8	8.00	0.1245	0.664	12.5	5.209	3.74e-006	7.55e-003	7.60e-005
9	16.0	0.1602	0.596	16.0	4.895	3.69e-006	4.46e-003	4.43e-005
10	32.0	0.2021	0.516	20.2	3.749	4.39e-006	2.62e-003	3.10e-005
11	8.00	0.1852	0.548	18.5	2.172	7.34e-006	7.06e-004	1.40e-005
12	2.00	0.1555	0.605	15.5	9.626	1.75e-006	4.95e-003	2.34e-005
13	0.500	0.1232	0.666	12.3	44.641	4.07e-007	2.15e-002	2.36e-005
14	0.125	0.09023	0.729	9.02	129.585	1.51e-007	8.80e-002	3.58e-005
15	0.0625	0.07205	0.763	7.20	181.952	1.14e-007	2.91e-001	8.93e-005

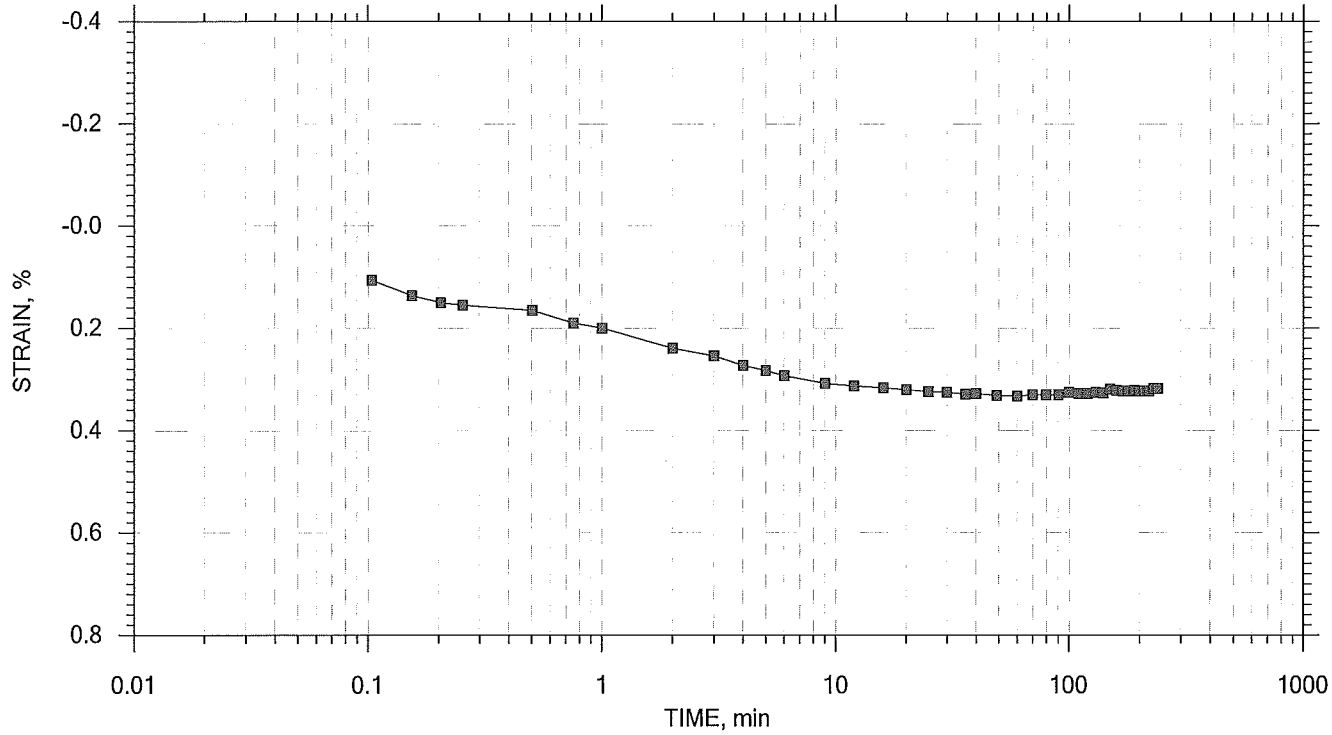
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv ft²/sec	Mv 1/tsf	k ft/day	Ca %
1	0.0809	0.003180	0.894	0.318	0.000	0.00e+000	3.93e-002	0.00e+000	0.00e+000
2	0.125	0.006968	0.887	0.697	0.000	0.00e+000	8.59e-002	0.00e+000	0.00e+000
3	0.250	0.01860	0.865	1.86	0.000	0.00e+000	9.31e-002	0.00e+000	0.00e+000
4	0.500	0.03500	0.834	3.50	0.000	0.00e+000	6.56e-002	0.00e+000	0.00e+000
5	1.00	0.05280	0.800	5.28	1.683	3.10e-006	3.56e-002	2.97e-004	0.00e+000
6	2.00	0.07140	0.764	7.14	1.894	2.65e-006	1.86e-002	1.33e-004	0.00e+000
7	4.00	0.09432	0.721	9.43	0.000	0.00e+000	1.15e-002	0.00e+000	0.00e+000
8	8.00	0.1245	0.664	12.5	1.564	2.89e-006	7.55e-003	5.88e-005	0.00e+000
9	16.0	0.1602	0.596	16.0	1.619	2.59e-006	4.46e-003	3.11e-005	0.00e+000
10	32.0	0.2021	0.516	20.2	1.640	2.33e-006	2.62e-003	1.65e-005	0.00e+000
11	8.00	0.1852	0.548	18.5	0.000	0.00e+000	7.06e-004	0.00e+000	0.00e+000
12	2.00	0.1555	0.605	15.5	2.553	1.54e-006	4.95e-003	2.05e-005	0.00e+000
13	0.500	0.1232	0.666	12.3	9.762	4.32e-007	2.15e-002	2.51e-005	0.00e+000
14	0.125	0.09023	0.729	9.02	0.000	0.00e+000	8.80e-002	0.00e+000	0.00e+000
15	0.0625	0.07205	0.763	7.20	0.000	0.00e+000	2.91e-001	0.00e+000	0.00e+000

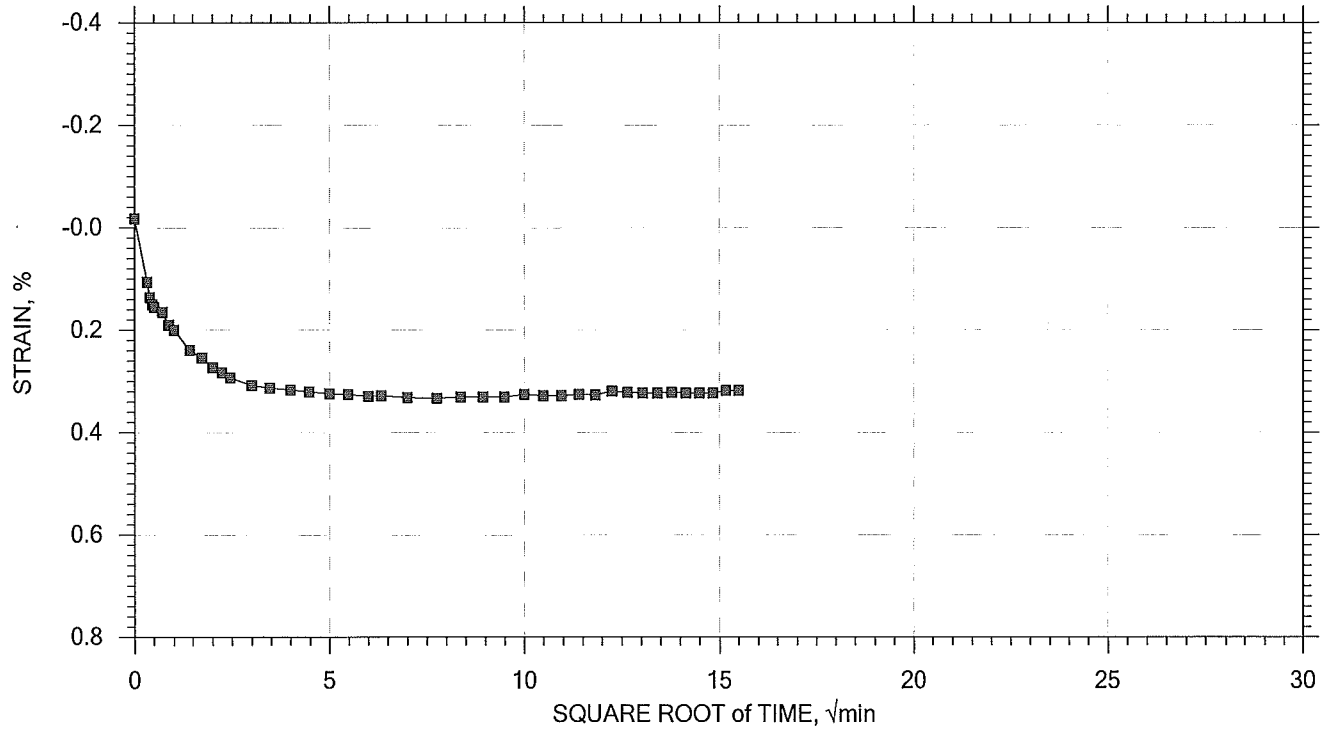
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Volume Step 1 of 15

Stress: 0.080891 tsf





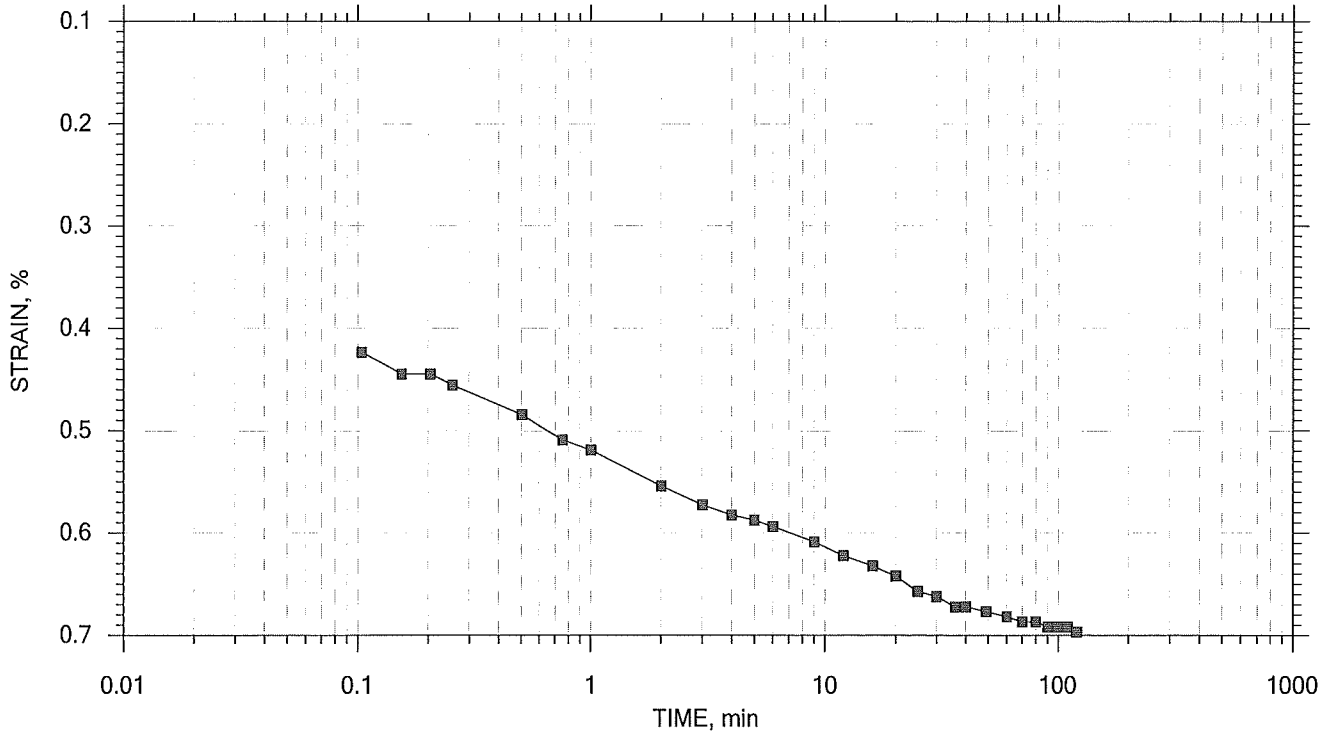
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

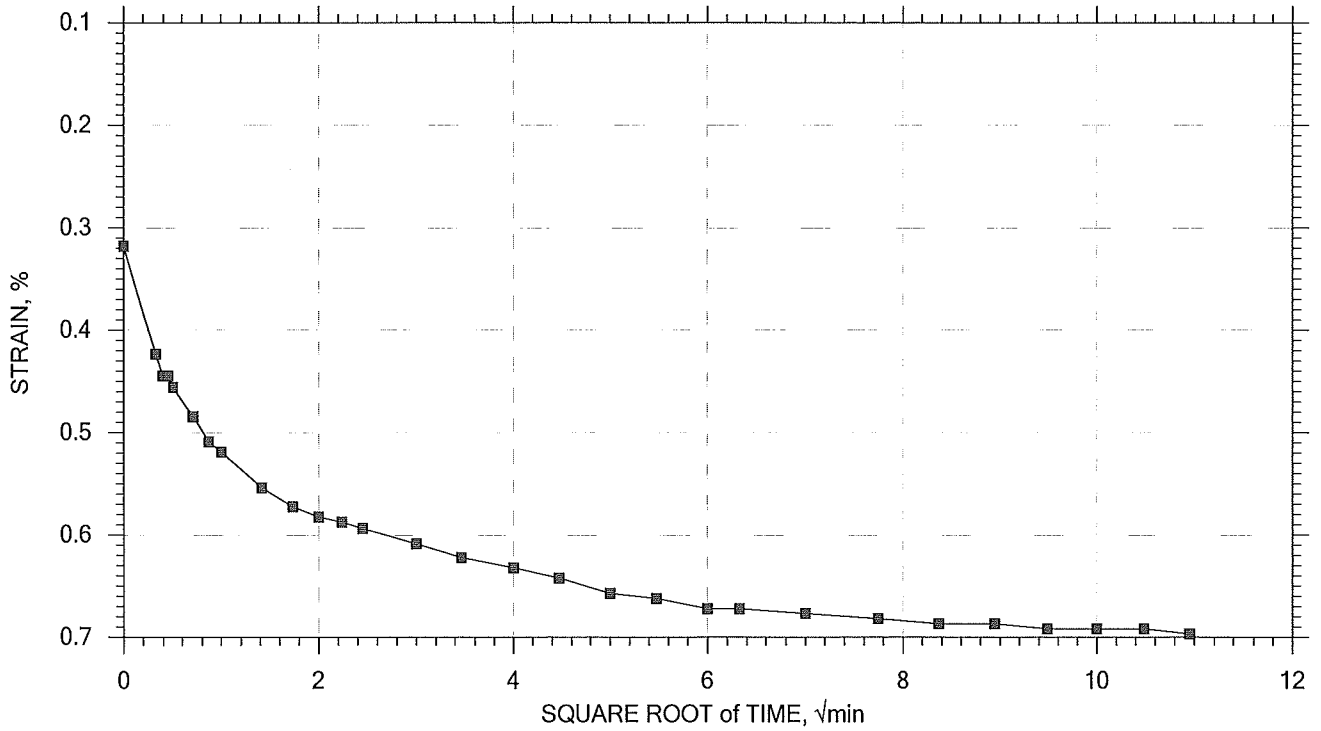
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 2 of 15

Stress: 0.125 tsf





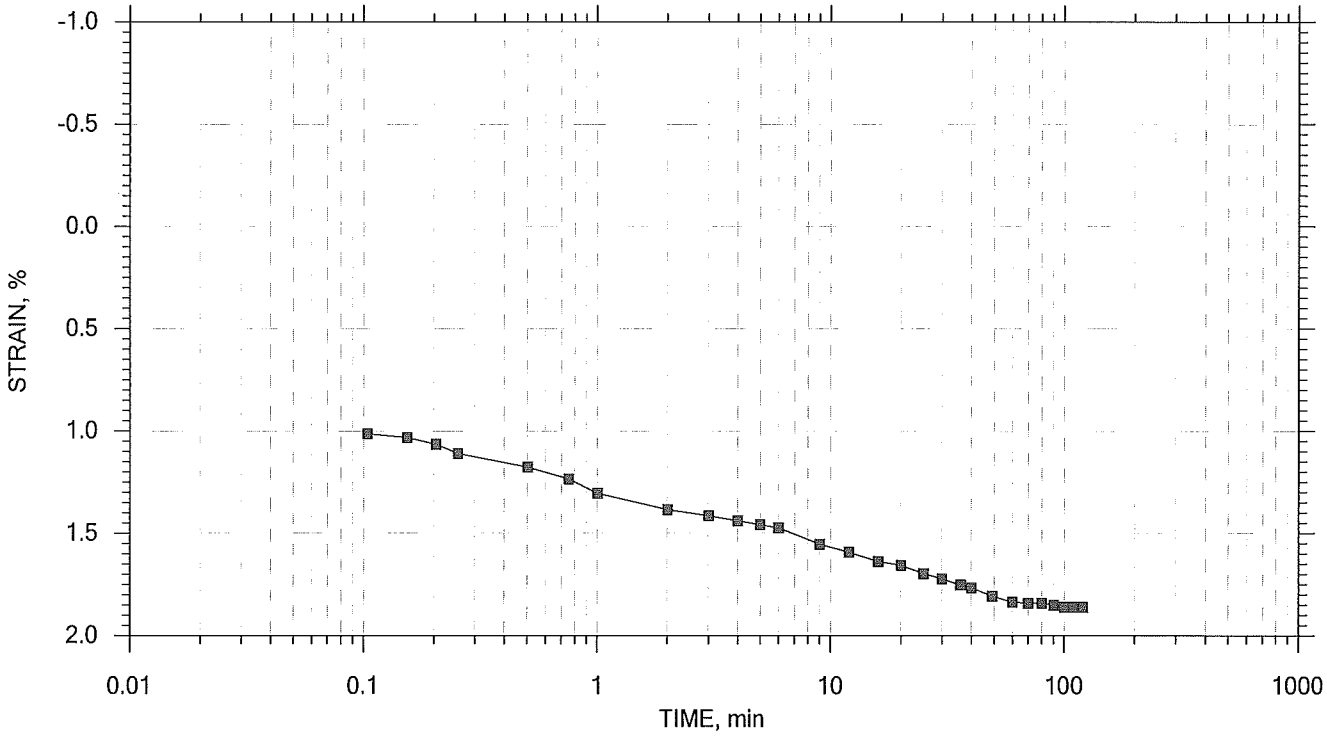
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

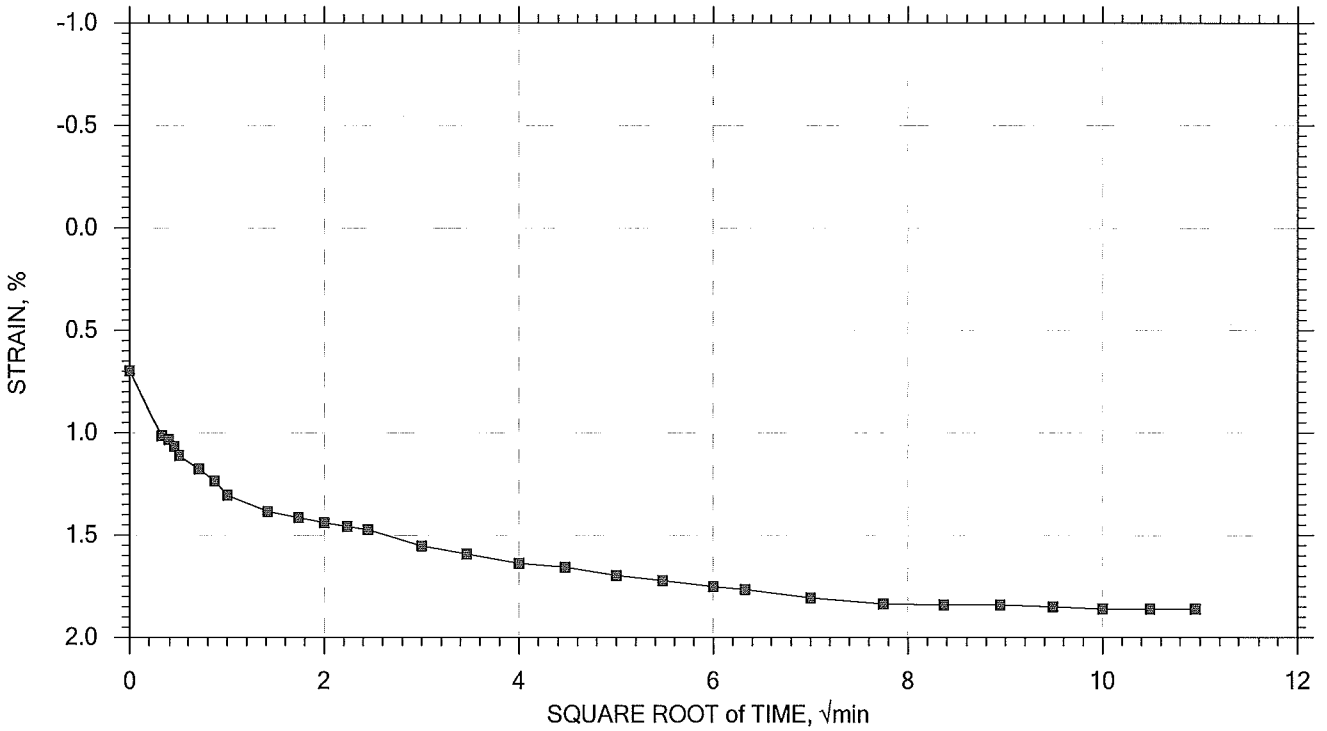
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 3 of 15

Stress: 0.25 tsf





GeoTesting EXPRESS

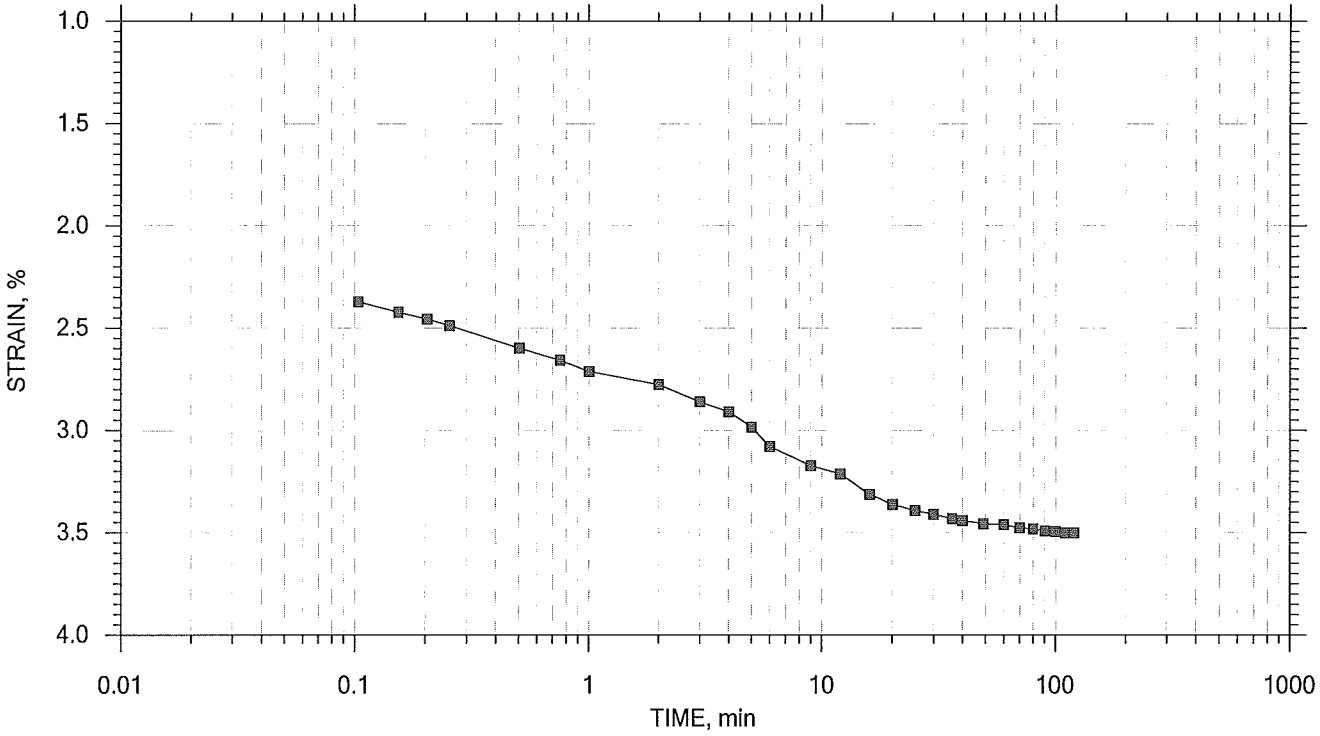
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

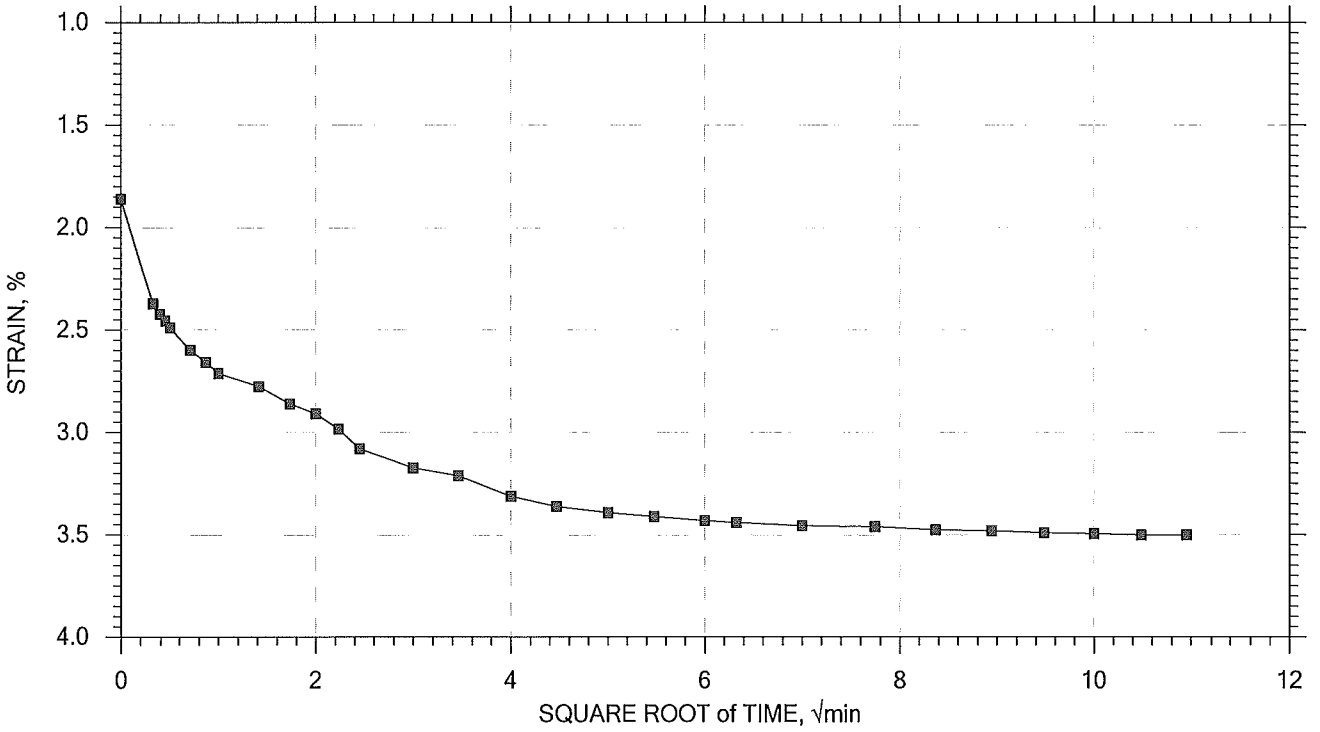
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 4 of 15

Stress: 0.5 tsf





GeoTesting EXPRESS

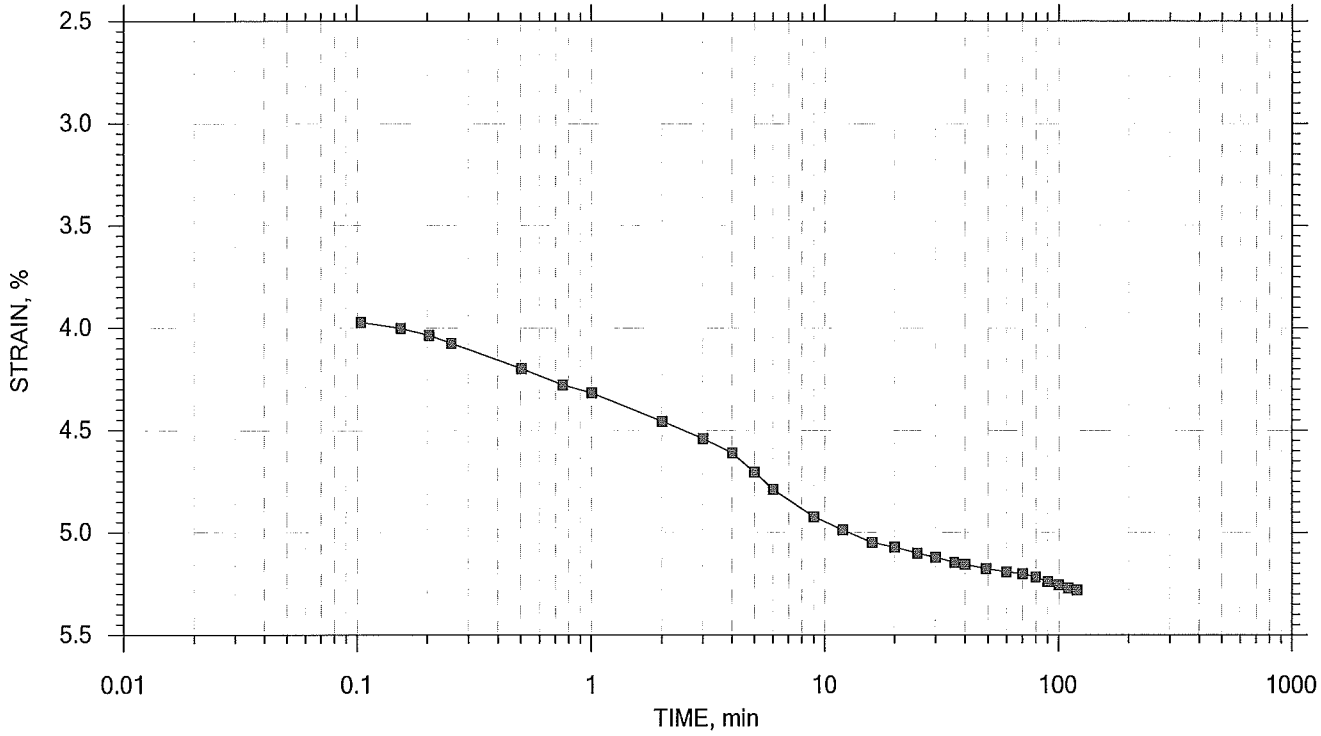
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

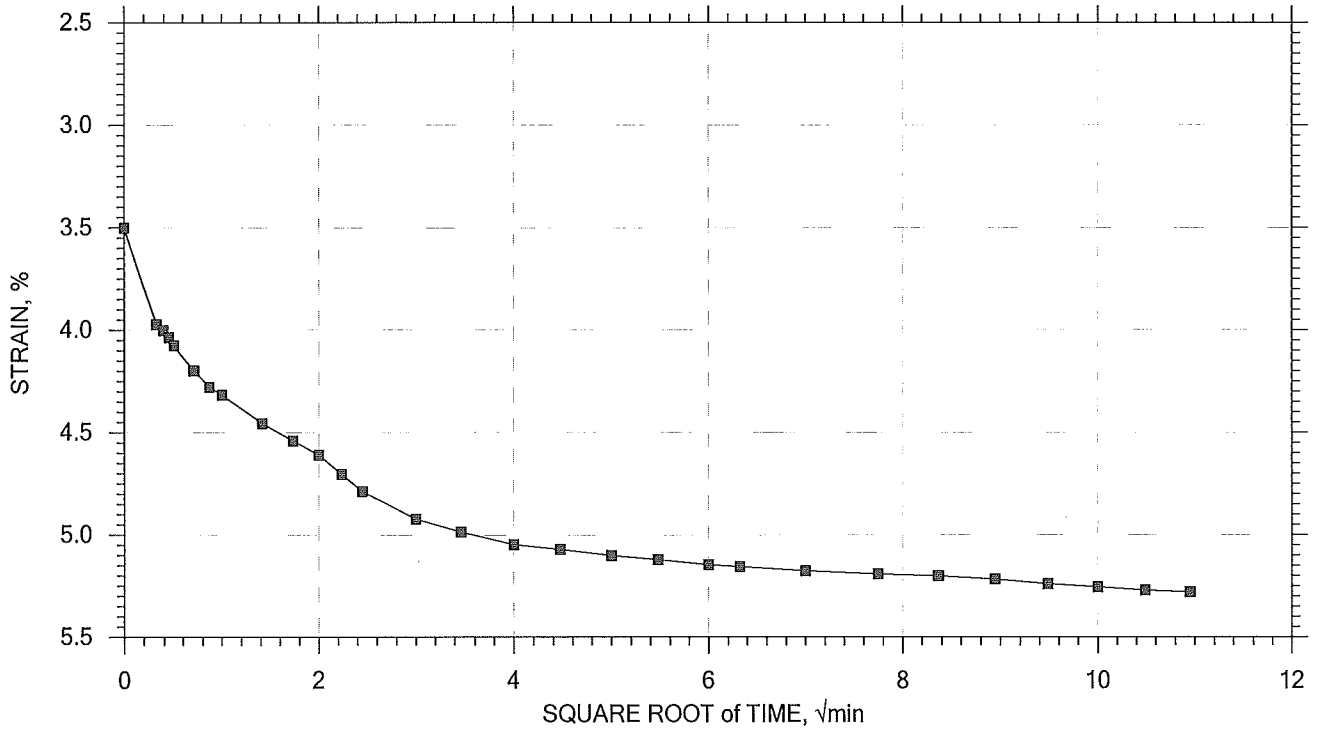
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 5 of 15

Stress: 1 tsf





GeoTesting EXPRESS

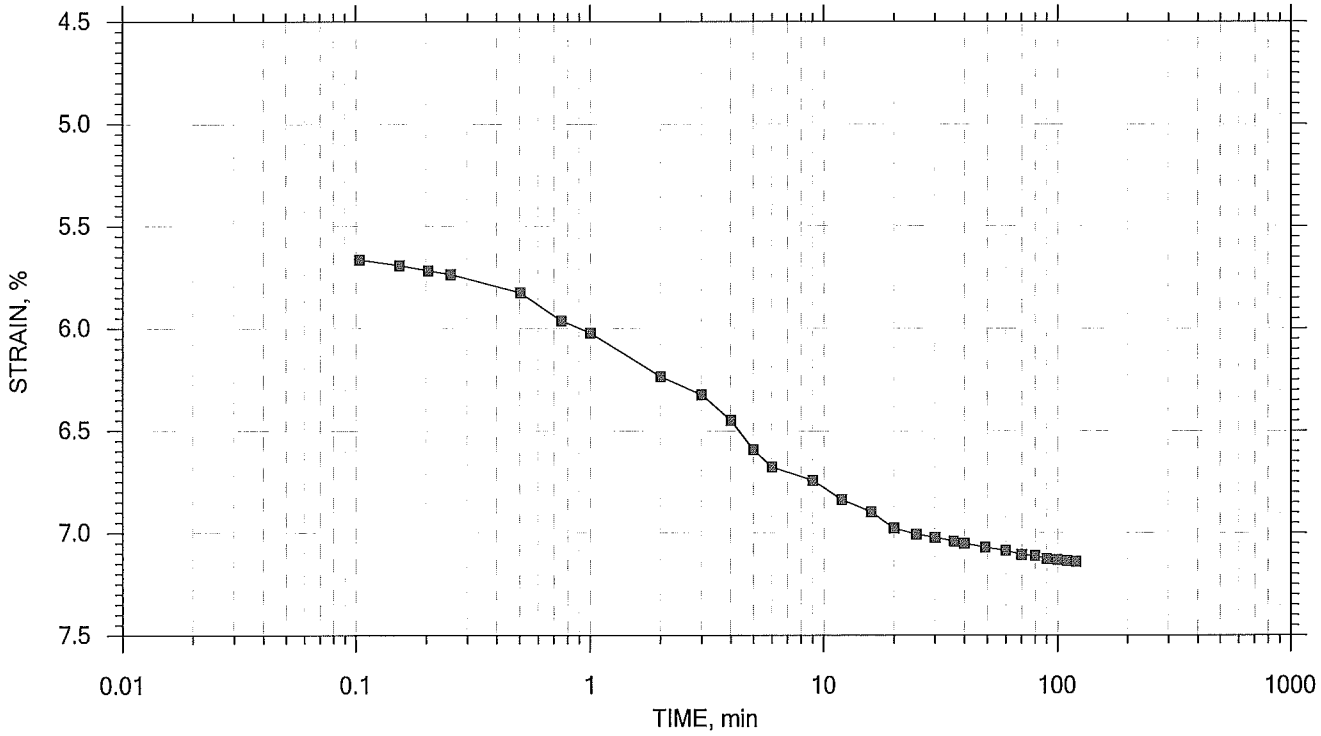
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

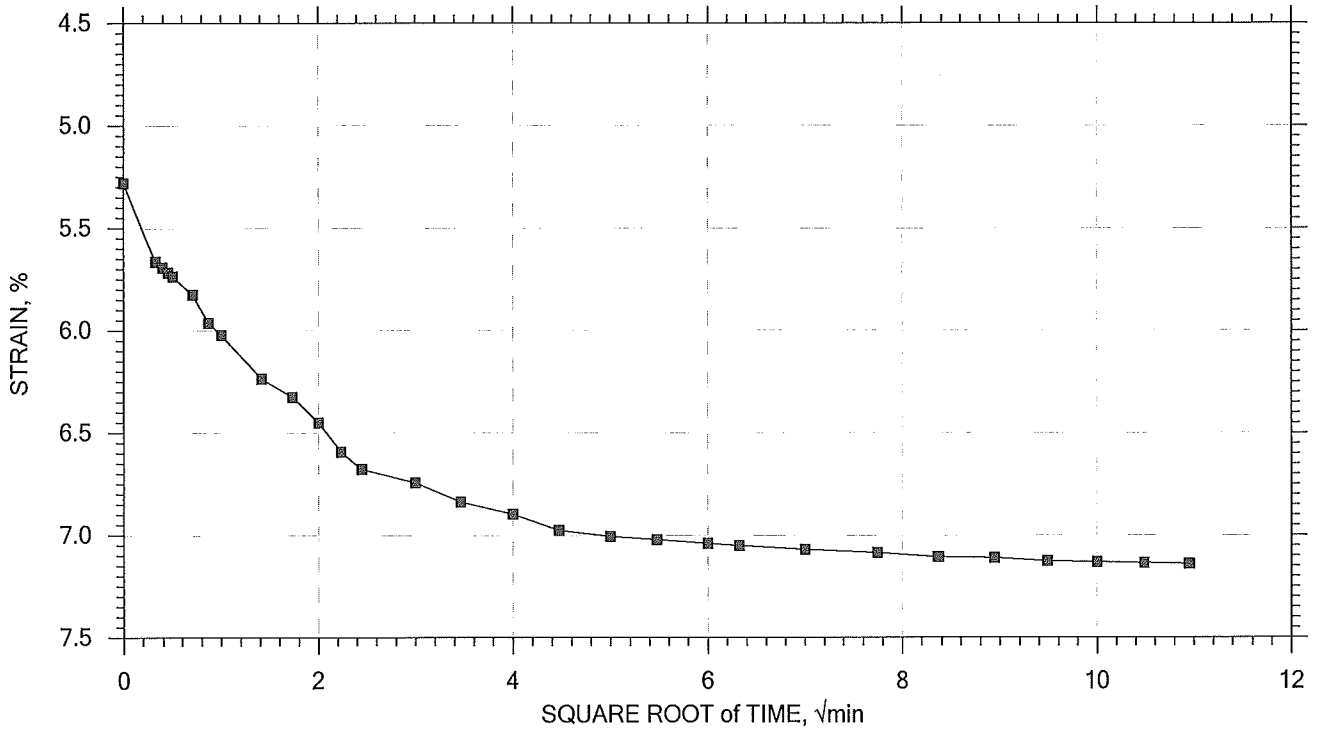
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 6 of 15

Stress: 2 tsf





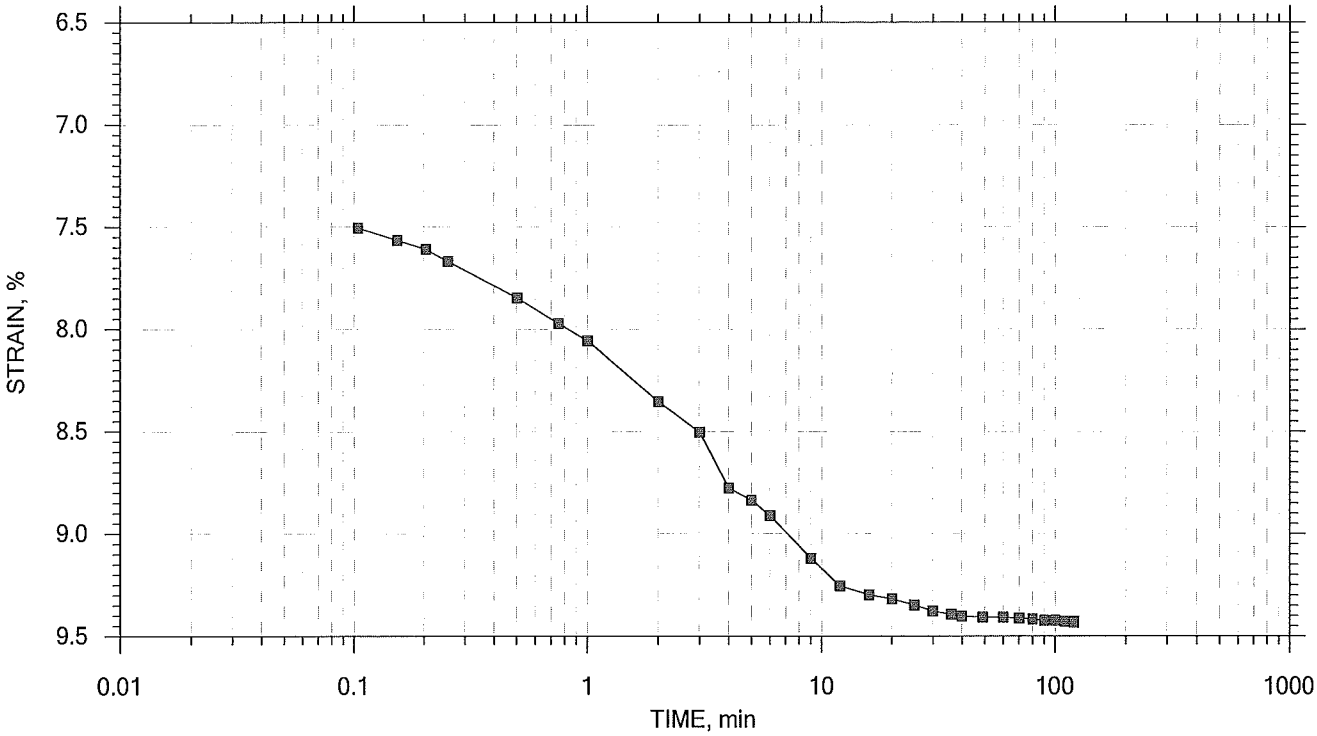
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

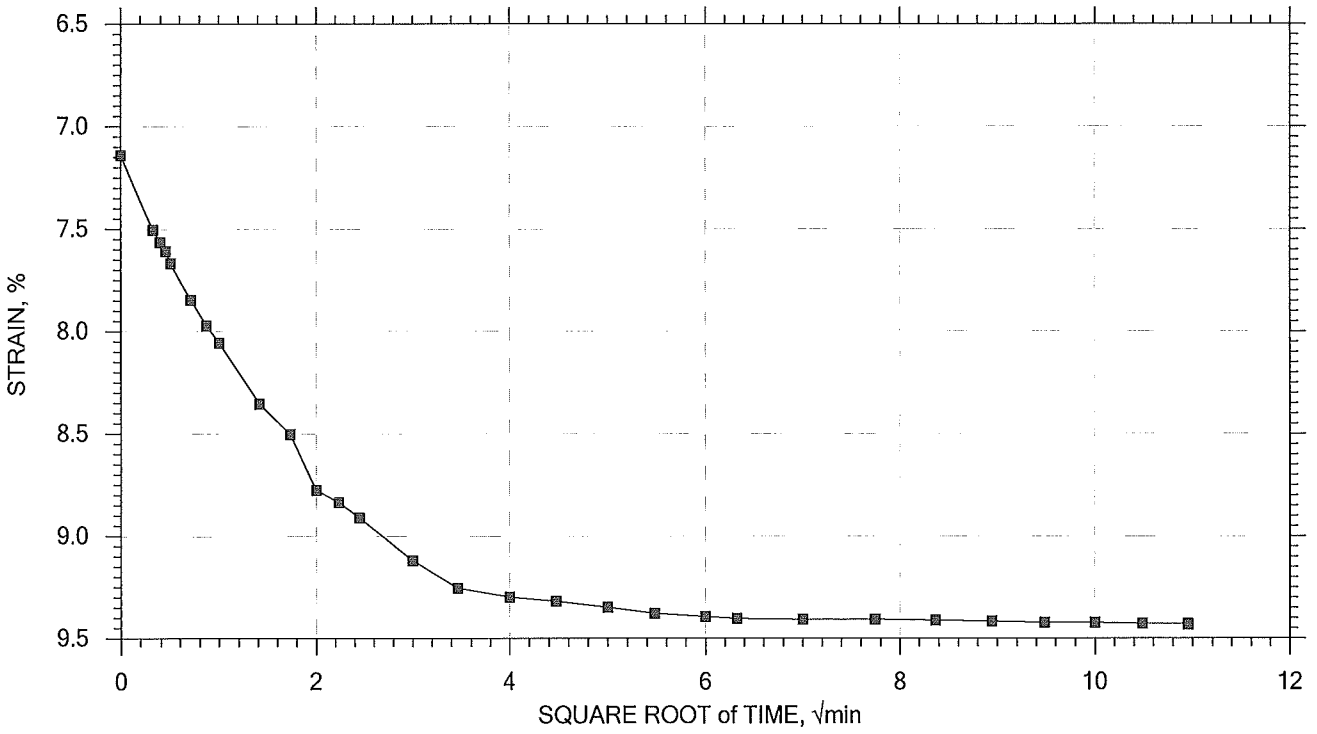
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 7 of 15

Stress: 4 tsf





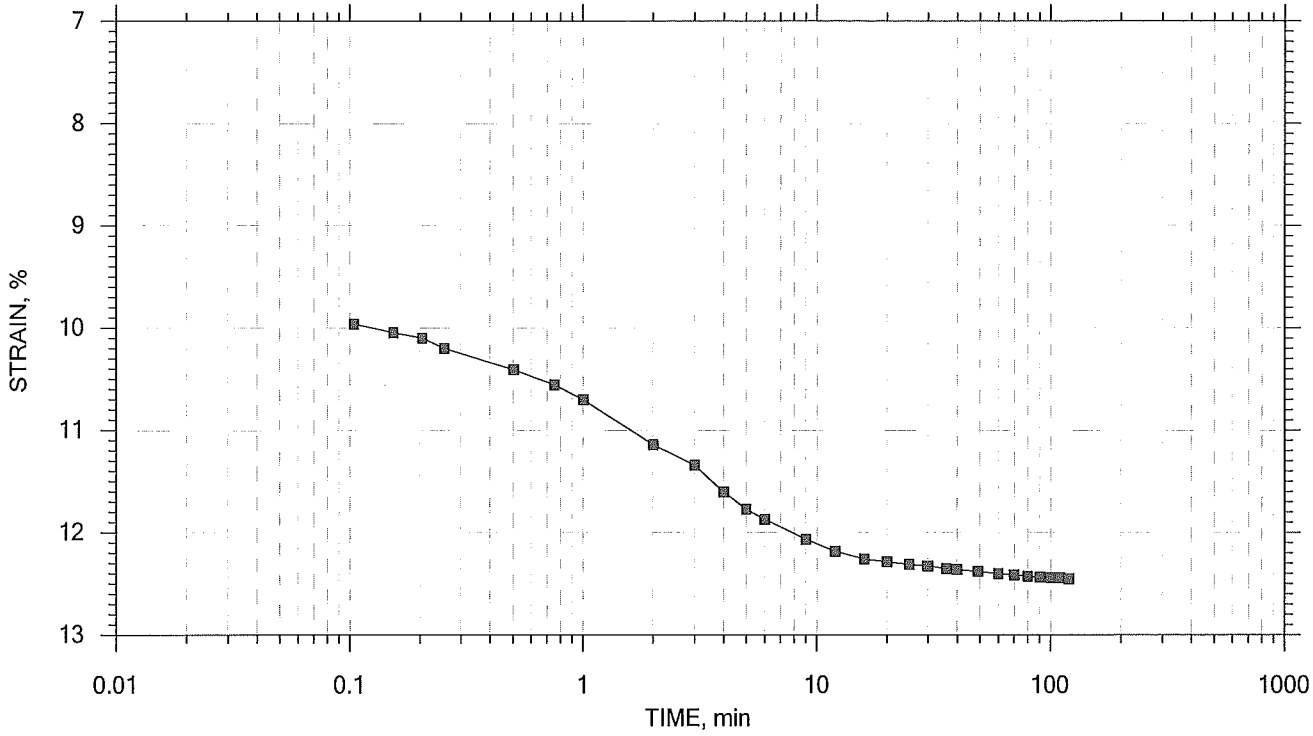
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

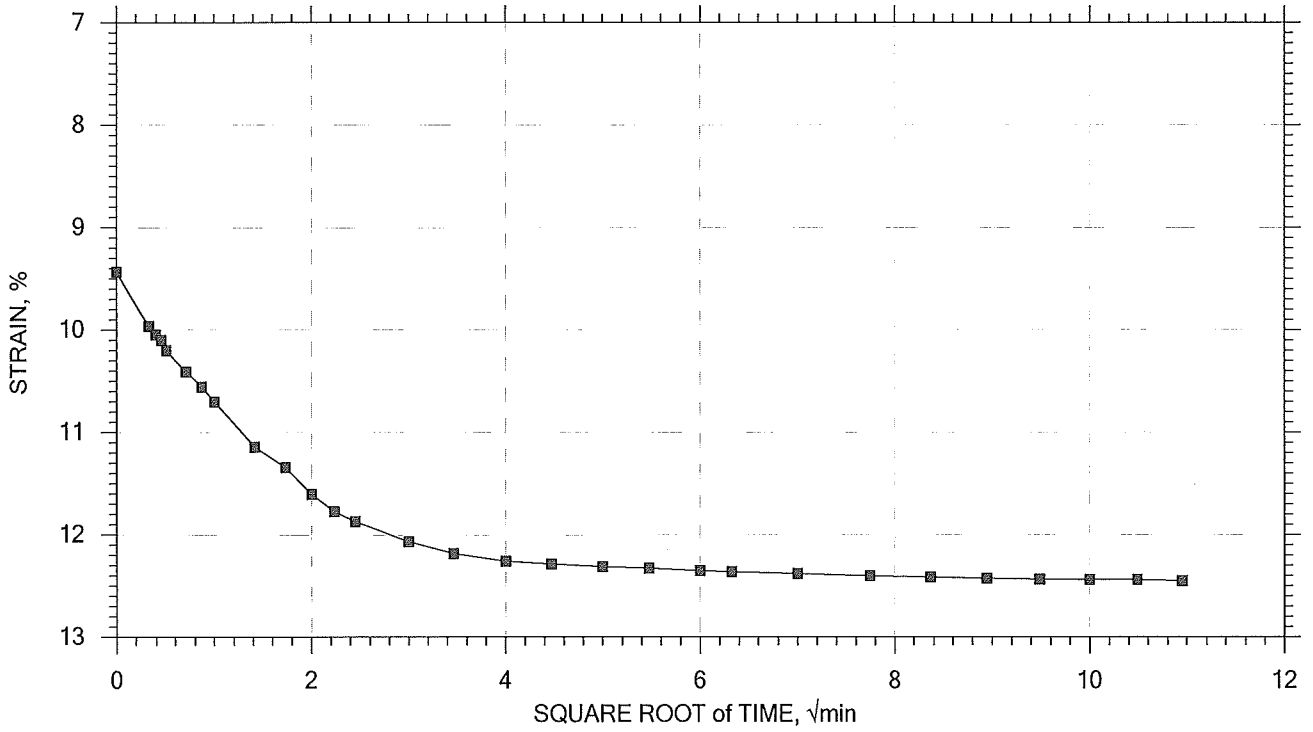
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 8 of 15

Stress: 8 tsf





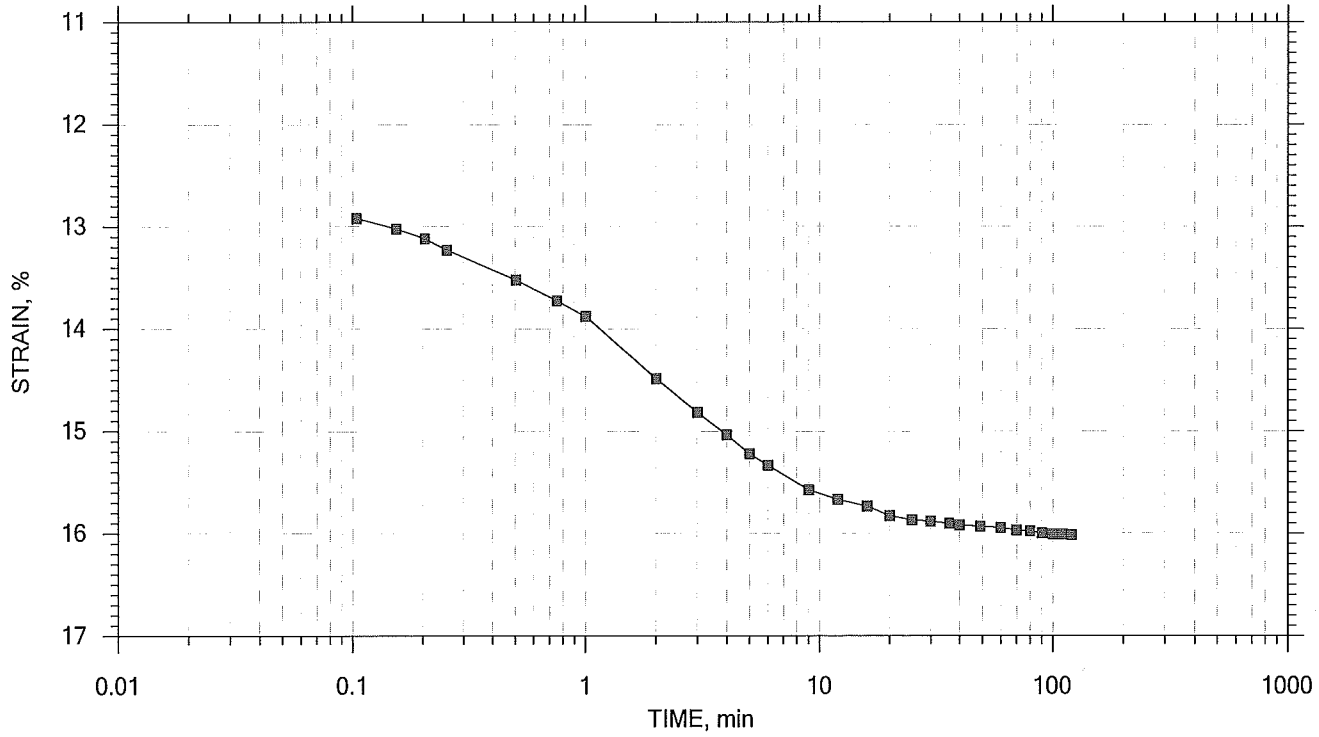
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

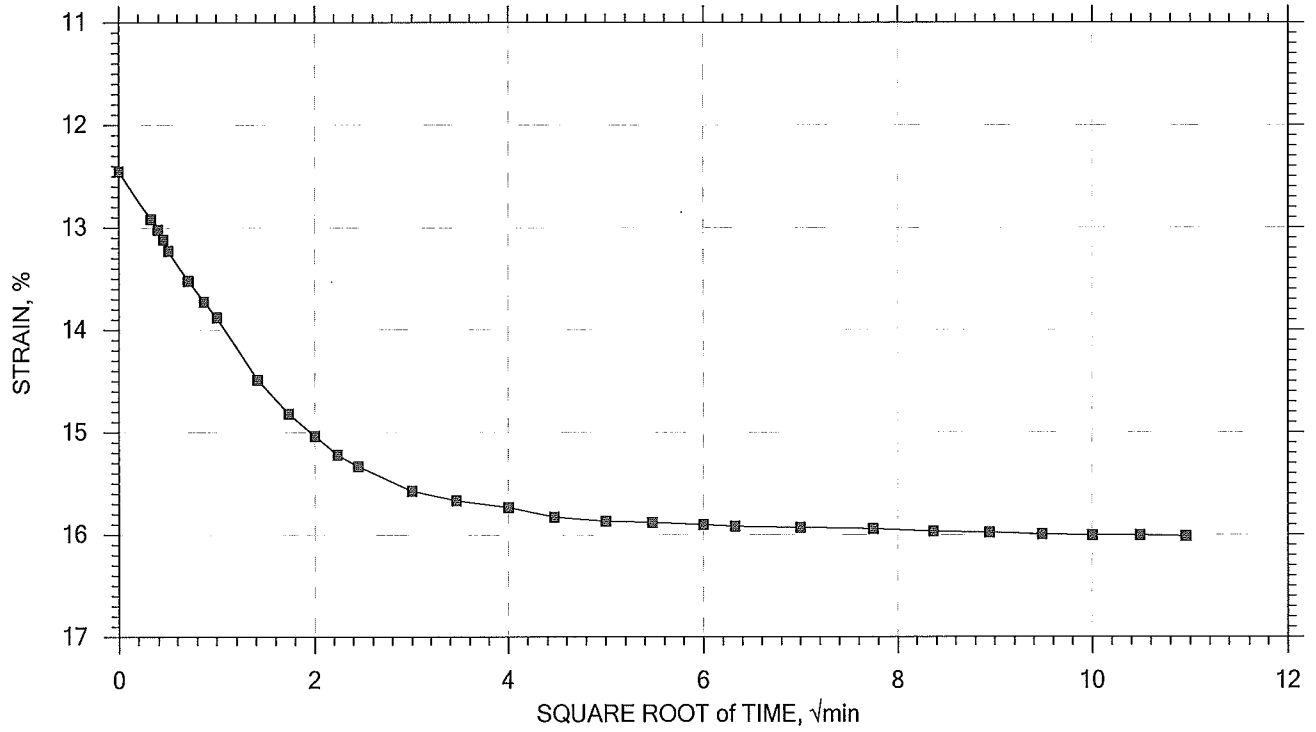
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 9 of 15

Stress: 16 tsf





GeoTesting EXPRESS

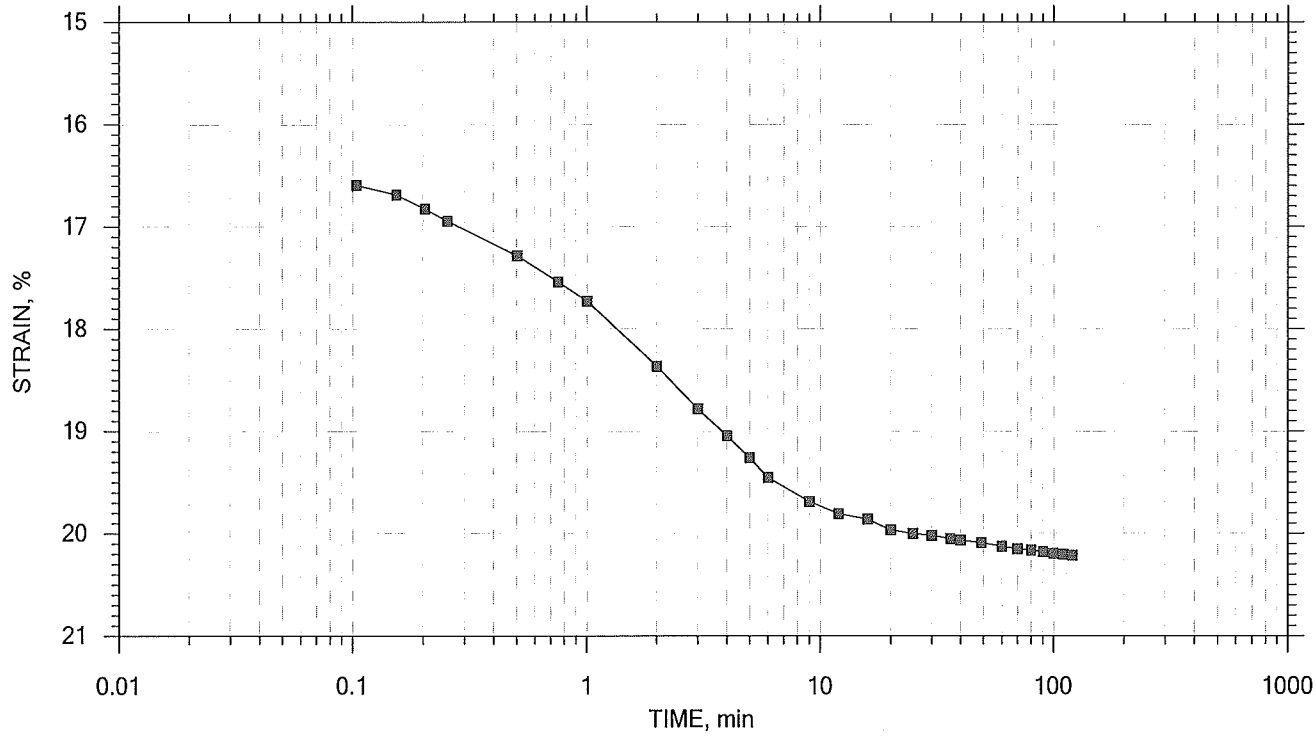
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

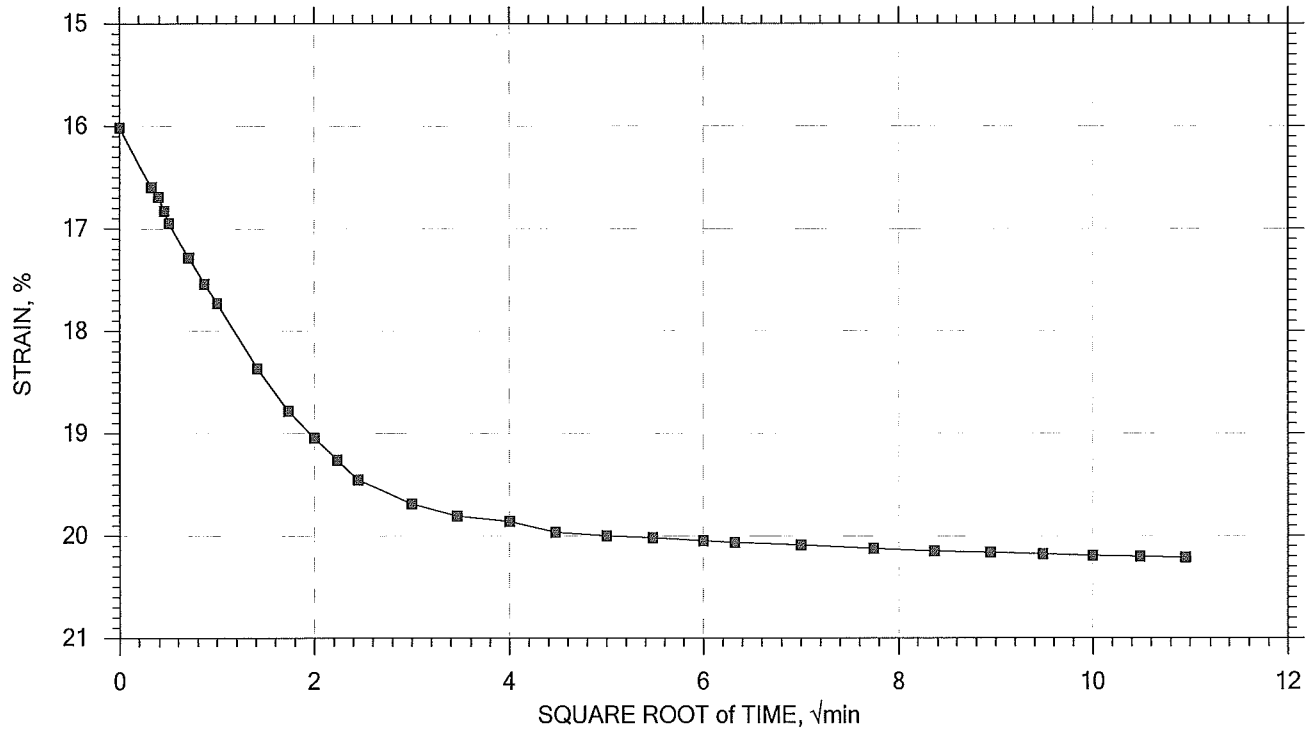
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 10 of 15

Stress: 32 tsf





GeoTesting EXPRESS

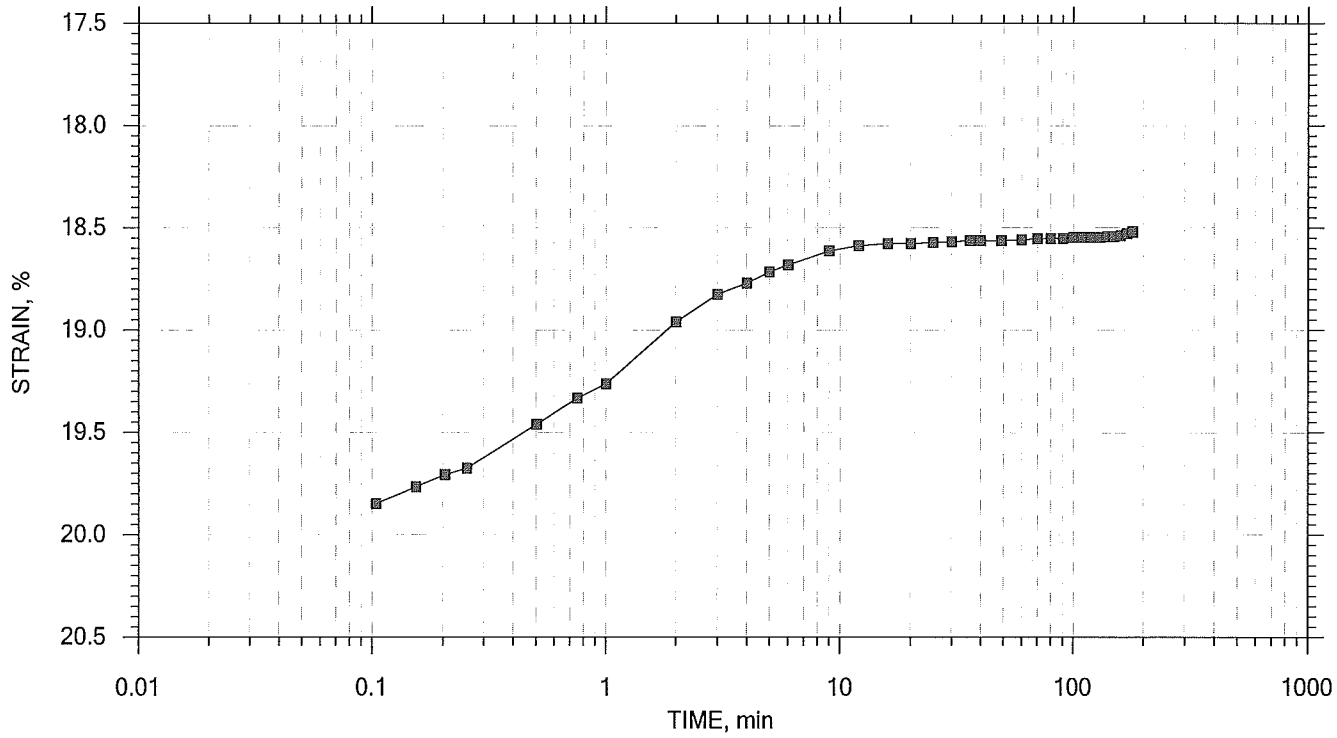
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

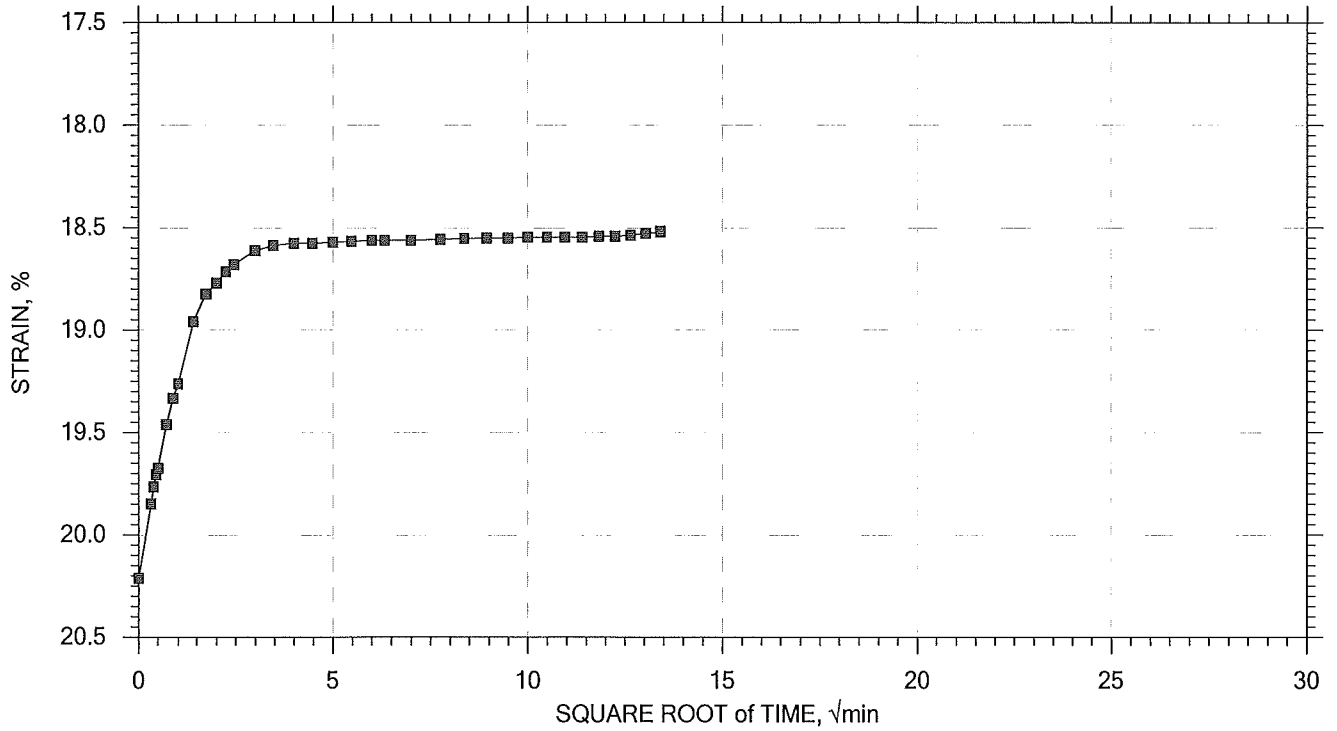
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 11 of 15

Stress: 8 tsf





GeoTesting EXPRESS

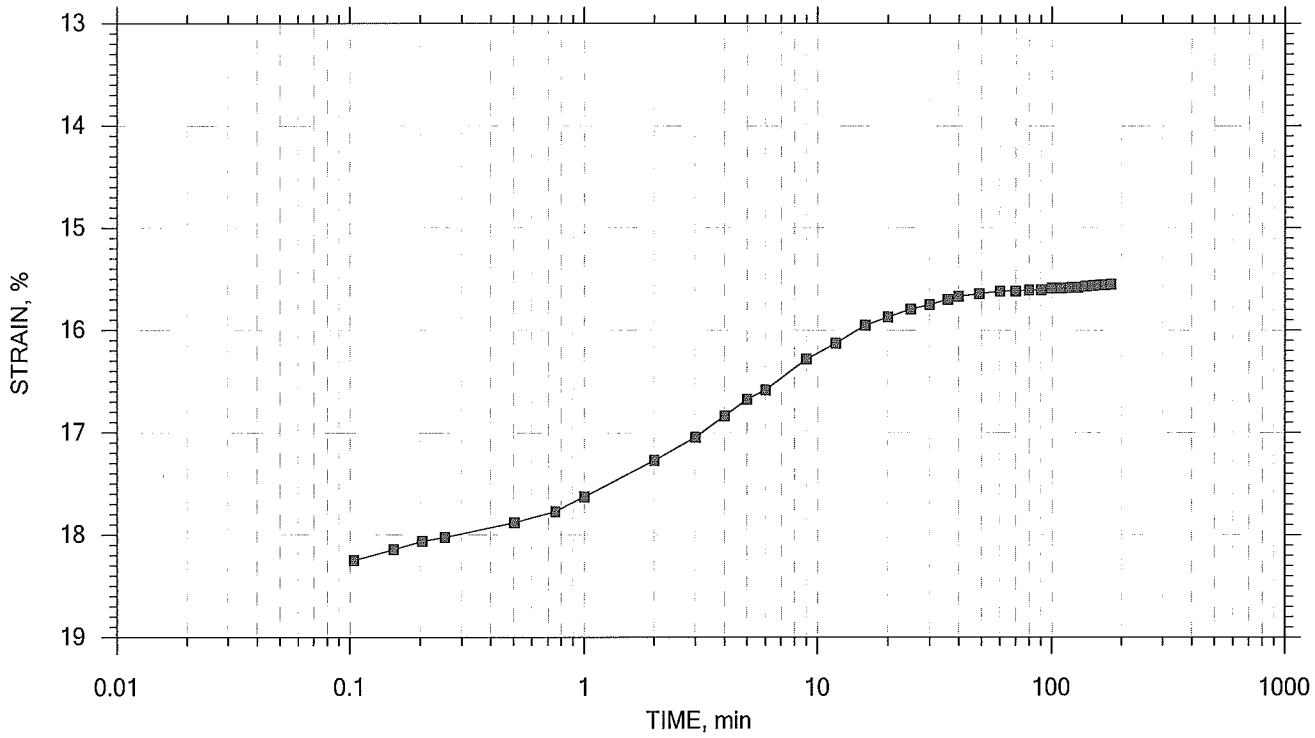
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

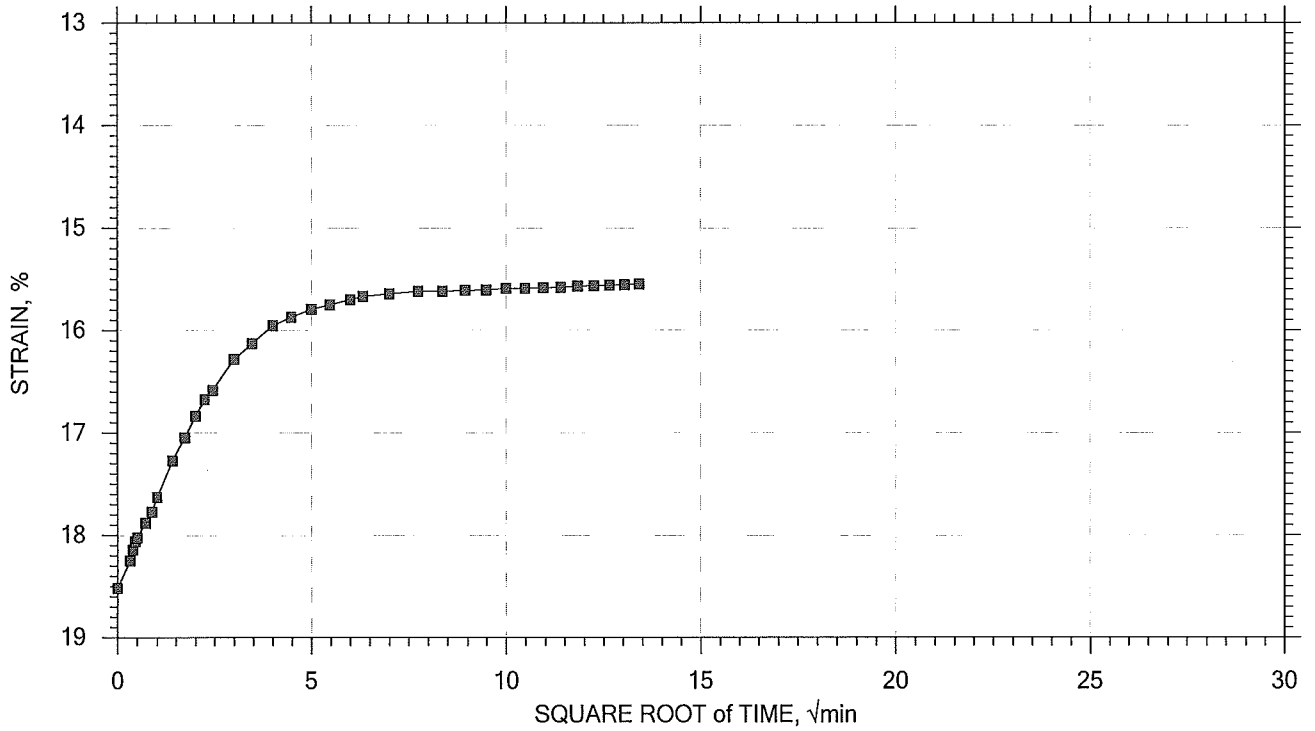
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 12 of 15

Stress: 2 tsf





GeoTesting EXPRESS

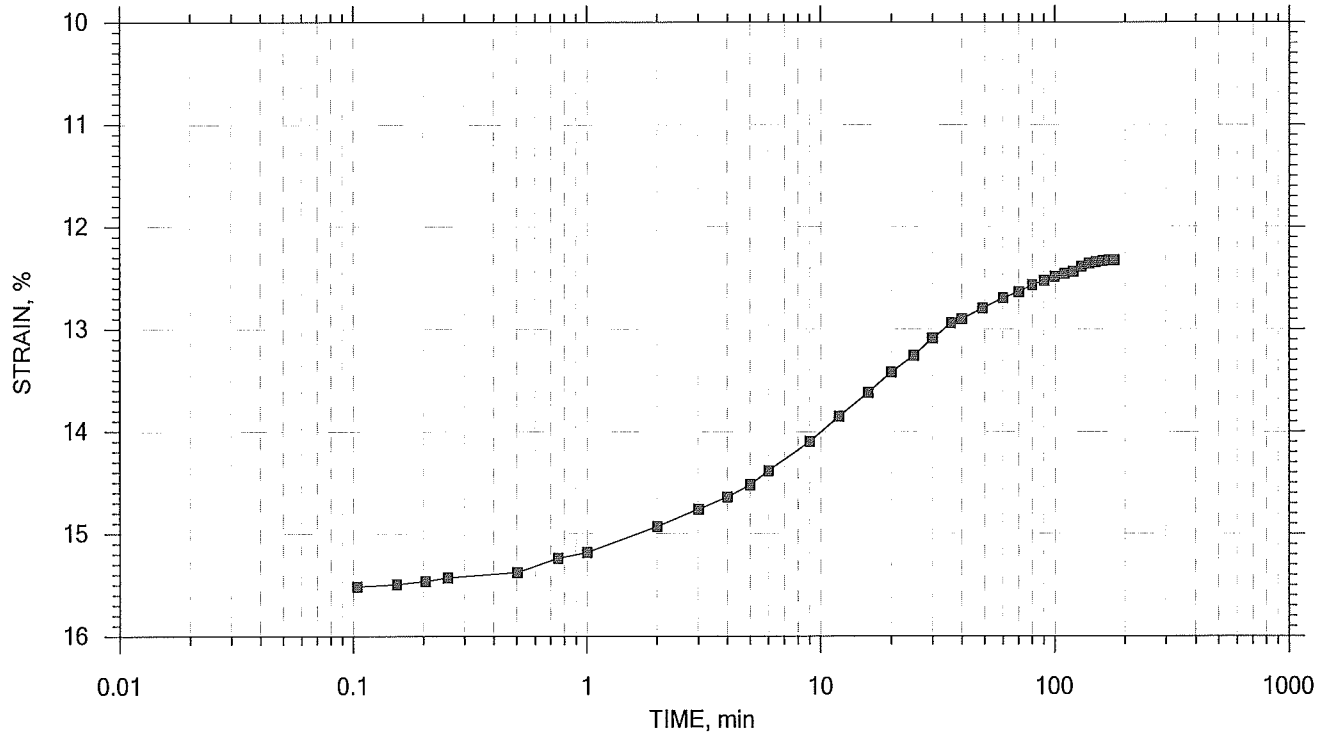
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

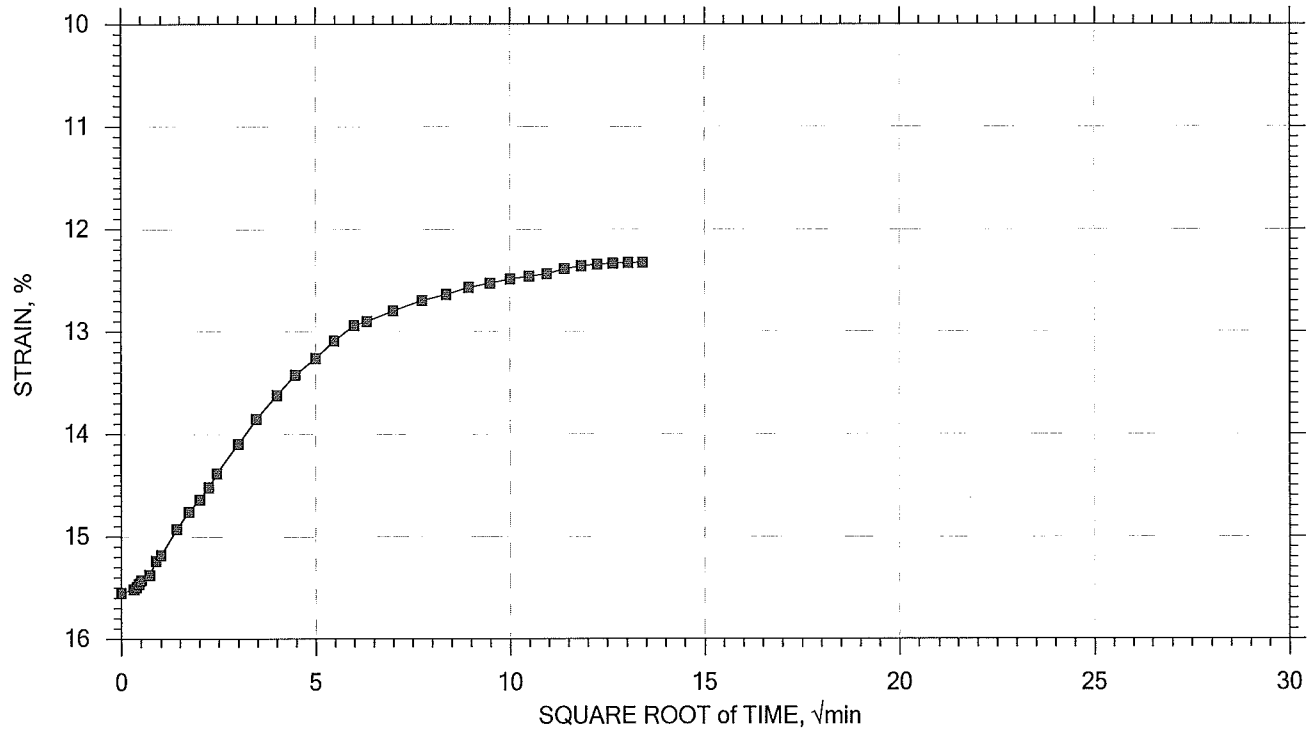
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 13 of 15

Stress: 0.5 tsf





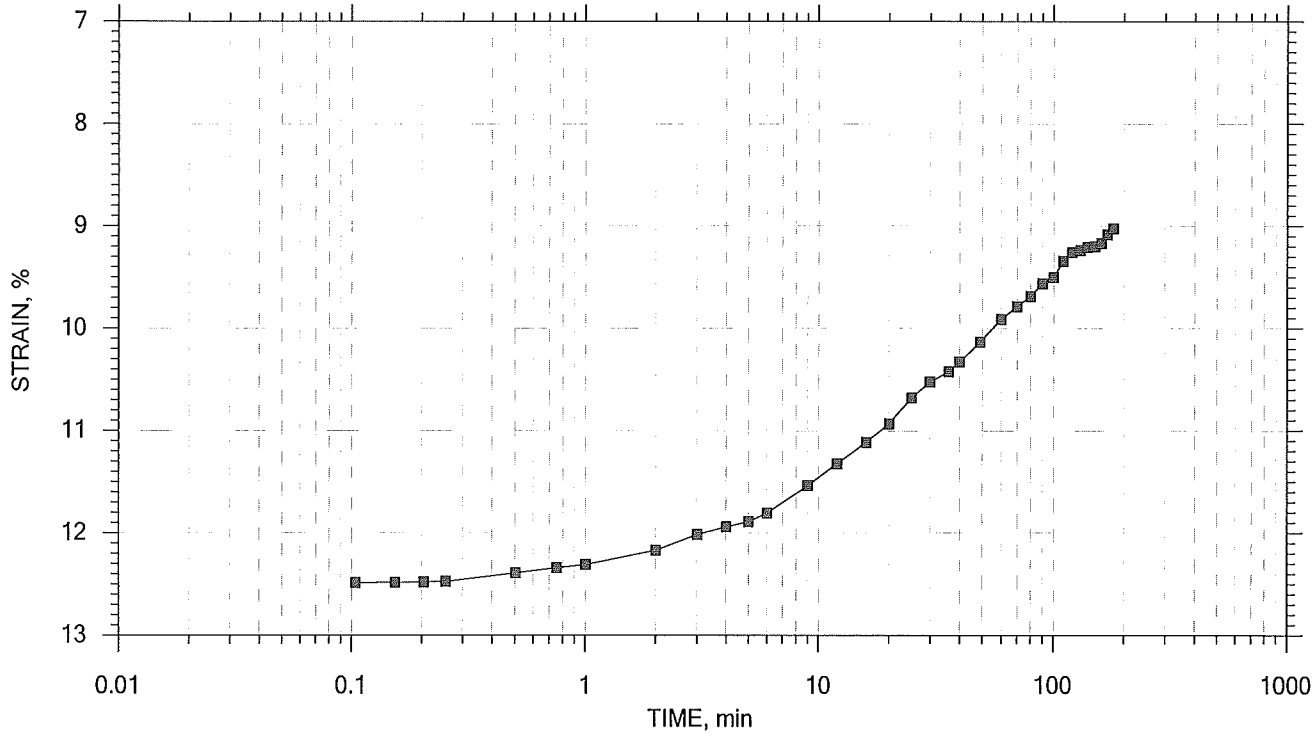
GeoTesting EXPRESS	Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
	Boring No.: B-20	Tested By: md	Checked By: jdt
	Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
	Depth: 32-35 ft	Sample Type: intact	Elevation: ---
	Description: Moist, red clay		
	Remarks: System K, Swell Pressure = 0.0809 tsf		

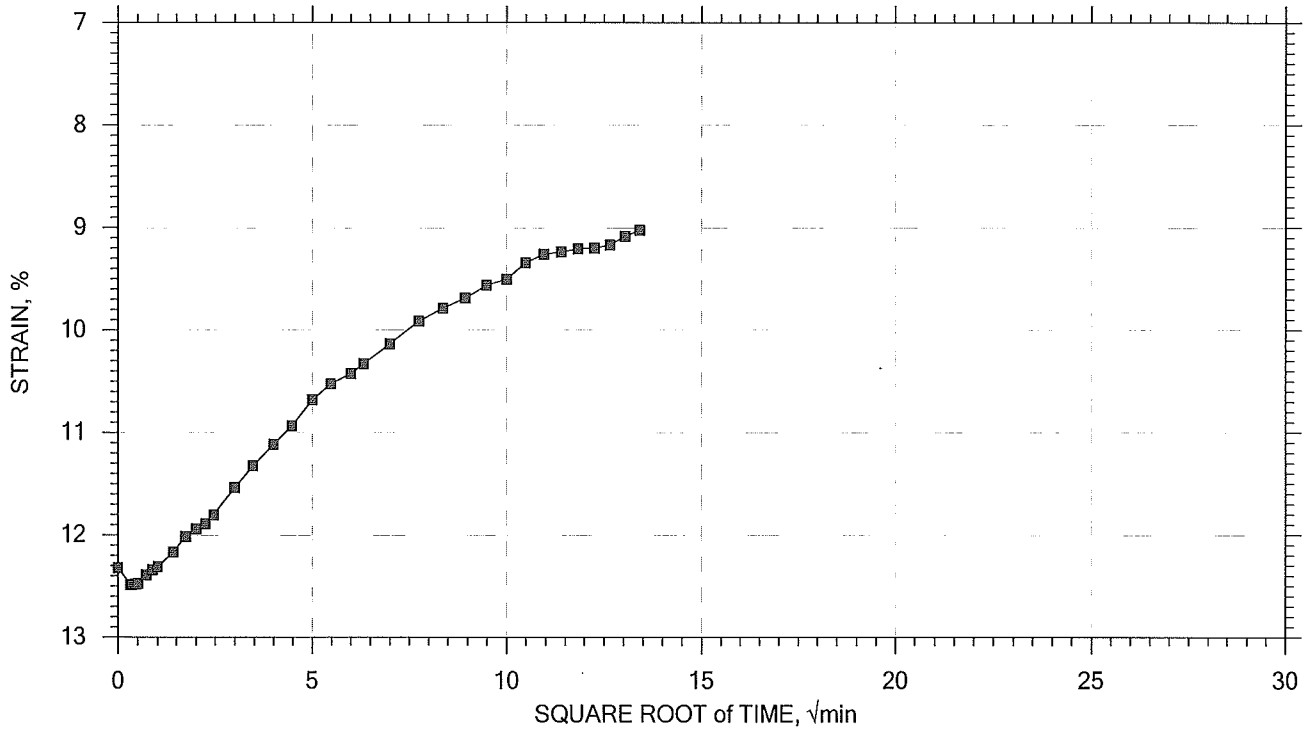
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 14 of 15

Stress: 0.125 tsf





GeoTesting EXPRESS

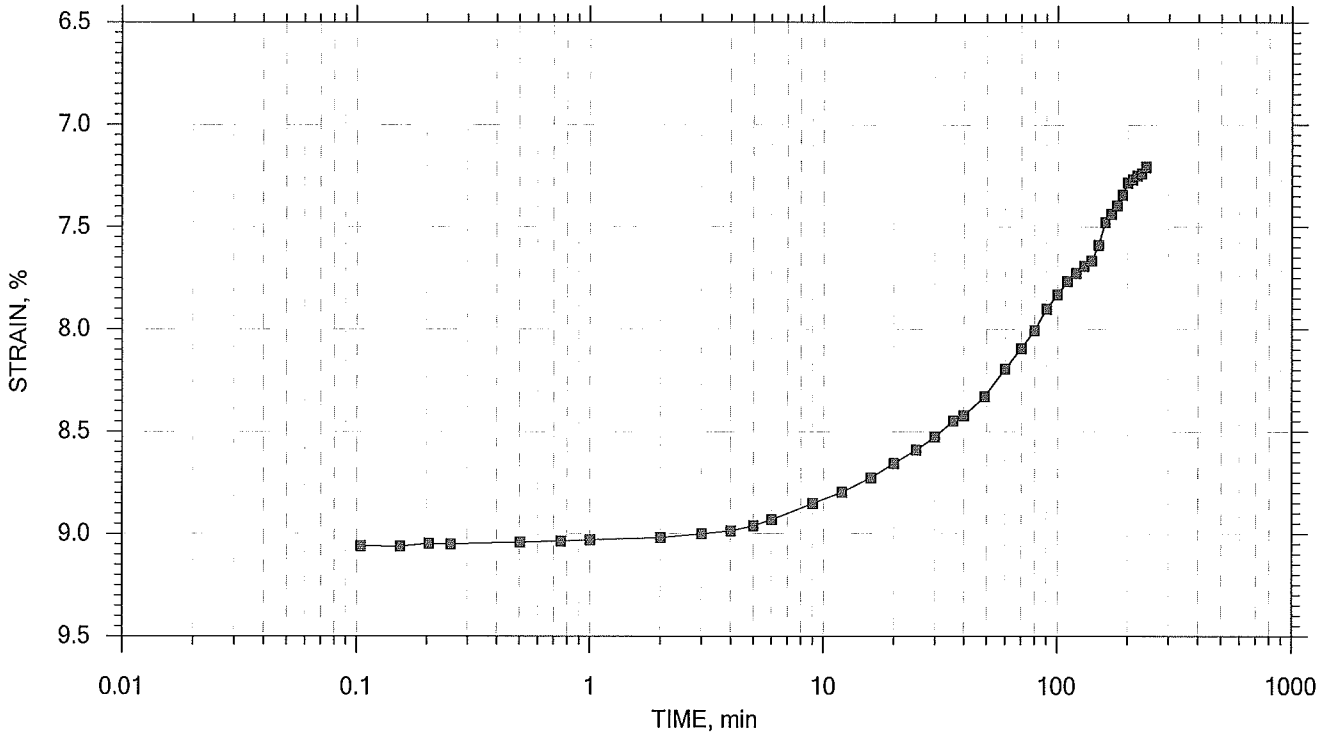
Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

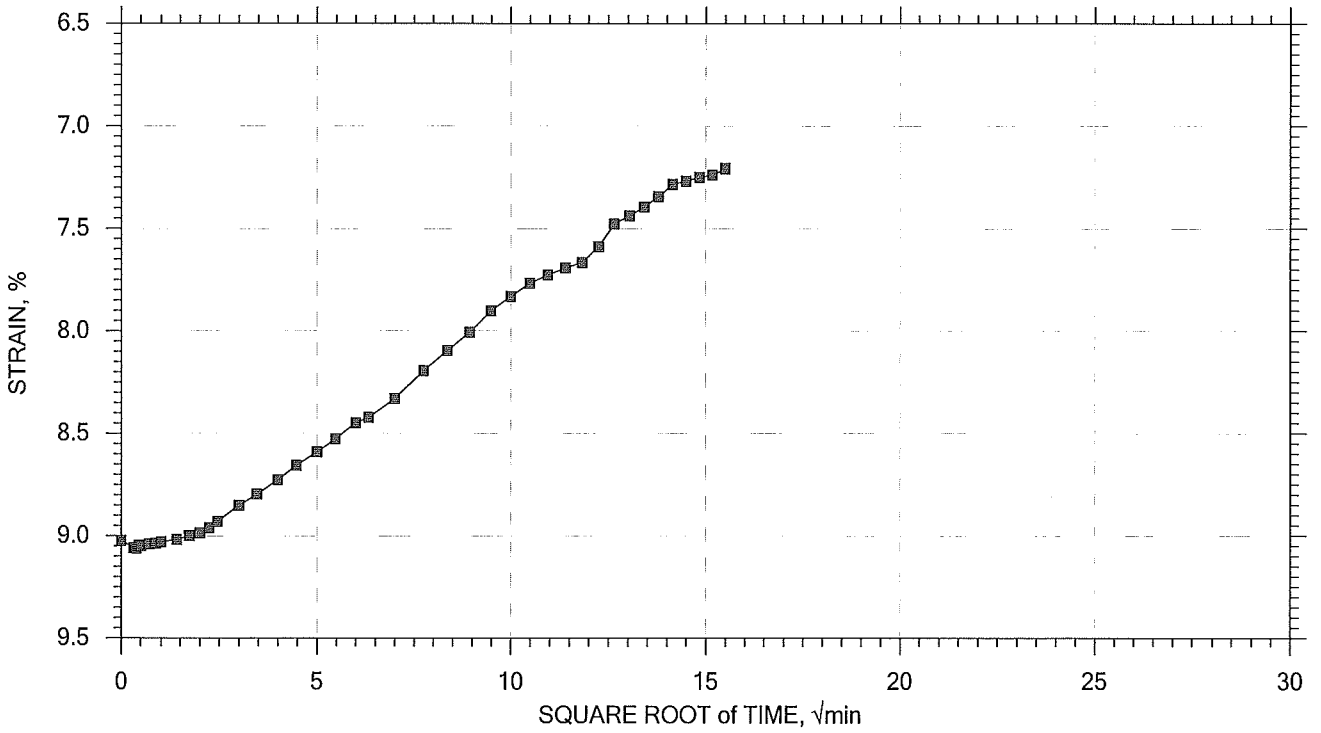
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 15 of 15

Stress: 0.0625 tsf

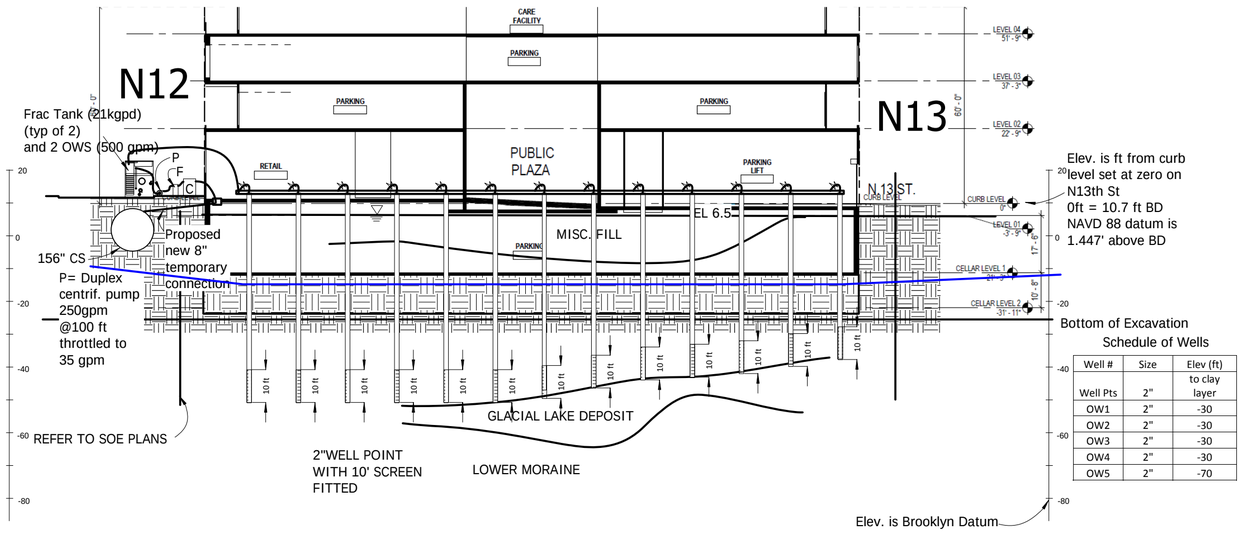




GeoTesting EXPRESS

Project: 19 Kent Ave	Location: Brooklyn, NY	Project No.: GTX-301904
Boring No.: B-20	Tested By: md	Checked By: jdt
Sample No.: S-10	Test Date: 06/07/14	Test No.: IP-1
Depth: 32-35 ft	Sample Type: intact	Elevation: ---
Description: Moist, red clay		
Remarks: System K, Swell Pressure = 0.0809 tsf		

ATTACHMENT J
Dewatering Plan



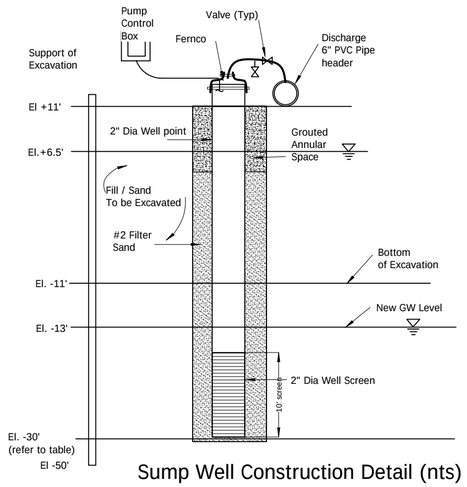
Schedule of Wells

Well #	Size	Elev (ft) to clay layer
Well Pts	2"	
OW1	2"	-30
OW2	2"	-30
OW3	2"	-30
OW4	2"	-30
OW5	2"	-70

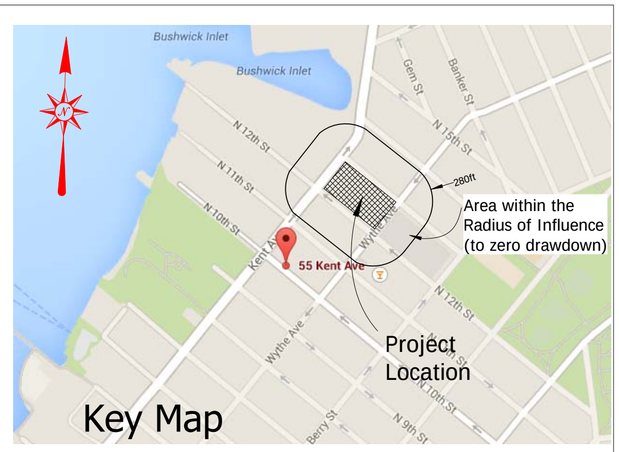
P Duplex 25 hp pump skid, each pump 250 gpm @ 100' TDH (43 psi) Total 500 gpm
F Duplex 8 bag filter skid, each housing 400 gpm nominal: toal 1600 gpm
C 10k carbon vessel, each unit provides 5 min EBCT at 500 gpm
OWS 250 gal oil water separator units

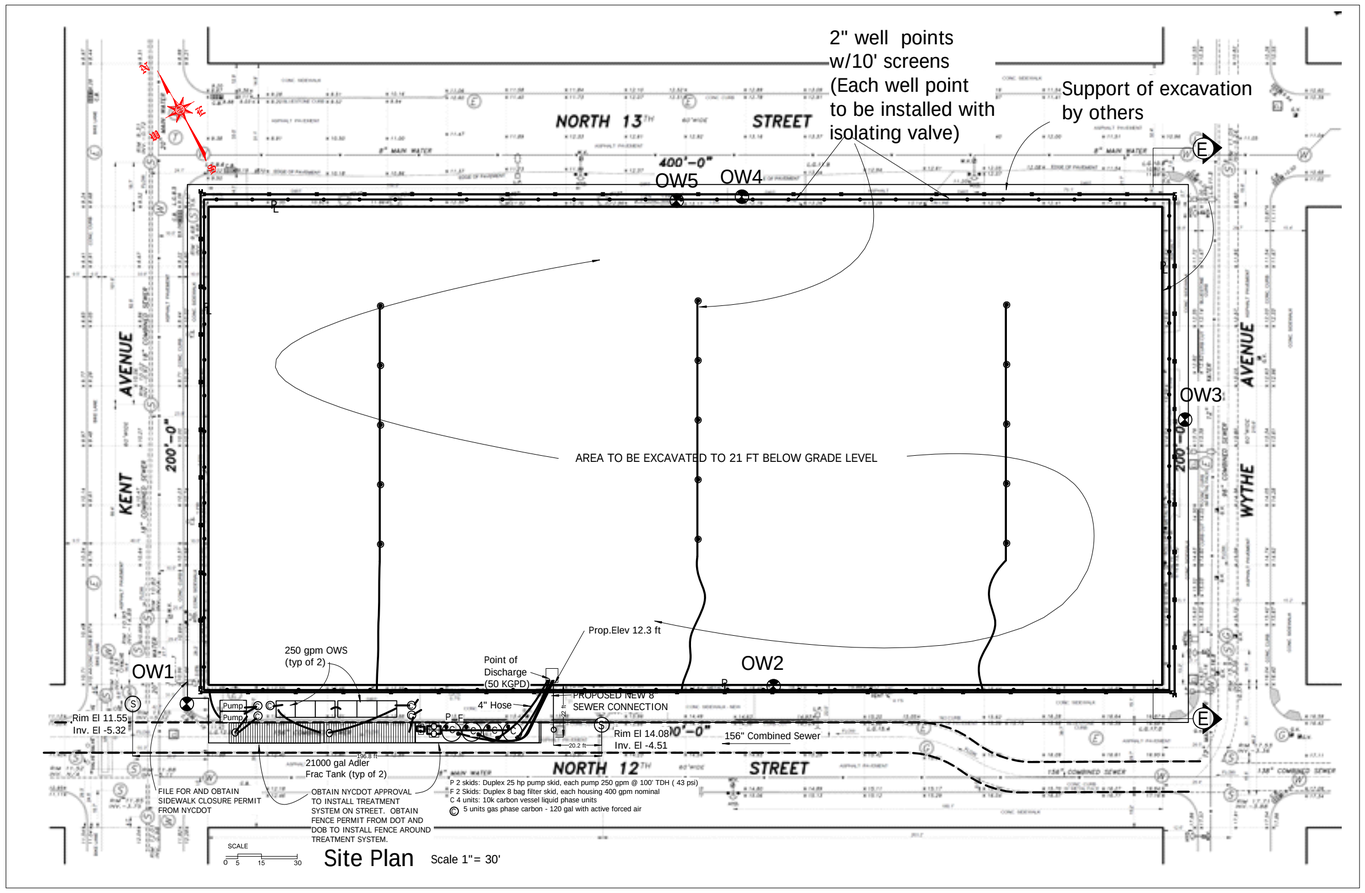
Schematic Process Flow Diagram

Section E-E



Sump Well Construction Detail (nts)





Site Plan Scale 1"= 30'

(From Construction Dewatering - J. Patrick Powers)			
Radius of Influence			
K	coef of permeability	gpd/ftsq	21
H	thickness of saturated aquifer	ft	40
T	pumping time	day	90
		min	129600
C	constant		4710
Cs	storage coeff		0.3
Ro	(K H T / C Cs)^0.5		277.57
Flow			
hw	Thickness of aquifer dewatered	ft	30
rw	effective radius	ft	
	Length	ft	400
	width	ft	200
			180.06
Q	Flow = K (H2-hw2)/(458) ln(Ro+rw/rw)	GPM	34.4
		GPD	**49,550**
Flow to a Wellpoint			
D	Borehole	"	2
radius		"	1
Length of Wetted Screen		ft	10
Q	Flow=0.035(length wet scr)(rad borehole)*K^0.5	GPM	1.60
Perimeter		ft	1200
Number of Well Points			21
Wellpoints Spacing		ft	55.9
a	Number of well points	21	points
b	Diameter of wellpoints	2	inches
c	Spacing of well points	55.9	ft
d	Length of screen	10	ft
e	Depth to bottom of screen	30	ft
f	Number of pumps	2	1 operating-1 standby
g	Capacity of pumps	250	GPM
h	Static water level	4	ft
i	Drawdown required	15	ft
j	Duration of dewatering	90	days
k	Estimated daily pumpage	49,550	gpd

ENSURE THAT FRAC TANKS AND TREATMENT EQUIMENT CAN BE SECURELY LOCATED WHERE DEPICTED ON PLANS. OBTAIN APPROVAL FROM STRUCTURAL ENGINER. GROSS WEIGHT OF FULL FRAC TANK IS 207,000 LBS IN A 45FT X 8.5 FOOT PRINT.
6. INSTALLATION ASSUMES THAT SUPPORT OF EXCAVATION WILL EXTEND TO THE REPORTED GLACIAL LAKE DEPOSITS, AS INDICATED IN THE BORING LOGS BY LANGAN.
7. DRAWDOWN AND DEWATERING MUST BE CONTROLLED VIA OBSERVATION POINT.
8. AS EXCAVATION PROCEEDS, THERE MAY BE PERCHED WATER LAYER WHICH WILL HAVE TO BE PUMPED WITH LOCALIZED PUMP TO ADVANCE EXCAVATION.
9. ALL CONDITIONS MUST BE FIELD VERIFIED. ANY DISCREPANCIES MUST BE BROUGHT UP TO THE ATTENTION OF THE DEWATERING CONTRACTOR AND ENGINEER.

NOTES TO CONTRACTOR
1. ENSURE THAT ALL UTILITIES ARE MARKED OUT AND SITE IS SAFE FOR EXCAVATION. FOLLOW ALL CITY, STATE AND FEDERAL REGULATIONS WHEN WORKING AT THIS SITE.
2. PROVIDE PROOF OF UTILITY MARK OUT TO ENGINEER OF RECORD.
3. OBTAIN APPROVAL FROM OWNER OR STRUCTURAL ENGINEER THAT LOCATION OF TREATMENT SYSTEM IS ADEQUATELY SUPPORTED. DO NOT PLACE TREATMENT EQUIPMENT UNTIL INDICATED SO BY STRUCTURAL ENGINEER.
4. A SEPARATE DEWATERING PERMIT WILL BE OBTAINED FROM NYCDEP. DO NOT COMMENCE DISCHARGE UNTIL SUCH PERMIT IS SECURED.
5. DEWATERING AND DISCHARGE OF GROUNDWATER TO THE COMBINED SEWER WILL REQUIRE TREATMENT.

Engineering Notes:
2 frac tanks (21,000 gal), bag filtration (5 micron) and activated carbon (four x 10,000 lb vessels). The first frac tank serves as the settling tank. The second will add additional storage capacity. A bag filter is provided to filter out suspended solids (multiple housing). The GAC vessels will remove various VOCs expected to be in the GW. Filtration Equipment and tanks to be located on grade as indicated. Submersible pumps to be installed in pits as depicted on plans.

Since the discharge exceeds 10,000 gpd, a separate permit filing will be submitted to BWSO NYCDEP and be able to discharge to a sewer connection.
Exposed hoses can be manifolded into a main PVC header provided that each connection is fitted with a check valve and an adjustable flow valve.

Owner:
19 Kent Development LLC
199 LEE AVE #693
Brooklyn, NY 11211
Contact: Toby Moskovits

AMC ENGINEERING PLLC
99 Jericho Turnpike, Ste. 300J
Jericho, NY 11753
516 417-8588

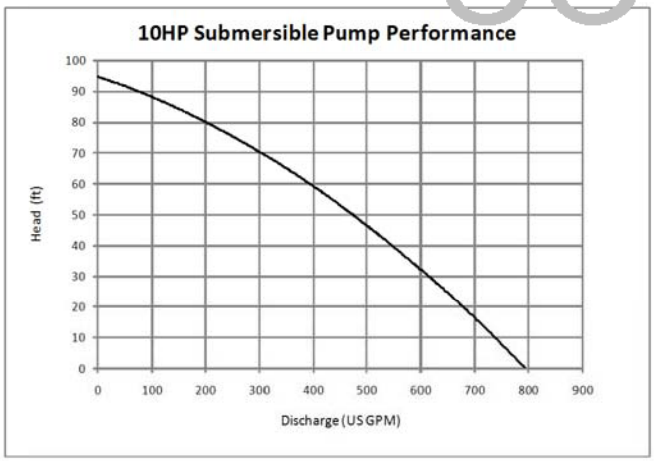
PROJECT
25 Kent Avenue
Brooklyn, NY 11249
Block 2282
Lots 1, 15, 28, 34

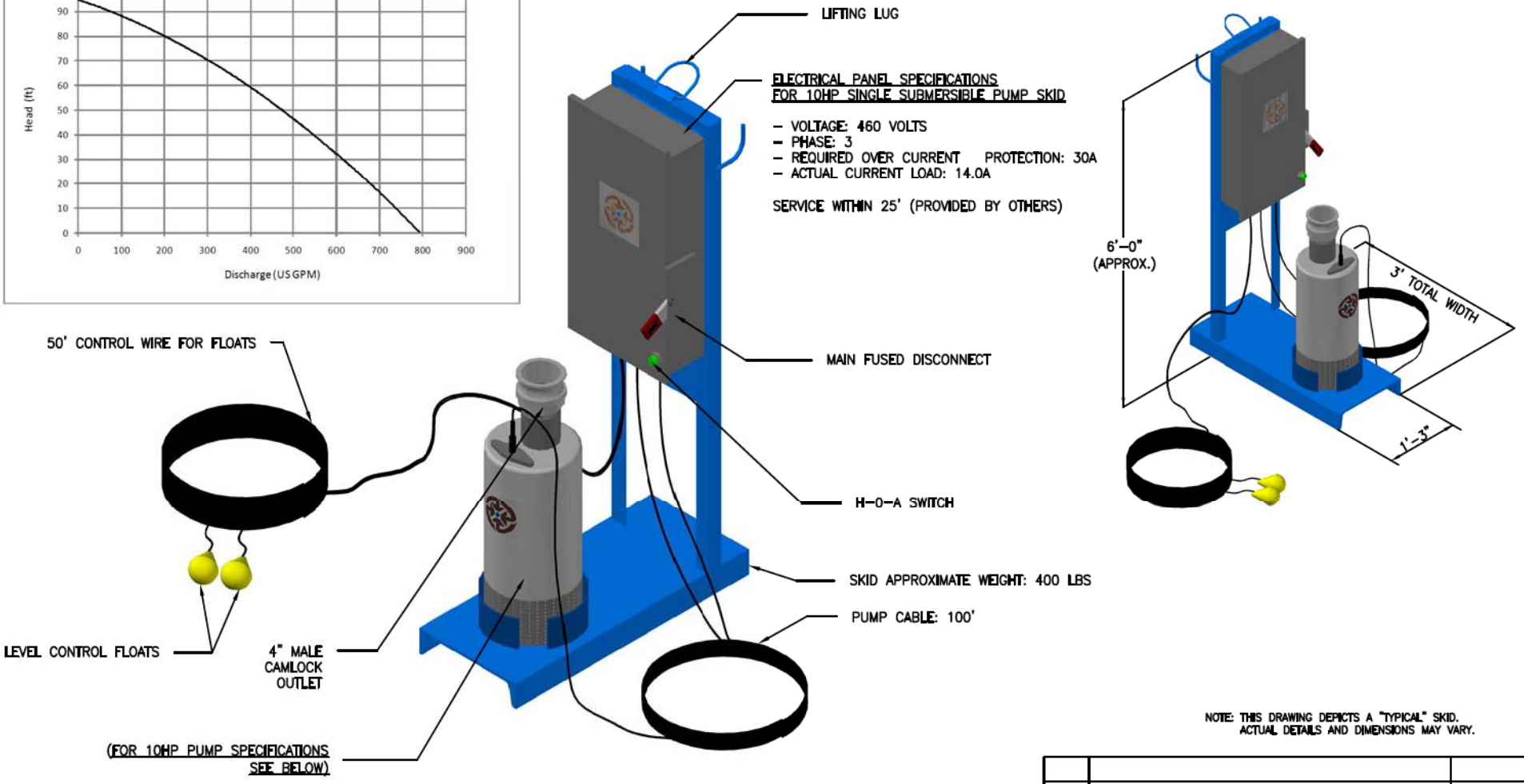
TITLE:
Proposed Dewatering Plan
NYCDoB 320591944

SEAL & SIGNATURE:

DATE: Sep 30 2014
PROJECT No:
DRAWING BY: AC
CHK BY:
DWG No:
SP-01.03

T:\Cad Files\Rentals - STANDARD DRAWINGS\EQUIPMENT SPECIFICATION\PUMPS\ST-0089-SPC-Rev-A Single 10 HP Submersible Pump Skid.dwg

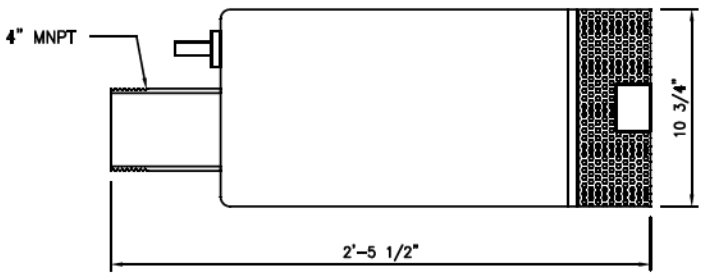




NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

10HP SUBMERSIBLE PUMP MECHANICAL/ELECTRICAL SPECIFICATIONS:

- MODEL: G554T
- CAPACITY: 425 GPM @ 62.5'
- OUTLET: 4" MNPT
- 2 POLE INDUCTION CONTINUOUS RATED MOTOR W/ SQUIRREL CAGE ROTOR
- STATOR INSULATION CLASS 'H' (180 degrees CELSIUS)
- SPEED: 3400 RPM @ 60 Hz, 2800 RPM @ 50 Hz
- POWER RATING: 5/7.5/10HP@60 Hz
- CURRENT FLA: 7.1, 11, 14Amps @460v
  8.1, 12.5, 16 @400V
- MAX TEMPERATURE OF PUMP FLUID: 104 degrees F / 40 degrees C
- MAX START/STOP PER HOUR: 15
- pH RANGE: 5–8
- SUBMERGENCE: BELOW LIQUID SURFACE MIN 5" MAX 50'
- WEIGHT: 142lbs



NO.	REVISIONS	DATE
A	AS BUILT	09/03/09

SINGLE 10HP SUBMERSIBLE PUMP SKID STANDARD EQUIPMENT SPECIFICATION

SCALE: NONE	APPROVED: JB	DRAWN BY: RS	
DATE: 09/03/09			

GROUNDWATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST–0089–SPC	A

ADLER TANK RENTALS

Easy-to-clean, smooth-wall interior

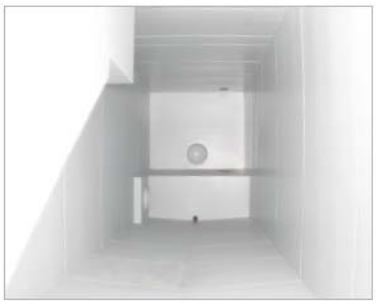
21,000 Gallon
Closed-Top Frac Tank

Capacity: 21,000 gal (500 bbl)
Height: 11' 1"
Width: 8' 6"
Length: 45'
Tare Weight: 29,500 lbs

All sizes are approximate

At Adler Tank Rentals, we are committed to providing safe and reliable containment solutions for all types of applications where performance matters.

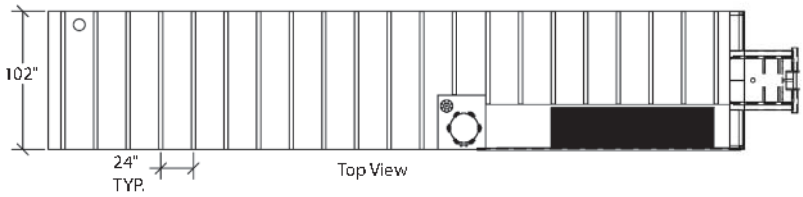
Combined with our standard smooth-wall construction and sloped V bottom for ease of cleaning, the 21,000 Gallon Closed-Top Frac Tank is a top-performing liquid storage solution. It boasts a wide array of safety features including a safety side stairway, non-slip materials on all climbable surfaces and "safety yellow" rails and catwalks for high visibility.



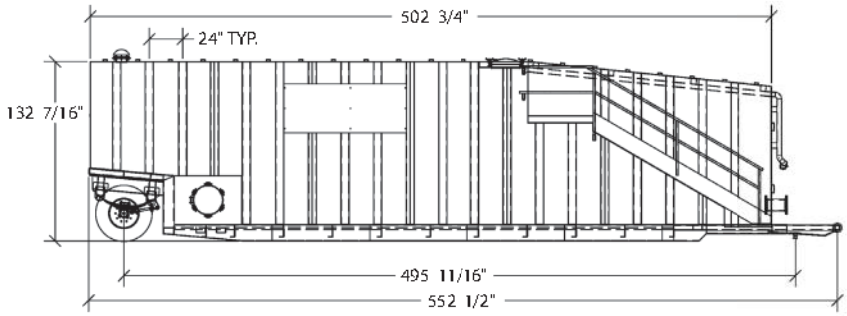
Mechanical Features

- Epoxy-lined interior
- 3" fill line
- Four (4) standard 22" side-hinged manways
- Multiple 4" valved fill/drain ports, including floor-level valves for low point drain out
- 4" vent with 1 lb pressure/4 oz vacuum pressure relief valve
- Sloped and V bottom for quicker drain out and easier cleaning
- Easy-to-clean design with smooth-wall interior, no corrugations and no internal rods
- Meets Cal/OSHA guidelines
- Fixed rear axle for increased maneuverability
- Nose rail cut-out for easy access when installing hose and fittings on the front/bottom of tank
- One (1) front and one (1) rear 4" valved fill/drain port
- Two (2) top connection ports for vapor recovery

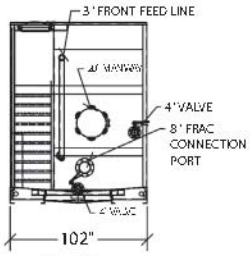
21,000 Gallon Closed-Top Frac Tank



Top View



Side View



Front View

Safety Features

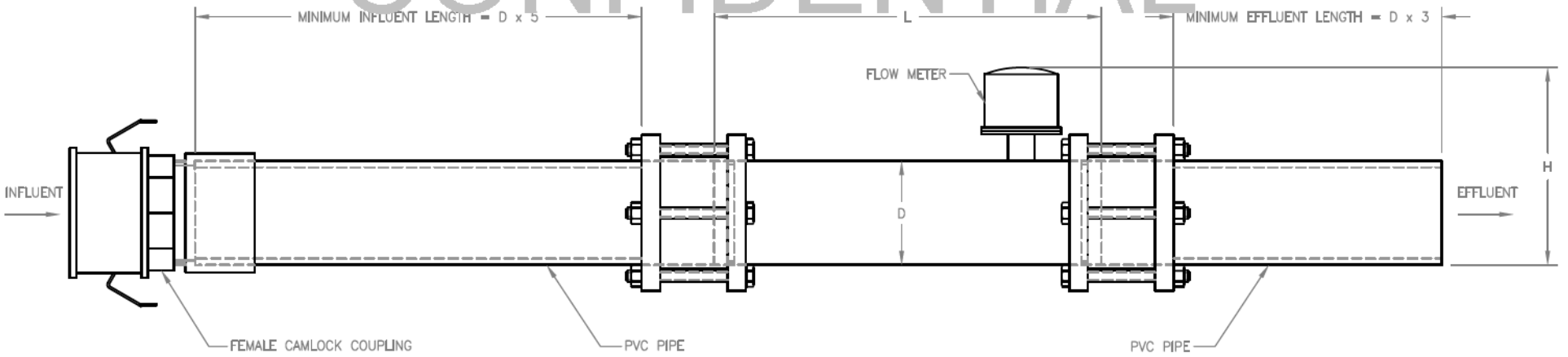
- Non-slip step materials on stairs and catwalks
- "Safety yellow" rails and catwalks for high visibility
- Safe operation reminder decals
- Safety side stairway—no mechanical guard rails to set up
- Strapping charts

Options

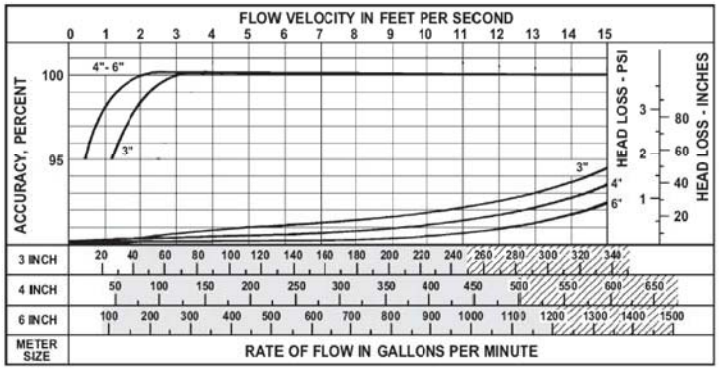
- Round bottom
- Dual manifold
- SS 316 stainless steel
- Bare steel interior
- Heating coils
- Level gauges (fixed or temporary)
- External or internal manifold
- White exterior for MSS compliance
- Audible alarms, strobes and level gauges (digital and mechanical)

Comprehensive Service

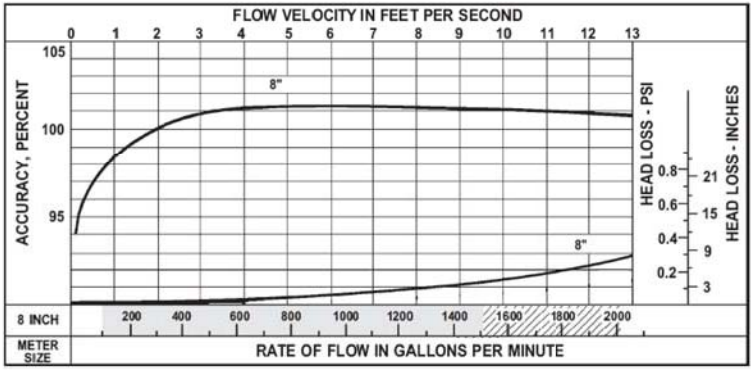
Adler Tank Rentals provides containment solutions for hazardous and non-hazardous liquids and solids. We offer 24-hour emergency service, expert planning assistance, transportation, repair and cleaning services. All of our rental equipment is serviced by experienced Adler technicians and tested to exceed even the most stringent industry standards.



FLOW METER ASSEMBLY



ACCURACY AND HEAD LOSS CURVES
(3"/4"/6" FLOW METERS)



ACCURACY AND HEAD LOSS CURVES
(8" FLOW METER)

MG100 FLOW METER SPECIFICATIONS

– METER SIZE, D (INCHES):	3	4	6	8
– MAXIMUM FLOW U.S. GPM:	250	600	1200	1500
– MINIMUM FLOW U.S. GPM:	40	50	90	100
– HEAD LOSS IN INCHES AT MAX. FLOW:	29.50	23.00	17.00	6.75
– H (INCHES):	10.9	12.78	13.84	14.84
– L (INCHES):	13	20	20	20
– O.D. OF METER TUBE:	3.50	4.50	6.625	8.625
– MIN. INFLUENT LENGTH (INCHES):	15	20	30	40
– MIN. EFFLUENT LENGTH (INCHES):	9	12	18	24

– MAXIMUM TEMPERATURE: 160°F CONSTANT

– PRESSURE RATING: 150 PSI

NO.	REVISIONS	DATE
A	TYPICAL	01/28/09

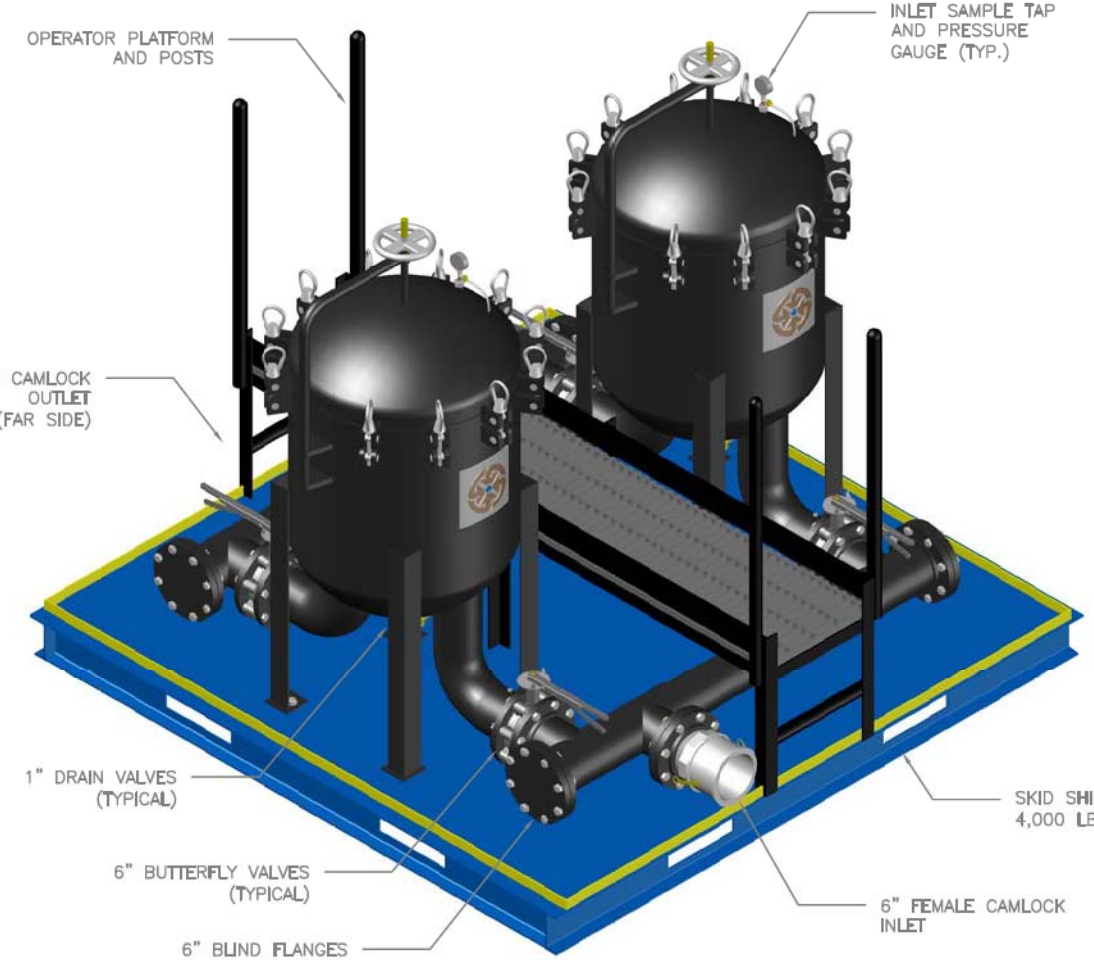
FLOW METER ASSEMBLY
STANDARD
EQUIPMENT SPECIFICATION

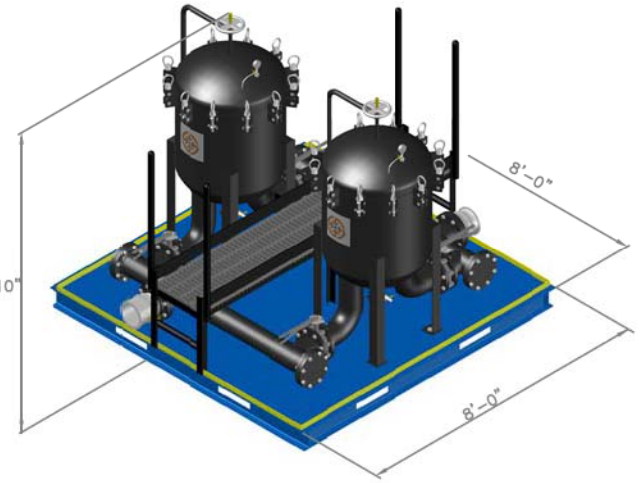
SCALE: NTS	APPROVED BY: JMB	DRAWN BY: AAV
DATE: 01/28/09		

GROUND/WATER TREATMENT & TECHNOLOGY
627 MT. HOPE ROAD
WHARTON, NEW JERSEY 07885

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST–0052–SPC	A

T:\CAD FILES\RENTALS – STANDARD DRAWINGS\EQUIPMENT SPECIFICATION\FLOW METERS\ST–0052–SPC Rev–A Flow Meter Assembly.dwg

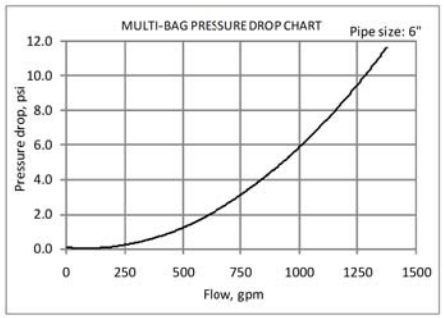




NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

NO.	REVISIONS	DATE
C	ADDED WEIGHTS	08/30/13
B	UPDATED INFORMATION	07/02/13
A	PRELIMINARY DESIGN FOR REVIEW	06/25/13

PRESSURE DROP



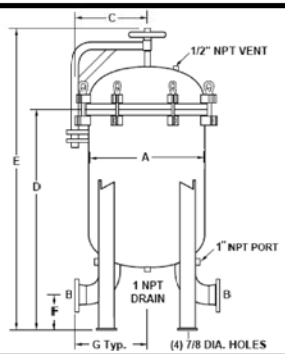
MULTI-BAG FILTER SPECIFICATIONS

– CONSTRUCTION:	CARBON STEEL
– HOUSING STYLE:	STANDARD
– NUMBER OF BASKETS:	8
– STRAINING FILTERING AREA:	35.2 SQR. FT.
– INLET/OUTLET SIZE:	6"
– NOMINAL FLOW RATE:	800
– STANDARD PRESSURE:	150 PSI
– WEIGHT (PER DRY UNIT):	705 Lbs.
– WEIGHT (TOTAL SKID):	3,000 Lbs.

BASIC DIMENSIONS

MODEL NUMBER & A: 30"
LEG BOLT CIRCLE: ø28.0"

B: 6"	D: 51.9"	F: 7.00"
C: 18.0"	E: 72.4"	G: 22.2"



DUPLEX 8–BAG FILTER SKID
18–1000
EQUIPMENT SPECIFICATION

SCALE:	NTS	APPROVED BY: NF	DRAWN BY: BJK
DATE:	06/25/13		

GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: 18–1000–SPC	C

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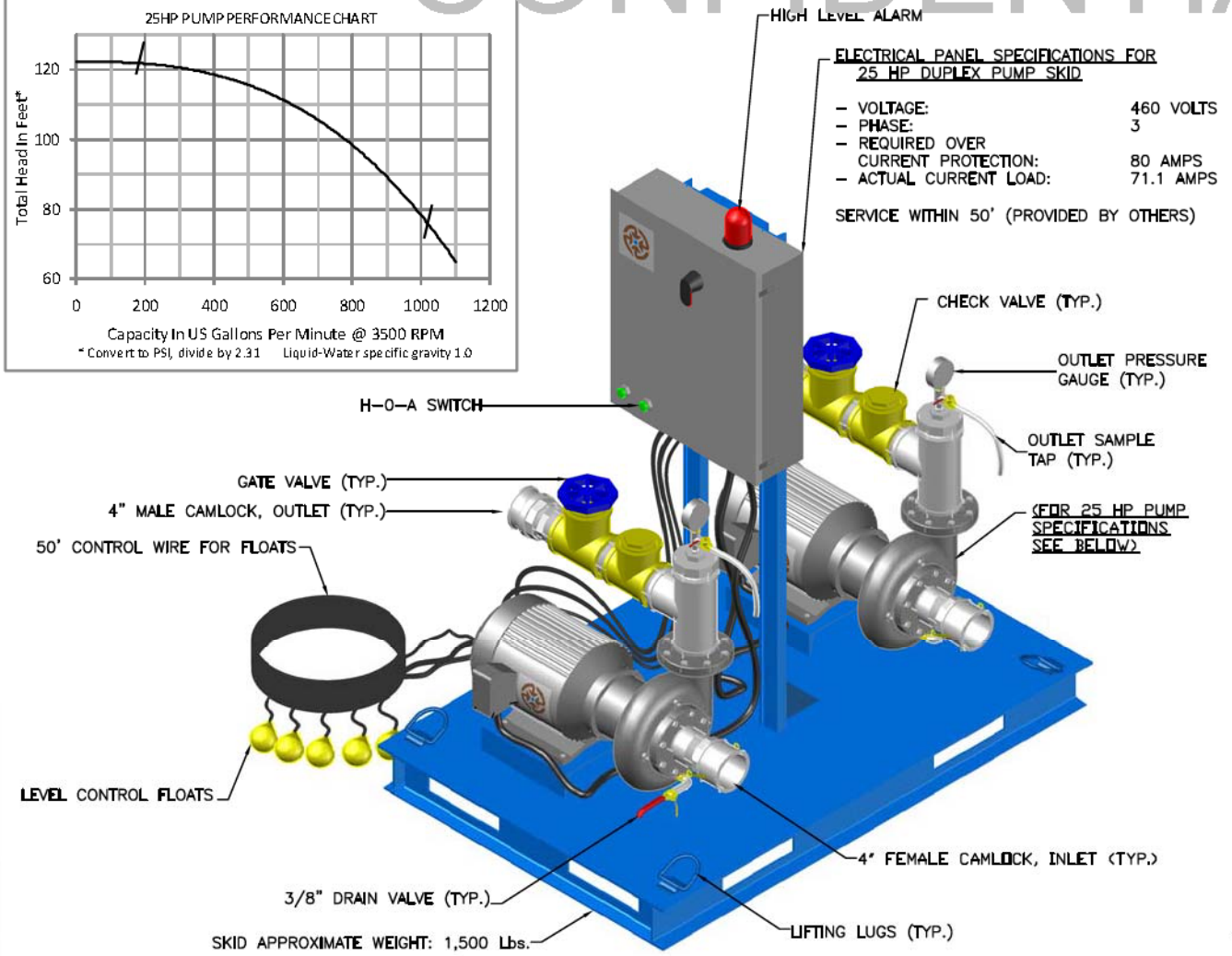
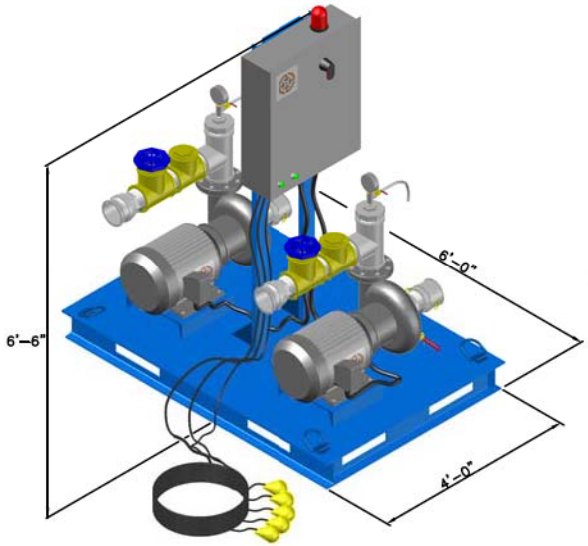
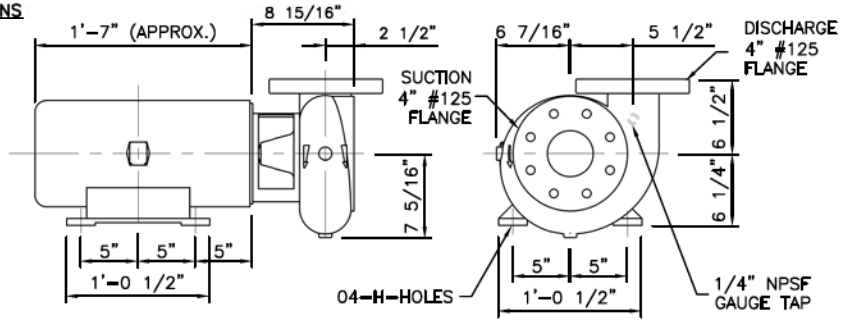




NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

25 HP PUMP MECHANICAL/ELECTRICAL SPECIFICATIONS

– TYPICAL CAPACITY AND HEAD:	750 GPM @ 100' TDH
– CONSTRUCTION:	STAINLESS STEEL
– MAXIMUM HEAD:	120 ft.
– MAXIMUM FLOW:	1000 GPM
– FRAME:	256TCZ
– ENCLOSURE:	TEFC
– SUCTION:	4" FLANGE
– DISCHARGE:	4" FLANGE
– PUMP WEIGHT:	400 Lbs.
– IMPELLER DIAMETER:	6"
– DRIVER:	60 Hz 2 POLE 3500 RPM



NO.	REVISIONS	DATE
A	TYPICAL	01/14/09

DUPLEX 25 Hp PUMP SKID STANDARD EQUIPMENT SPECIFICATION

SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV	
DATE: 01/14/09			

GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST–0048–SPC	A

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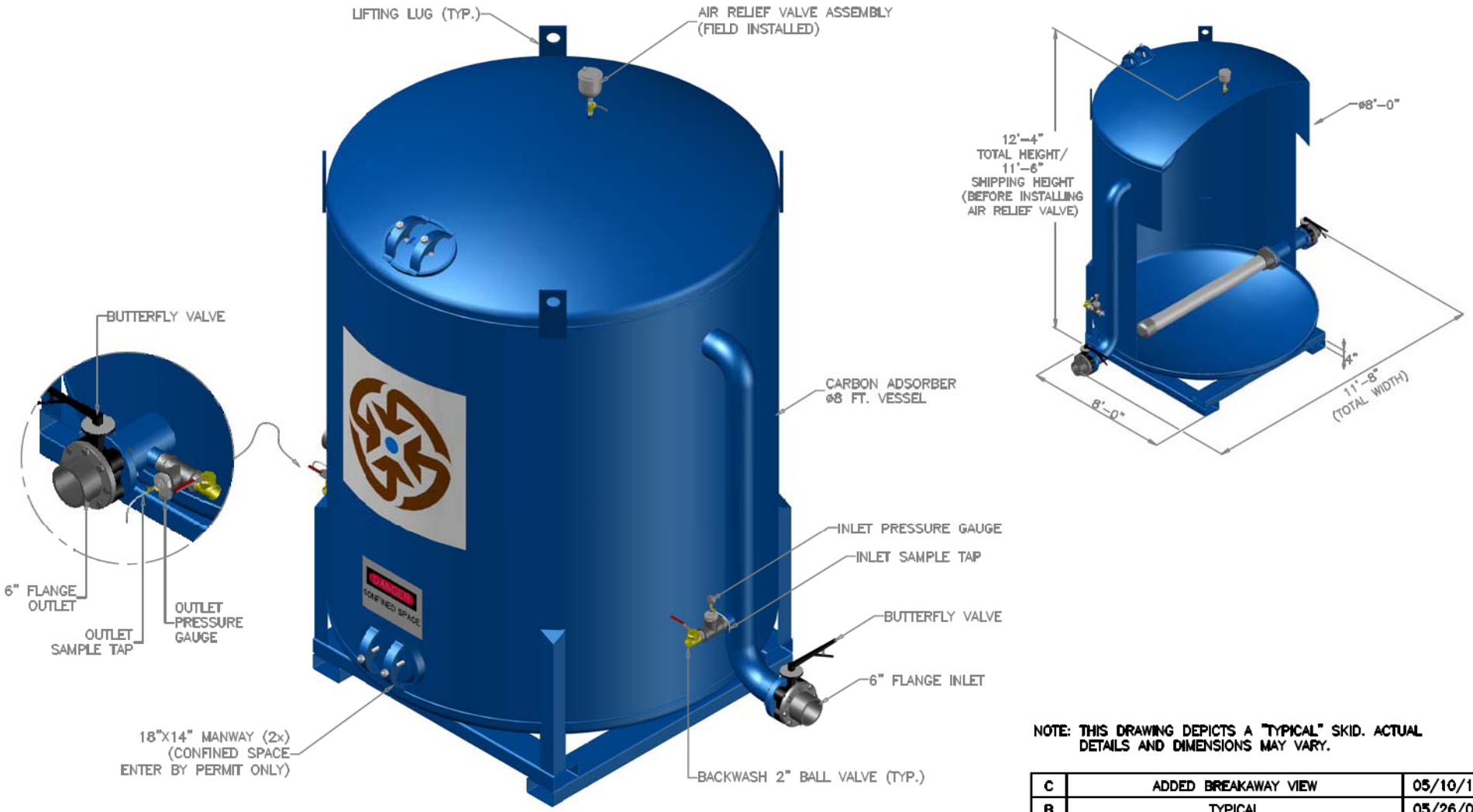


NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID. ACTUAL DETAILS AND DIMENSIONS MAY VARY.

10,000 POUNDS CARBON ADSORBER SPECIFICATIONS

– CARBON FILL:	10,000 Lbs.
– DESIGN STANDARD PRESSURE:	75 PSI
– MAX. FLOW RATE:	500/1,000 GPM
– HOUSING CONSTRUCTION:	A-36 CARBON STEEL
– INLET CONNECTION:	6" FLANGE
– OUTLET CONNECTION:	6" FLANGE
– DRAIN:	N/A
– CARBON FILL VOLUME:	350 Cu.ft.
– CARBON ADSORBER WEIGHT	
EMPTY:	5,000 Lbs.
SHIPPING (W/CARBON):	15,000 Lbs.
OPERATING:	30,000 Lbs.
– EBCT @ 500 GPM:	5.25 min.

NO.	REVISIONS	DATE
C	ADDED BREAKAWAY VIEW	05/10/12
B	TYPICAL	05/26/09

10,000 Lb. CARBON ADSORBER STANDARD EQUIPMENT SPECIFICATION

SCALE: NTS	APPROVED BY: JMB	DRAWN BY: RS	
DATE: 09/30/08			

GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0032-SPC	C

USFILTER WESTATES CARBON

AQUACARB® 830 AND 1240

Coal based granular activated carbon

(Formerly KG-401 and KG-502)

FOR MUNICIPAL, INDUSTRIAL AND REMEDIAL WATER TREATMENT

Description & Applications

AquaCarb® 830 and AquaCarb® 1240 are high activity granular activated carbons manufactured from selected grades of bituminous coal. Manufactured by direct activation, they exhibit exceptional hardness and attrition resistance and have become a cost effective choice for use in municipal, industrial and remedial water treatment applications. These high surface area microporous carbons have been specifically developed for the removal of a broad range of organic contaminants from potable, waste and process waters.

- ANSI/NSF Standard 61 classified for use in potable water applications
- Fully conforms to physical, performance and leachability requirements established by the current ANSI/AWWA B604 (which includes the Food Chemical Codex requirements)
- A detailed quality assurance program guarantees consistent quality from lot to lot and shipment to shipment

Quality Control

All AquaCarb® activated carbons are extensively quality checked at our State of California certified environmental and carbon testing laboratory located in Los Angeles, CA. USFilter's laboratory is fully equipped to provide complete quality control analyses using ASTM standard test methods in order to assure the consistent quality of all AquaCarb® carbons.

Our technical staff offers hands-on guidance in selecting the most appropriate system, operating conditions and carbon to meet your needs. For more information, contact your nearest USFilter representative.

USFilter

Rosedale Filter Media

Rosedale has a wide selection of filter media available to help solve your filtration problems. Our product offerings include filter bags, filter cartridges, and perforated strainer baskets. This selection features a variety of options from low-cost, disposable filter media; through high-performance filter cartridge; to cleanable stainless steel elements.

The filtration efficiency values specified in our data (see Element Performance Chart on page 123), are the indication of the filter's performance. Unlike many manufacturers, Rosedale publishes the filtration efficiency and dirt capacity of our media, providing all the information needed for an accurate sizing of a filter.

Our media is offered in standard grades and high efficiency. Standard grade refers to products which are nominally rated. This means there is no specified efficiency at the micron size but the product is interchangeable with industry standards. Rosedale high efficiency filter media is rated 95%, 99%, or 99.98% efficient at the specified micron level.

Nominal Rating	Absolute Rating (95% Efficiency)
1	35
3	35
5	48
10	55
15	65
25	70
50	90
75	110
100	110

Bag or cartridge filters are usually selected so that the clean pressure drop does not exceed 2 psi. Change-out is recommended at 15 psid (for bags), and 30 psid (for cartridges). Higher pressure drops may be tolerated when contaminant loading is low.

A more comprehensive chart on page 123 details each product group with corresponding efficiency and micron rating.

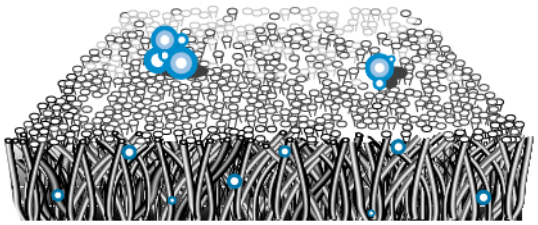
High Capacity Filter Bags for Rosedale Bag Filters

Fits All Rosedale Filter Housings

Construction

Felt Bags-Standard Grade

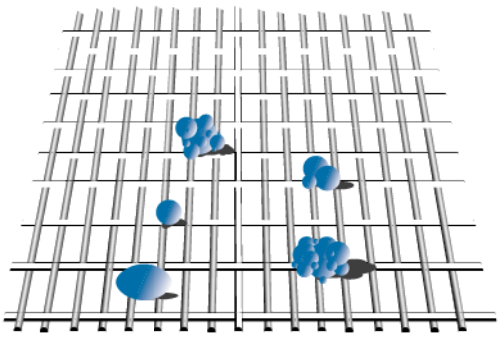
Felt construction is generally chosen where smaller particle retention is required, in the nominal 1 to 100 micron range. It offers higher solids loading capacity than mesh. General-purpose felt bags are offered in polyester and polypropylene materials. Special-purpose felt bags are offered in polyester and polypropylene materials. Special-purpose felt bags include high temperature service (to 500°F) bags of Nomex® nylon or Teflon®.



Mesh Bags

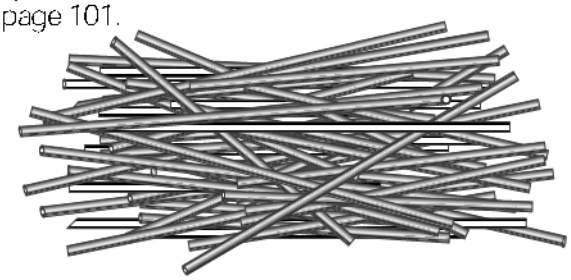
Mesh is a woven construction, generally used where micron ratings of 50 to 800 are required.

Two types are offered. The **multifilament** mesh is a low cost, disposable material offered in polyester. **Monofilament** mesh has higher strength, and is available in nylon. (It should be considered cleanable.)



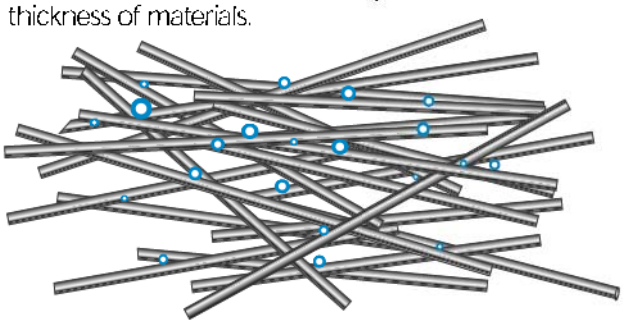
Oil Adsorption Bags

For removal of free oil, bags made of polypropylene microfibers, known as oil-adsorb, are available. A size 2 oil-adsorb bag will remove approximately a half-pound of oil from a water-oil liquid. It is only available with a 25 micron rating. If finer filtration is needed in an oil removal task, or high volume oil removal is required, Rosedale's Sorbent Containment Systems are available and information is located on page 101.



Melt Blown Media (Microfiber)

Polypropylene melt blown media offers unparalleled adsorption capacity for the removal of hydrocarbon contaminates from liquid streams. The melt blown media is also the heart of the high efficiency filter bag. The small diameter fibers create the bag's ability to remove fine particulate at high efficiencies. Fiber diameter is important because the pore size is a function of fiber diameter, density of fibers, and thickness of materials.



Felt Bag Finishes and Covers

Standard finish. Plain, as manufactured, without treatment or covers.

Glazed finish. The outer most surface fibers are melted by a momentary application of high heat. This bonds the fibers together and reduces the possibility of fiber migration.

Mesh covers completely encase the felt bag. This cover acts to contain any fibers that may separate from the filter bag. Materials available in mono and multifilament mesh, spun bonded nylon and polyester.

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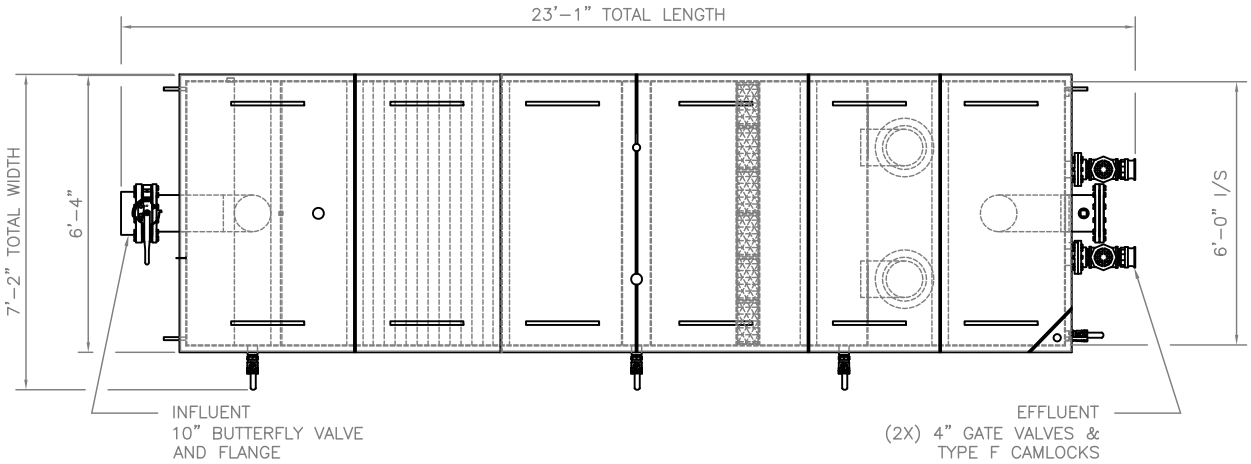
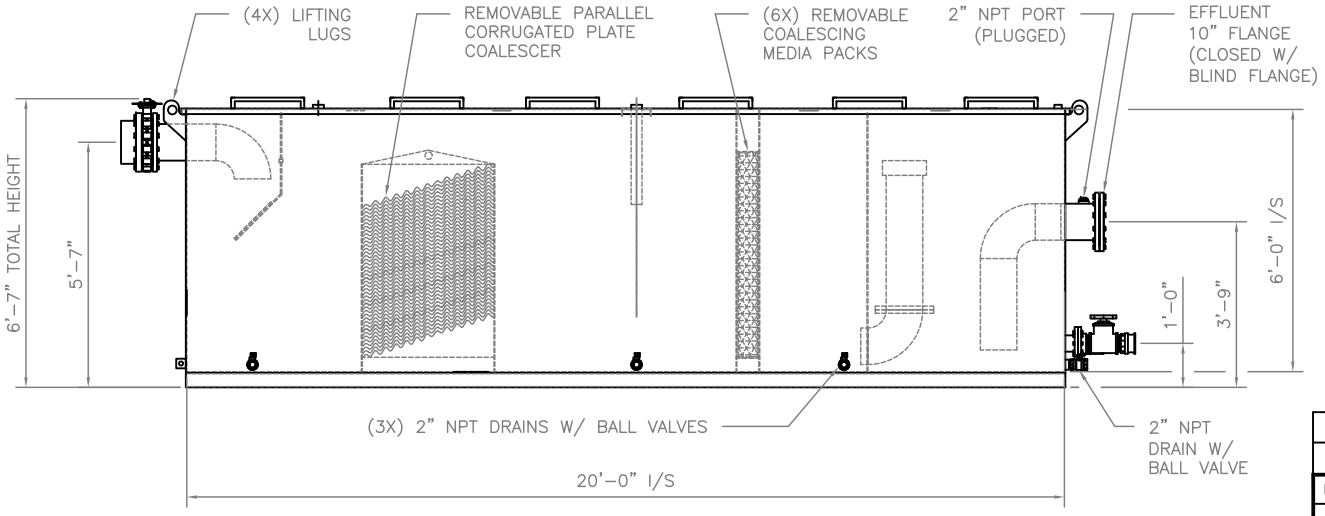
PLAN VIEW





ELEVATION VIEW

NOTE: THIS DRAWING DEPICTS A "TYPICAL" UNIT. ACTUAL DETAILS AND DIMENSIONS MAY VARY.

500 GPM OWS SPECIFICATIONS

– NOMINAL VOLUME:	6500 GALLONS
– OPERATING VOLUME:	5000 GALLONS
– DESIGN FLOW RATE:	500 GPM
– TANK CONSTRUCTION:	A-36 CARBON STEEL
– INLET CONNECTION:	10" FLANGE
– OUTLET CONNECTION:	10" FLANGE (CLOSED), (2X) 4" MALE CAMLOCKS
– DRAINS (4x):	2" NPT
– APPX. TANK WEIGHT (EMPTY):	10000 Lbs.
– APPX. TANK WEIGHT (OPERATING):	52500 Lbs.

NO.	REVISIONS	DATE
A	TYPICAL	10/02/12

500 GPM OIL/WATER SEPARATOR STANDARD EQUIPMENT SPECIFICATION

SCALE: NTS	APPROVED BY: JMB	DRAWN BY: RS	
DATE: 10/02/12			

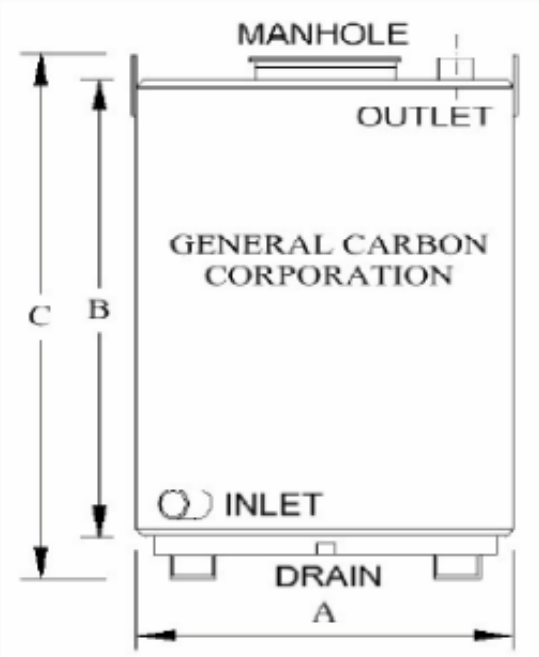
GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0381-SPC	A

General Carbon Corporation
Paterson, NJ ▪ Irvine & Sacramento, CA ▪ Starkville, MS ▪ Toronto
"Cleaning The World With Activated Carbon"
33 Paterson Street
Paterson, NJ 07501
T (973)523-2223
F (973)523-1494
sales@generalcarbon.com

TV Adsorbers

Vapor Phase 1000, 2000, 3000



The Transportable Vapor Phase adsorbers are fabricated from mild steel and are tested to DOT shipping standards. All units have two part epoxy coatings on the inside and industrial enamel on the outside to give a long service life. Inlet/outlet fittings are connected to PVC internals for corrosion resistance. The units have 4-way forklift access, a screened drain and 16-inch top manhole. GC C-40 pelletized virgin, bituminous coal base, carbon is standard. Other virgin coal, coconut shell, reactivated or impregnated carbons are available.

search here …
Go

New Products

- GC ST – H2S Treatment in Low Oxygen Gas Streams
- GC 12x30SCI – For Chlorinated By-Products & Trihalomethanes

Short Cuts

- Home
- Contact Us
- Vapor Products
- Liquid Products

Note: Compare inlet/outlet sizes to your flow rate and system duct sizes to make sure your fan has enough static pressure available to produce the design flow rate.

Specifications	**TV-1000-4**	**TV-2000-4**	**TV-2000-6**	**TV-3000-6**	**TV-3000-8**
A – Diameter, Outside:	46″	48″	48″	60″	60″
B – Tank Height:	48″	80″	80″	72″	72″
C – Overall Height:	62″	88″	88″	90″	90″
Inlet/Outlet:	4″	4″	6″	6″	8″
Carbon Weight, lbs.:	1000	2000	2000	3000	3000
Flow Rate, CFM:	500	500	750	700	1200
Max Pressure, psig:	12	12	12	10	10
Max Design Temp., °F:	140	140	140	140	140

*Optional size – must be ordered from factory. Other sizes available.

Installation and Startup – TV Series adsorbers require no special procedure for startup. Remove the shipping plugs from the inlet and outlet and make the proper connections to your system. The unit is now ready for service and can be started up. Unions or quick connect fittings are recommended if the unit will be disconnected frequently. Multiple units can be connected in parallel to increase the treated air flow. Testing after a unit is the only way to determine when the carbon is spent.

Maintenance – When in use, the only maintenance the TV Units require is testing for contaminants in the influent and effluent streams, and checking the operating pressure of the system. Monitoring the contaminant concentration level into the last unit in a series arrangement is the recommended safeguard against having breakthrough in the final outflow. When the concentration of contaminants in the flow coming out of the lead unit equals the concentration of the flow into the unit, the unit

has reached its removal capacity and should be removed from service. The working life of each adsorber is dependent upon the type of contaminant in the air as well as its concentration and the air flow rate. A pressure relief device is advised to prevent damage to the adsorber in the event of excessive pressure buildup.

Recharging – Once the carbon is saturated by contaminants, the unit should be taken off line. If connected in a series mode, the next downstream unit should be moved into the lead position and a fresh unit put at the end of the train. All shipping plugs must be replaced when the unit is to be transported. General Carbon has modern equipment and OSHA trained technicians to service your carbon adsorbers. Please call us at 973-523-2223 to get a free service price quote.

Disposal – Dispose of the spent carbon in accordance with Local, State and Federal regulations.

CAUTION!

Wet activated carbon removes oxygen from air causing a severe hazard to workers inside carbon vessels. Confined space/low oxygen procedures should be put in place before any entry is made. Such procedures should comply with all applicable Local, State, and Federal guidelines.