515 WEST 18TH STREET
NEW YORK COUNTY

MANHATTAN, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: BCP #C231093

Prepared for:

18th Highline Associates, L.L.C.

c/o The Related Companies

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New York, NY 10023

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

FINAL DECEMBER 2018

CERTIFICATION STATEMENT

I Matthew M. Carroll, certify that I am currently a NYS registered professional engineer as is defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

NYS #091629 P.E.

12/07/2018 DATE

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List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines

SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: BCP #C231093 – 515 West 18th Street

Institutional Controls:	1. The property may be used for restricted residential use, commercial and industrial uses, subject to applicable zoning.
	2. All ECs must be operated and maintained as specified in this SMP.
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.
	4. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	5. Data and information pertinent to Site management must be reported at the frequency and in a manner as defined in this SMP.
	6. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	7. Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified in the Environmental Easement.
	8. Vegetable gardens and farming on the Site are prohibited.
Engineering Controls:	1. Cover system (above Track 4 areas only)

Site Identification: BCP #C231093 – 515 West 18th Street

Inspections:	Frequency
1. Cover inspection	Annually
Reporting:	
1. Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the 515 West 18th Street Site located in Manhattan, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) Site No. C231093 which is administered by New York State Department of Environmental Conservation (NYSDEC).

18th Highline Associates, L.L.C. entered into a Brownfield Cleanup Agreement (BCA), on July 2, 2015 with the NYSDEC to remediate the Site. A figure showing the Site location and boundaries of this Site is provided in Figure 1. The boundaries of the Site are more fully described in the legal Site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, some contamination was left at this Site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the Manhattan Borough Register's Office, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index #C231093-05-15; Site #C231093) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix B of this SMP.

This SMP was prepared by Matthew Carroll, P.E. and Tenen Environmental LLC, on behalf of 18th Highline Associates, L.L.C., in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

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

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

Table 1 on the following page includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	Contact Information
Douglas MacNeal, Project Manager	(518) 402-9662, douglas.macneal@dec.ny.gov
Samsudeen Arakhan, Regional Remediation Engineer	(718) 482-4995, samsudeen.arakhan@dec.ny.gov
Kelly A. Lewandowski, P.E., Chief, Site Control Section	(518) 402-9543, kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in Manhattan, New York County, New York and is identified as Block 690, Lot 29 (Lot 29 is currently comprised of the former Lots 20 and 29, that were recently merged into a single lot – 29) on the New York City Tax Map (see Figure 1). The Site is an approximately 1.05-acre area and is bounded by West 19th Street to the north, West 18th Street to the south, 10th Avenue to the east, and commercial, residential, and office buildings to the west (see Figure 1 – Site Location Map). The boundaries of the Site are more fully described in Appendix A – Environmental Easement. The owner of the Site parcel(s) at the time of issuance of this SMP is:

18th Highline Associates, L.L.C.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a 21-story tower on former Lot 20 and a 10-story tower on former Lot 29 (as of the date of this SMP, both are under construction), incorporating 410,000 SF of residential and commercial mixed-use space that occupy the majority of the Site footprint (approximately 46,000 SF), excluding offsets from adjacent buildings. Both towers share a common foundation, cellar level and ground level. The Site is zoned C6-4, a designation which denotes commercial and mixed use residential. The High Line (a former elevated rail line constructed between 1929 and 1934) traverses the Site from north to south over the western portion of Lot 29 and has been renovated by the City's Parks and Recreation Department into a public park (High Line Park).

The Site and surrounding area were rezoned in 2005 as part of the Special West Chelsea District Rezoning and High Line Open Space project under City Environmental Quality Review (CEQR) #03DCP069M, which included the placement of a noise, air, and hazardous materials "E" designation (E-142) on the Site (New York City Planning Commission, June 23, 2005). The hazardous materials E-designation will be addressed under the NYSBCP and the noise and air E-designations will be addressed under the New York City Mayor's Office of Environmental Remediation (NYCOER) E-designation Program. The Site has been assigned NYCOER project numbers 15TMP0268M and 15EHAN268M.

The properties adjoining the Site and, in the neighborhood, surrounding the Site primarily include commercial, residential, and office space. The properties immediately south of the Site consist of new commercial and residential construction; the properties immediately north of the Site include commercial and residential properties; the properties immediately east of the Site include commercial and residential properties; and the properties to the west of the Site include commercial and residential properties.

2.2.2 Geology

The shallow subsurface at the Site consists of a thick layer of manmade fill which was used as backfill over the shore line deposits to extend the land into the Hudson River. The fill stratum typically consists of medium compact, brown, fine to coarse sand with varying amounts of gravel, silt, and miscellaneous debris (brick, concrete, asphalt, wood, glass). The fill stratum is present at depths up to 30 feet below sidewalk grade (ft-bsg) with underlying deposits of silts, sands, and glacial till. Bedrock is estimated at depths ranging from 40 to 60 ft-bsg (*Geotechnical Report, W18-W19 Street Project, New York, New York,* Mueser Rutledge Consulting Engineers, July 2015).

Geologic cross sections are shown in Figure 2. Site specific geotechnical boring logs are provided in Appendix C.

2.2.3 Hydrogeology

Groundwater has been measured at depths of approximately 9 to 12 ft-bsg. The groundwater elevations range from approximately -0.36 to 1.28 feet above mean sea level (ft-msl). Groundwater flow contours based on data collected in 2015 and 2017 show that shallow groundwater generally flows west/southwest. Regional groundwater flow is inferred to be west toward the Hudson River, except where there are localized groundwater influences (e.g., utilities, tunnels, building foundations, sumps) and/or temporal variations (i.e., tides, pumping cycles). The Hudson River is the nearest surface body of water, located approximately 400 feet west of the Site.

A groundwater contour map is shown in Figure 3. Groundwater elevation data is provided in Table 2.

2.3 Investigation and Remedial History

Former Lots 20, 29 and vicinity have been used for various industrial, commercial, and residential uses since the early to mid-1800s. Both former Lots 20 and 29 were historically part of the West 18th Street Gas Works, a Manufactured Gas Plant (MGP) owned by The Manhattan Gas Light Company ("Manhattan"), predecessors-in-interest of Consolidated Edison Company of New York, Inc. (Con Edison), from the mid-1800s to the early 1900s. The Site is included within a Voluntary Cleanup Agreement (VCA) between Con Edison and New York State Department of Environmental Conservation (NYSDEC) [VCA # D2-0003-02-08 effective August 15, 2002].

Manhattan purchased former Lot 20 in 1870 and former Lot 29 in 1848. Manhattan constructed a pair of large, open gas holders on former Lot 29 and, based on Sanborn Fire Insurance Maps from 1895 and 1904, used former Lot 20 for storage yard purposes, both in support of its West 18th Street Gas Works located on other parcels in the area. Following Manhattan's sale of former Lot 20 in 1919, a large garage was constructed on the 18th Street side that included buried gasoline tanks, and in 1947 a private garage was built on the 19th Street side. Both garage structures were demolished in 2017. The two open gas holders on former Lot 29 were razed in 1914, but their below-grade structures and foundations were left in place. Following Manhattan's sale of former Lot 29 in 1917, it was used as a wagon yard, automobile parking lot, and commercial truck parking lot with a number of small structures and underground gasoline tanks for a filling station (Phase I ESA, Integral 2014). Former Lot 29 was a vacant parking lot at the start of the remedial action.

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

Several investigations were conducted across the Site between 2005 and 2017. Phase I ESAs were conducted in 2005 and 2014 by LiRo-Engineers and Integral Engineering, respectively. Both Phase I ESAs identified recognized environmental conditions (RECs) in connection with the Site due to its former use as an MGP site and UST related concerns involving NYSDEC Spill Nos. 9414276, 9514181, 9612012, and 0905252.

A Site Characterization Study (SCS) was conducted in 2006 by TRC Environmental for the entire West 18th Street Gas Works site. This BCP Site was documented as Area 2 in the SCS. Based on the findings of the SCS, TRC concluded that soil and/or groundwater in each of the six designated areas of the West 18th Gas Works site, including Area 2, had been imapcated by historical operations of the former MGP. At the time of the SCS, former Lot 20 was improved with an operational garage building, therefore no investigatory work was performed in this lot.

Following the SCS, a Site Wide Remedial Investigation (RI) was performed for the entire West 18th Street Gas Works site by ARCADIS in 2009, pursuant to the Con Edison VCA. A total of twelve soil borings and one monitoring well were installed across former former Lot 20 and former Lot 29. A total of thirty-four (34) soil samples were collected for laboratory analysis. Petroleum and MGP odors were observed in soil borings. Laboratory analysis indicated elevated levels of VOCs (BTEX, methylene chloride, and 2-butanone), SVOCs, and metals (arsenic, copper, cyanide lead, mercury, and zinc) in soil samples across Site.

A Limited Phase II Environmental Site Investigation (ESI) was performed on former Lot 20 in 2012 by Core Environmental at the request of NYSDEC to determine if residual petroleum impacts associated with Spill No. 9612012 were present in soil and/or groundwater beneath the propery. A total of eight (8) soil and nine (9) groundwater samples were collected for laboratory analysis. Laboratory analysis indicated elevated concentrations of VOCs (BTEX, naphthalene, and n-propylbenzene) and SVOCs in soil and elevated concentrations of petroleum related VOCs in groundwater.

A geotechnical investigation was conducted on former Lot 29 by Mueser Rutledge Consulting Engineers in 2015. A total of 25 borings were advanced across former Lot 29. Integral Engineering was present during the geotechnical subsurface investigation to to visually delineate MGP related contamination that was documented previously during other investigations. Petroleum and/or MGP odors were observed in thirteen of 25 soil borings and tar-like material (TLM) or oil-like material (OLM) was observed in five borings. No analytical samples were collected as part of this investigation.

Integral performed a Pre-Design Investigation in June 2016 to define the horizontal and vertical extent of coal tar residue in the soil/fill beneath former Lot 29 and to delineate significant non-MGP related petroleum impacts within the shallow subsurface above the groundwater table. 30 soil borings were advanced in former Lot 29. Seven (7) soil samples were collected for laboratory analysis.

The results of the Pre-Design Investigation showed a consistent layer of TLM and OLM just above the bottom surface of the southern gas holder and the southern and western portions of the northern gas holder. Coal tar residue was also observed with impacts ranging in thickness from 1" to 2" and was generally present across the interior holder bottoms at approximately 20 to 22 ft-bg. Coal tar residue impacts were limited to the interior of the holders and were not observed below or outside of the holder foundations. Petroleum impacts were observed and generally limited to the southern portion of former Lot 29 from approximately 5-7 ft-bg with one localized deeper area (approximately 9-11 ft-bg) of petroleum impacts in the northern portion of former Lot 29. Laboratory analysis indicated elevated concentrations of petroleum related VOCs and SVOCs in soil.

Integral Engineering implemented a Supplemental Subsurface Investigation (SSI) in April 2017 to more fully characterize the subsurface soil and groundwater on former Lot

20 and the western portion of former Lot 29 under the High Line. Fifty-seven (57) soil samples and seven (7) groundwater samples were submitted for laboratory analysis. Petroleum impacts were generally observed in the central portion of former Lot 20 and in the southwest portion of former Lot 29 from approximately 5-15 ft-bg. Elevated concentrations of BTEX and naphthalene were also detected in the southwest corner of former Lot 20. Laboratory analysis indicated elevated concentrations of BTEX, naphthalene and other petroleum related VOCs in soil and groundwater.

Historical sample locations are depicted on Figure 4.

Summary of Pre-Remediation Site Conditions

Previous investigations at the Site confirmed the presence of petroleum related VOCs (BTEX) in soil and groundwater, as well as OLM and TLM within the gas holders on Lot 29. Integral's investigations also confirmed the presence of historical fill at the Site, with the results of the April 2017 investigation indicating elevated levels of metals and SVOCs (PAHs) consistent with historical fill material. Additional details are provided below.

Coal Tar Residue Extent

Coal tar residue was identified during three investigations (described above) The results of the Pre-Design indicated that coal tar residue was limited to a 1-2 inch interval on the interior of the holder bottoms (approximately 20-22 ft-bg). During the performance of the Pre-Design, select boring locations were advanced in areas where significantly larger intervals of coal tar residue were previously documented. The results of the Pre-Design Investigation showed TLM and OLM just above the surface of the holder foundation bottoms and did not extend beneath or outside the holder foundations.

Coal tar residue was found across the inside of the southern holder bottom, with impacts in the northern holder limited to the southern and western portions of the holder bottom interior.

The results of the SSI indicated that former Lot 20's subsurface soil was impacted predominantly with petroleum-related VOCs and Diesel Range Organics (DRO). However, cyanide, a common by-product of MGP operations, was detected in 27 soil samples, with the highest concentrations collected in proximity to the western Site boundary. BTEX & Naphthalene were detected in the southwestern area of former Lot 20 in concentrations above Unrestricted Soil Cleanup Criteria in ratios similar to those found in material visually impacted with coal tar. The aforementioned volatile data as well as the large number of samples with detectable cyanide indicated that MGP impacts existed on former Lot 20, either comingled with petroleum wastes or otherwise.

Petroleum Impacts Extent

Soil petroleum impacts were documented during five separate investigations described above. Soils impacted by petroleum appeared to be co-mingled with MGP waste; both impacts were attributed to historical Site operations and historical on Site petroleum storage and usage.

Petroleum VOCs exceeding Unrestricted SCOs were found in 41 soil samples, 23 of which were located above the water table. Petroleum VOCs exceeding Restricted Residential SCOs were found in 9 soil samples, 8 of which were located above the water table. Concentrations of DRO were detected in all 57 samples collected as part of the 2017 SSI. Concentrations of GRO were detected in 44 of 57 SSI samples.

Results of the SSI indicated the presence of petroleum impacts across the entirety of former Lot 20, extending to approximately 15 ft-bg. The source is believed to have originated from a combination of both petroleum fuel and MGP waste materials. VOC and TPH analysis, as well as PID field screening, indicated the presence of both volatile petroleum hydrocarbons and degraded petroleum hydrocarbons.

Petroleum impacts were generally found in the southern (from approximately 5-7 ft-bg) and western portion (approximately 0-15 ft-bg) of former Lot 29. A localized deeper area (approximately 9-11 ft-bg) of petroleum impacts was observed in the northern portion of former Lot 29.

Soil Quality

SVOCs, specifically polycyclic aromatic hydrocarbons (PAHs), and metals impact were documented during four separate investigations described above. Elevated SVOC and metal concentrations were observed in soil and fill material throughout the Site at depths ranging from 0-28 ft-bg. SVOC and metals impacts in on-Site soil and fill was consistent with concentrations found in historic fill throughout urban areas of New York City that are in or around waterfront and industrial areas. Additionally, elevated SVOC and metals concentrations found throughout the Site may have been related to historical MGP related activities at the Site.

Groundwater Quality

Groundwater was sampled during three separate investigations described above. Groundwater was encountered between 9 to 12 ft-bg across the Site. Prior investigations and the 2017 SSI documented the presence of both MGP and petroleum based NAPL in soil borings and/or groundwater monitoring wells located on Site and in the sidewalks adjacent to Site. Results from groundwater sampling events from the 2017 SSI indicated Site-wide petroleum/MGP impacts present in groundwater. Petroleum impacted groundwater exceeding TOGS AWQS was found in all but one of the wells sampled on Site (In-GW-8). Additionally, there are known upgradient and cross gradient groundwater impacts that represent a potential for on Site migration and recontamination after redevelopment and remediation.

Remedial Action Work Plan

The RAWP summarized the nature and extent of contamination, as determined from data gathered during previous investigations, and evaluated Track 1, 2, and 4 remedies and other applicable remedial measure alternatives, their associated costs, and the recommended and preferred remedy to address on-Site contamination. This document was released for a 45-day public comment period and subsequently approved by NYSDEC on September 1, 2017. A Track 2 remedy with a secondary Track 4 component, developed to address all environmental issues associated with the Site, was selected, which included:

- Development and execution of plans for the protection of on Site workers, community, and environment during remediation and construction activities;
- Establishment of Site-specific SCOs;

- Design and construction of foundation incorporating perimeter sheeting and soil mix walls anchored into a clay confining layer or the bedrock surface;
- Removal of approximately 36,177 tons of on Site soil/fill that either exceeds Site-specific SCOs or is located above such contaminated material and, therefore, must be removed in order to remove material that does not meet Site-specific SCOs, including source material;
- Removal and proper disposal of all on Site coal tar and petroleum impacted material, where practicable;
- Removal of the gas holder walls to approximately 17 ft-bg and backfilling the remainder of the holder foundations with flowable fill (PSI 4000) or material that meets NYSDEC DER-10 soil criteria;
- Removal of all previously unidentified/unknown USTs and petroleum impacted material, where possible;
- Dewatering and treatment of impacted groundwater;
- NAPL recovery and proper disposal, if present;
- Collection and analysis of endpoint soil samples to confirm and document removal of targeted materials;
- Importation of fill meeting the NYSDEC DER-10 soil criteria;
- Placement of a vapor/waterproofing membrane beneath the building slab and along foundation side walls;
- Installation of a concrete cap on fomer Lot 20 in areas of setback;
- Installation of an active mechanical ventilation system within the building basement; and
- Implementation of long-term Institutional and Engineering Controls as required by a recorded Environmental Easement.

Active Site remediation began in November 2017 and was completed in November 2018. Documentation of remedial activities are described throughout this SMP and in the in the Final Engineering Report (FER).

Figures and tables documenting the contaminant concentrations for primary contaminants prior to the completion of the remedial action and comparison to applicable standards were included in the RAWP submission and are included as Appendix D to this SMP.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document dated September 9, 2017 are as follows:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

2.5 Remaining Contamination

2.5.1 Soil

Excavation as part of the Site redevelopment and remedial action allowed for the removal of the bulk of contaminant mass at the Site. Approximately 613 tons of soils exceeding the Restricted-Residential SCOs were left in place due to structural integrity concerns associated with excavation along the boundary of one adjacent building located on Lot 40 and around High Line pile caps. Post-excavation samples were collected every 900 square feet along the excavation bottom in the set-back areas adjacent to Lot 40 where excavation was limited to approximately 2 ft-bg. Sidewall samples were not collected around the High Line pile caps, as it was not feasible with the SOE design of encapsulation of soil beneath the pile caps using flat plate steel sheets. Post-excavation samples were collected to document the characteristics of on Site soil left in place at elevations less than 15 ft-bg. Three post-excavation endpoint samples were collected and analyzed for Part 375 VOCs, SVOCs, and metals.

Concentrations of lead and mercury were detected in one post-excavation endpoint sample (EP-3) above Restricted-Residential Use SCOs. The area around EP-3 was over-excavated and re-sampled for lead and mercury only. The concentrations in all post-excavation endpoint samples documenting the onsite soil remaining in place were below the Site-specific SCOs for total SVOCs and below Restricted-Residential SCOs for VOCs and metals. Table 7 included with the FER summarizes the results of all post-excavtion endpoint sampling after completion of the remedial action.

2.5.2 Groundwater

On Site groundwater impacts, were addressed during the remedial action via a construction dewatering system that included an engineered well-point system consisting of 1-1/2-inch diameter well points installed on 10-foot centers, each connected to a 6-inch vacuum header, carbon filtration units and an oil water separator. Prior to the decommissioning of the dewatering system, a water sample was collected from an upgradient and downgradient sump location to document final conditions after the remedy is complete.

Post-remedial groundwater samples document that the remaining groundwater meets the Class GA Standards. Table 8 included with the FER summarizes the results of of all post-remedial groundwater sampling. Due to the known upgradient sources of groundwater contamination that could act as a continuing source of groundwater contamination beneath the Site, the complete removal of the on Site source of groundwater contamination, and the construction of engineering controls, post-remedial groundwater monitoring is not required.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

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

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix E) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and;
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the Site to restricted-residential, commercial and industrial uses only (subject to applicable zoning). Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure 5. These ICs are:

- The property may be used for: restricted residential, commercial, and industrial uses (subject to applicable zoning);
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Data and information pertinent to Site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement; and,
- Vegetable gardens and farming on the Site are prohibited.

3.3 Engineering Controls

3.3.1 Cover (or Cap)

Exposure to remaining contamination at the Site is prevented by a cover system placed over the Track 4 portions of the Site. This cover system is comprised of an 18-inch pressure slab that spans the entire footprint of the building. In places where the foundation is offset from the existing adjacent building at the northwestern Site perimeter, the unexcavated material between the foundation walls and the property line that remains in place (Track 4 areas) is capped with a structural concrete slab and waterproofing membrane. The cover system over Track 4 areas of the Site is the only part of the system that requires monitoring as described in Section 4.0 of this SMP. Figure 6 presents the location of the cover system and applicable Track 4 locations. The Excavation Work Plan (EWP) provided in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) prepared for the Site and provided in Appendix F, as well as the Community Air Monitoring Plan (CAMP) provided in Appendix G.

3.3.2 Vapor/Waterproofing Membrane

Since groundwater impacts remain surrounding the site outside of the soil mix wall, an Engineering Control (EC) is required to protect human health and the environment.

Consistent with the RAWP, a waterproofing/vapor barrier membrane was installed beneath the building slab and along foundation side walls. The membrane system was installed along the entire footprint of the Site beneath the foundation slab, and extends along the sides of the foundation slab from the base of the excavation to surface grade level.

Generally, the vapor/waterproofing membrane consisted of a GCP Applied Technologies Preprufe® 160R/300R and Bituthene® products and Aquafin Inc. Aquafin-IC (Integra-Coat) waterproofing slurry. The details of the installed vapor/waterproofing membrane are included in Appendix N of the FER.

3.3.3 Hydraulic Barrier

Since remaining off-site, upgradient and crossgradient groundwater impacts are present, an EC is required to protect human health and the environment.

As indicated in the RAWP, the SOE was designed to also act as a permanent hydraulic barrier to prevent re-contamination of the site from known off-site upgradient and crossgradient groundwater petroleum and MGP constituent contamination. The SOE/hydraulic barrier consists of a drilled interlocking soil mix wall that extends to depths between 35 and 60 ft-bg around the entire perimeter of the site (with a 20 foot offset from Lot 40) and is keyed into the clay confining layer or bedrock surface across the site. The soil mix wall will serve as a permanent hydraulic barrier against recontamination of the site. Portions of the soil mix wall also serve as a composite cover system to prevent exposure to contaminated soil within the Track 4 area adjacent to Lot 40 and the northernmost and southernmost High Line pile caps.

3.3.4 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

3.3.4.1 - Cover (or Cap)

The composite cover system is a permanent control and the quality and integrity of those portions of this system over the Track 4 portions of the Site will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.4.2 - Vapor/Waterproofing Membrane

The vapor/waterproofing membrane is a permanent control and integrity of this system will be considered intact if the cap is intact.

3.3.4.3 - Hydraulic Barrier

The hydraulic barrier is a permanent control that is underground and thus not subject to inspection.

4.0 MONITORING PLAN

4.1 General

This Monitoring Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring Plan may only be revised with the approval of the NYSDEC.

This Monitoring Plan describes the methods to be used for:

- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

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

- Annual inspection and periodic certification.

Reporting requirements are provided in Section 6.0 of this SMP.

4.2 Site – wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect the Site EC. During these inspections, an inspection form will be completed as provided in Appendix H – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of the Site EC;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and

- Confirm that Site records are up to date.

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

- Whether the Site EC continues to perform as designed;
- If this control continues to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement; and
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 6.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of the EC occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

6.0. REPORTING REQUIREMENTS

6.1 Site Management Reports

All Site management inspection and maintenance events will be recorded on the appropriate Site management forms provided in Appendix H. These forms are subject to NYSDEC revision. All inspection events will also be recorded in a field book.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC annually, or as otherwise determined by the Department, and summarized in the Periodic Review Report.

6.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable Site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.

- A summary of any information generated during the reporting period, with comments and conclusions.

- A Site evaluation, which includes the following:

  - The compliance of the remedy with the requirements of the Site-specific Decision Document;

  - Any new conclusions or observations regarding Site contamination based on inspections

  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and

  - The overall performance and effectiveness of the remedy.

6.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

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

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*

- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*

- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*

- *Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;*

- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *Use of the Site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative]"

Every five years the following certification will be added:

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

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

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

6.3 Corrective Measures Work Plan

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

The RAWP stated that a ventilation system would be installed within the basement of the new building and would serve as an engineering control for the mitigation of soil vapor intrusion. Based on the remaining groundwater contamination detected, the level of the water table, and the installation of a vapor/waterproofing membrane, soil vapor intrusion is not anticipated. The ventilation system is required to be installed as a code requirement however. If the ventilation system ceases operation in the future, an updated soil vapor intrusion assessment will be performed to confirm that no contamination is entering the building.

7.0 REFERENCES

Geotechnical Report, W18-W19 Street Project, New York, NY. Mueser Rutledge Consulting Engineers, July 1, 2015.

Letter dated September 3, 2009 from Core Environmental to Hiralkumar Patel of NYSDEC concerning NYSDEC Spill Case 9514181 and 9612012.

Letter dated August 6, 2009 from NYSDEC by Hiralkumar Patel to Semantic Realty, Inc. re spill at 515 West 18th Street, NY, NY Spill #9514181 and 9612012.

Letter dated April 28, 2009 from Core Environmental to Hiralkumar Patel of NYSDEC concerning NYSDEC Spill Case 9514181 and 9612012.

Letter dated November 30, 2011 from NYSDEC by Hiralkumar Patel to Semantic Realty, Inc. concerning spill at 515 West 18th Street, NY, NY, Case #9612012, and annexed is letter dated August 6, 2009 from NYSDEC by Hiralkumar Patel to Semantic Realty, Inc. concerning spill at 515 West 18th Street, NY, NY, Case #9514181 and 9612012.

Letter dated September 28, 2010 from Core Environmental to Hiralkumar Pater of NYSDEC concerning NYSDEC Spill Case 9514181 and 9612012.

Letter dated January 11, 2013 from NYSDEC by Hiralkumar Patel to Semantic Realty LLC re: closure of Spill Case 9612012.

Limited Phase II Environmental Site Investigation for 515 West 18th Street, NY, NY. Core Environmental, March 7, 2012.

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

Phase I Environmental Site Assessment, 511-525 West 18th Street & 131 10th Avenue, Manhattan, New York. LiRo-Engineering, April 2005.

Phase I Environmental Site Assessment, 511 West 18th Street and 131 10th Avenue, New York, New York. Integral Consulting, August 2014.

Pre-Design Investigation Work Plan, Former 18th Street Gas Works, 515 West 18th Street, New York, NY. Integral Engineering, June 2016.

Remedial Action Work Plan and Alternatives Analysis, Former 18th Street Gas Works, 515 West 18th Street, New York, NY. Integral Engineering, September 1, 2017.

Site Characterization Study Report for the Former West 18th Street Gas Works, NY, NY. TRC Environmental Corporation, January 2006.

Site-Wide Remedial Investigation Report for the Former West 18th Street Gas Works, NY, NY. ARCADIS, December 2009.

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

Figures

Basemap Source: ESRI, World Topo Map.

Site Location

Feet
0 1,000 2,000 4,000

http://gis.nyc.gov/taxmap/map.htm

Department of Finance Digital Tax Map

Feet
0 155 310 620

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
NYC Department of City Planning, Information Technology Division

Department of City Planning MapPLUTO - 2017v1

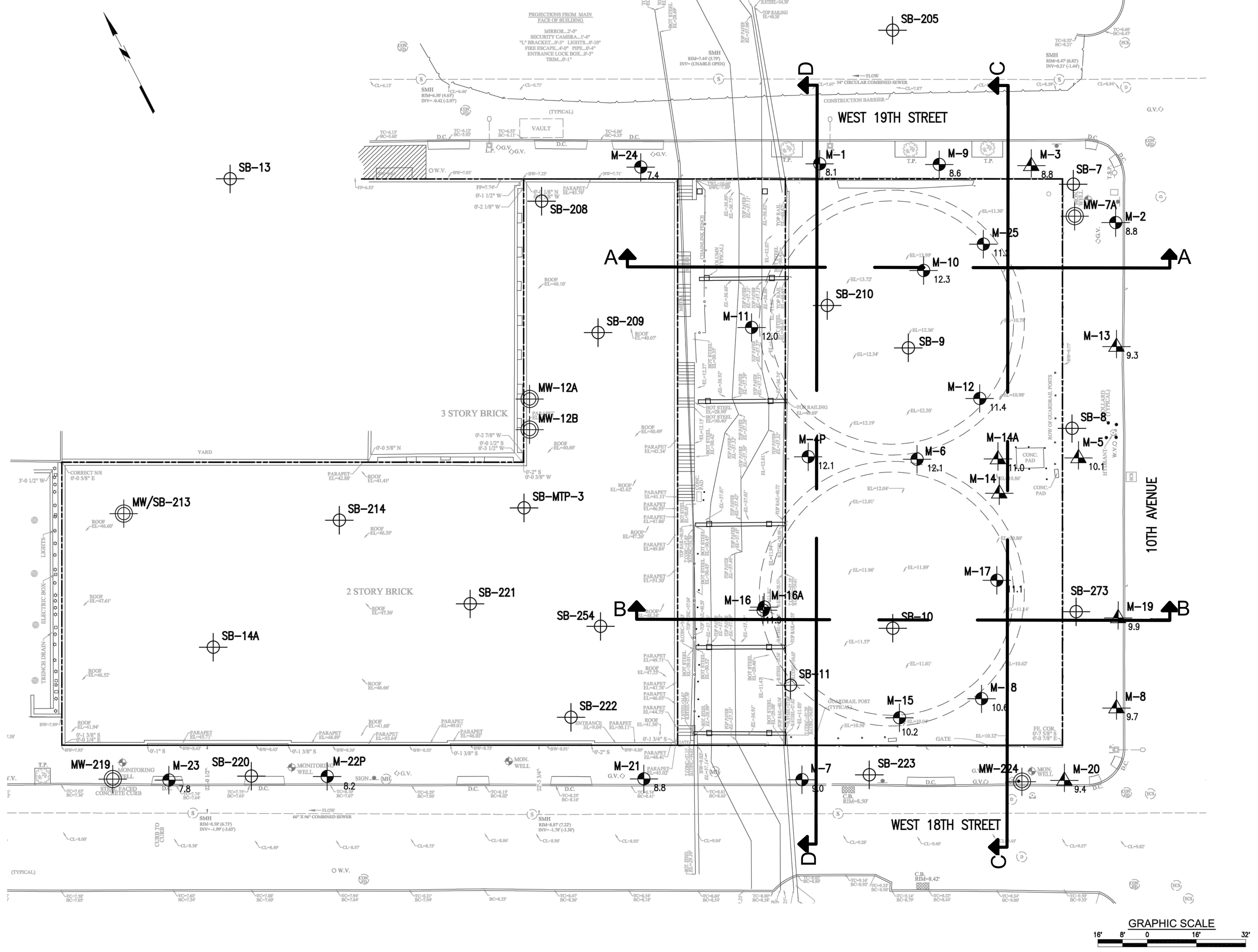
Feet
0 155 310 620

Site
Draft Site Management Plan
515 West 18th Street
New York, NY 10011
Block 690, Lots 20 & 29

TENEN ENVIRONMENTAL
Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: (646) 606-2332
F: (646) 606-2379

Drawn By: LM
Checked By: AP
Date: June 2018
Scale: As Noted

Drawing Title: Site Location Map
Drawing No: Figure 1



CROSS-SECTION TRANSECTS

Drawing Source:
Mueser Rutledge Consulting Engineers
The Related Companies, 60 Columbus Circle, New York, NY
Geotechnical Report, W18-W19 Street Project, New York, NY, July 1, 2015

Dwg. No. B-1 Boring Location Plan
Dwg. No. GS-1 Geologic Sections A-A and B-B
Dwg. No. GS-2 Geologic Sections C-C and D-D

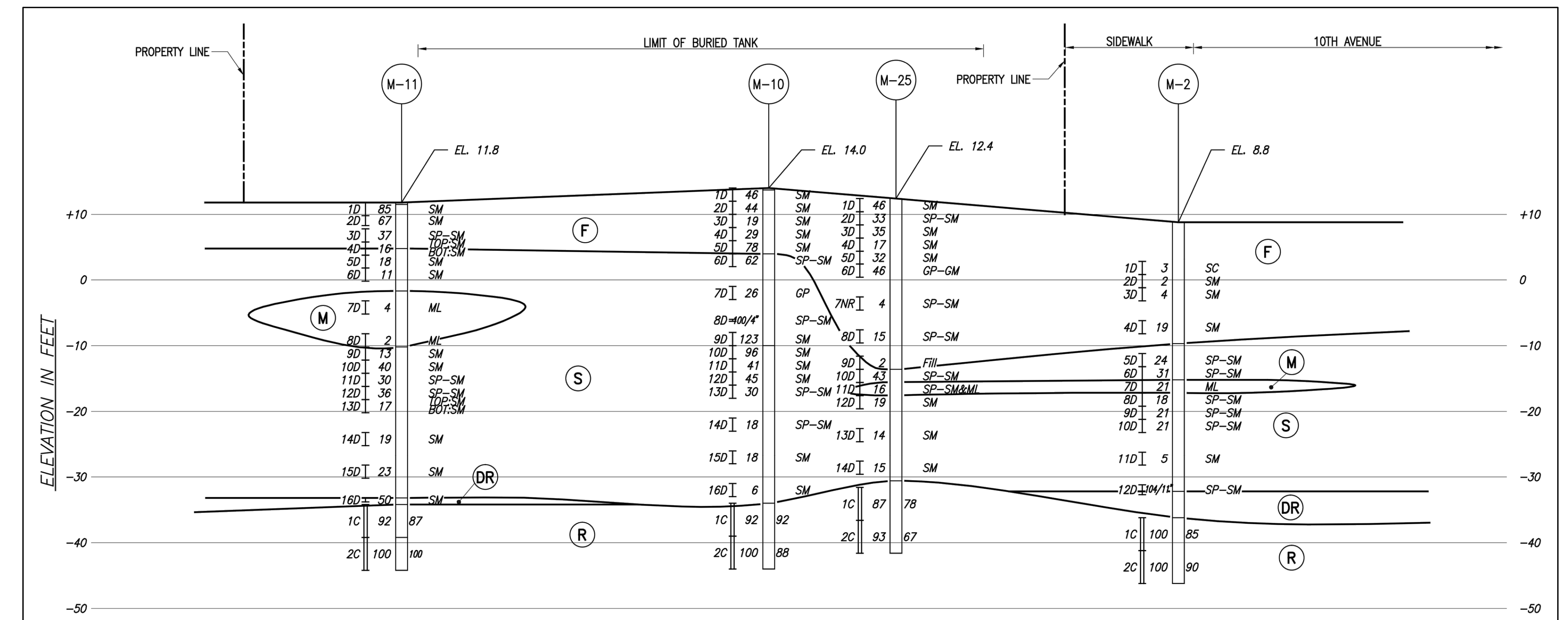
LEGEND:

M-4PA
12.1 – AS-DRILLED MRCE BORING, FULLY SAMPLED
"P" – PIEZOMETER
"A" – OFFSET LOCATION
GROUND SURFACE ELEVATION

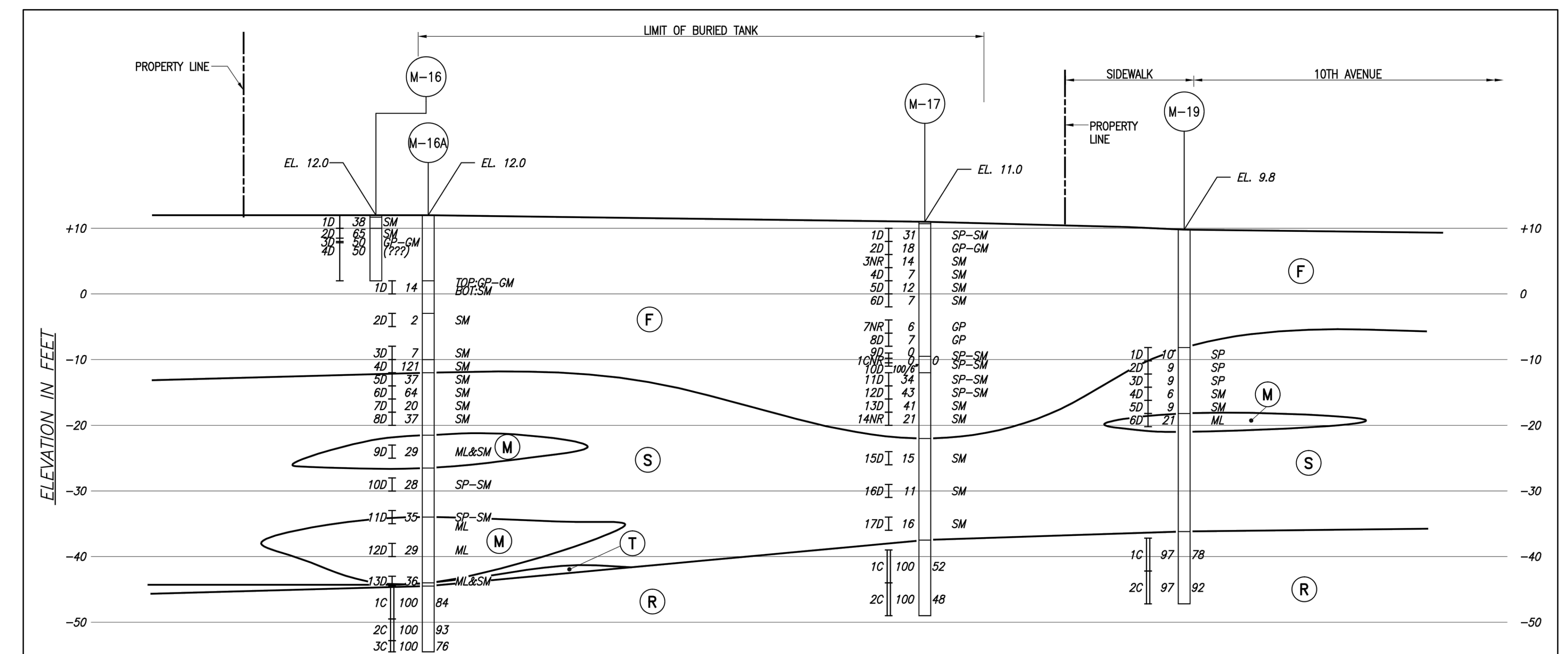
M-3
8.8 – AS-DRILLED MRCE BORING, ROCK CORE ONLY
GROUND SURFACE ELEVATION

MW-12A
– EXISTING MONITORING WELL MADE BY ARCADIS (2007)

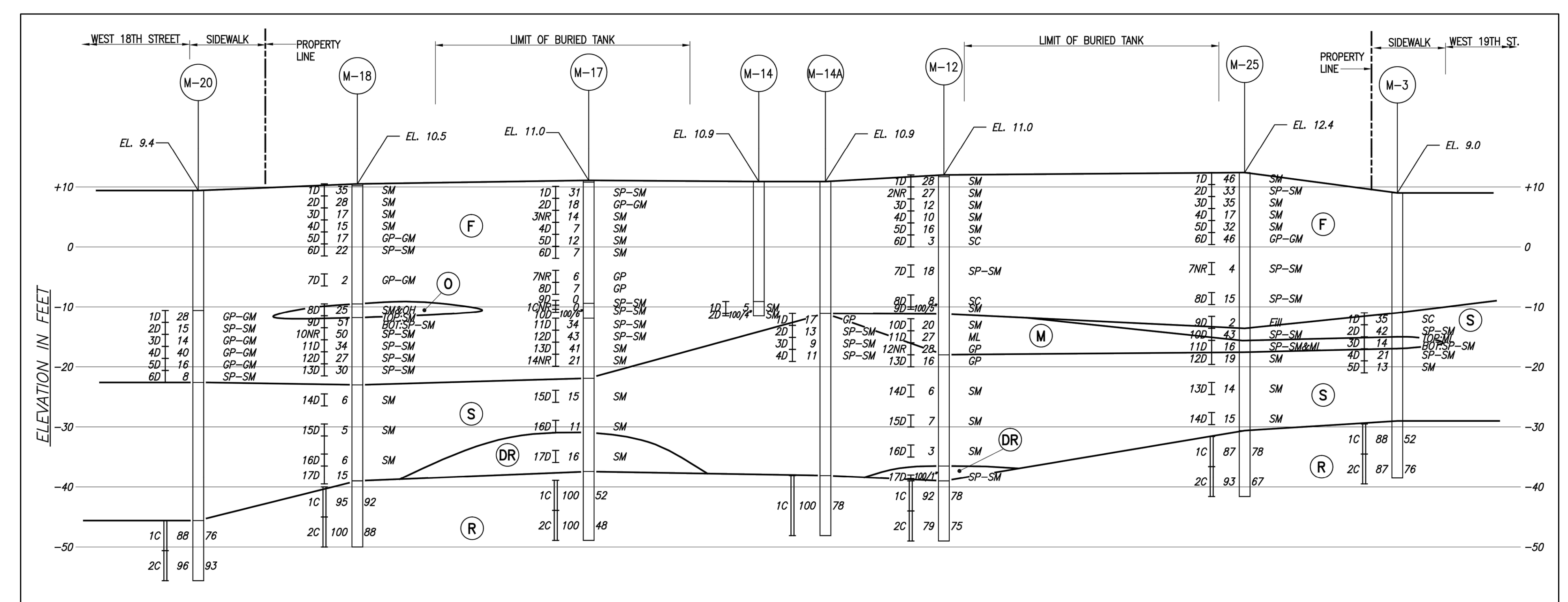
SB-10
– EXISTING BORING MADE BY ARCADIS (2007)



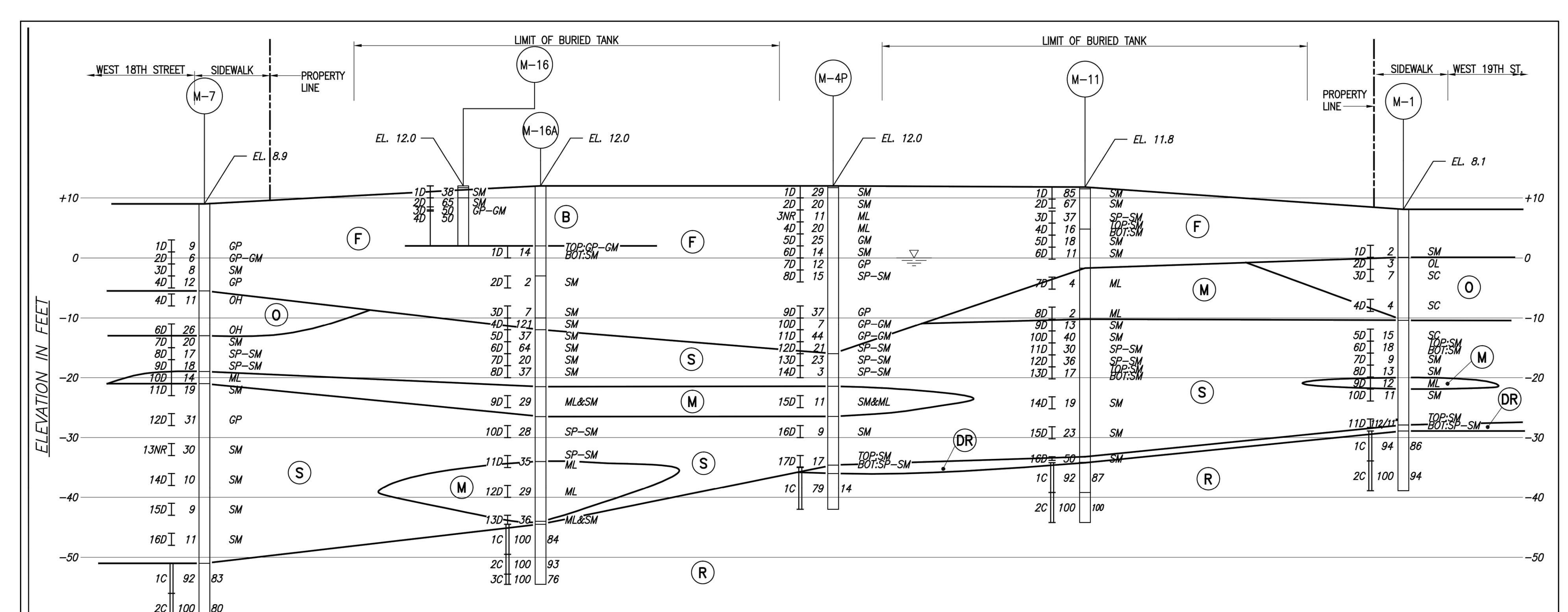
GEOLOGIC SECTION A-A



GEOLOGIC SECTION B-B



GEOLOGIC SECTION C-C



GEOLOGIC SECTION D-D

515 West 18th Street New York, New York

No.	Description	Date

TENEN ENVIRONMENTAL

Tenen Environmental, LLC
121 West 27th Street, Suite 702
New York, NY 10001
646-606-2332

515 WEST 18TH ST. DRAFT SITE MANAGEMENT PLAN

NEW YORK, NEW YORK

DRAWING TITLE:

GEOLOGIC CROSS-SECTIONS

PE Seal

Date	6/20/2018
Scale	AS NOTED
Drawn By	LM
Checked By	AC

FIGURE 2

Legend

- Monitoring Well Location
- Groundwater Elevation Contour January 21, 2009
- Site Boundary
- High Line

Feet: 0, 15, 30, 60

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Monitoring Well locations are approximate.
3. Elevations referenced to the North American Vertical Datum NAVD) of 1988.

Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2016

Integral Engineering p.c., New York, NY,
515 West 18th Street, New York, NY
Remedial Action Work Plan, Historic Sample Location (All Historic Investigation) - Figure 4

Groundwater Elevation Data from Arcadis
Consolidated Edison Company of NY, Inc., West 18th St. Former Gas Works,
Remedial Investigation Report, Water Table Map for Shallow Groundwater Surface - January 21, 2009 - Figure 7

Site
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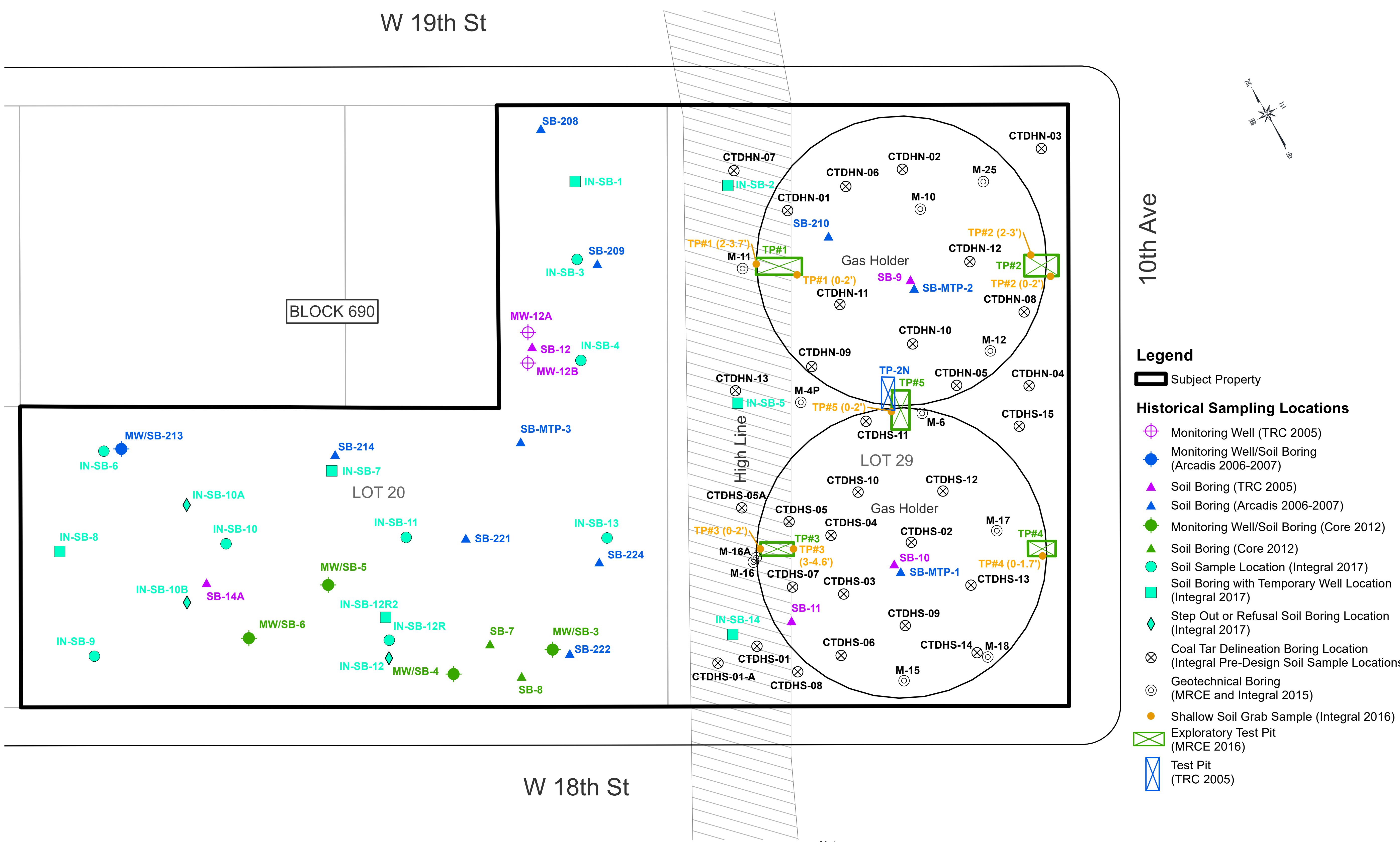
Drawn By	Checked By	Date	Scale
LM	AP	June 2018	As Noted

Drawing Title
Groundwater Contour Map

Drawing No
Figure 3



Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2016

Integral Engineering p.c., New York, NY,
515 West 18th Street, New York, NY
Remedial Action Work Plan, Historic Sample Location (All Historic Investigation) - Figure 4
Remedial Action Work Plan, Test Pit and Pre-Design Sample Location Map - Figure 7
Remedial Action Work Plan, Pre-Design Soil Sample Locations - Figure 9
Remedial Action Work Plan, Supplementary Subsurface Investigation Sampling - Figure 14
Remedial Action Work Plan, Geotechnical and Visual Coal Tar Delineation Boring Location Map - Figure 6

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Boring locations are approximate.
3. Assumes an average elevation of +8 after demo.

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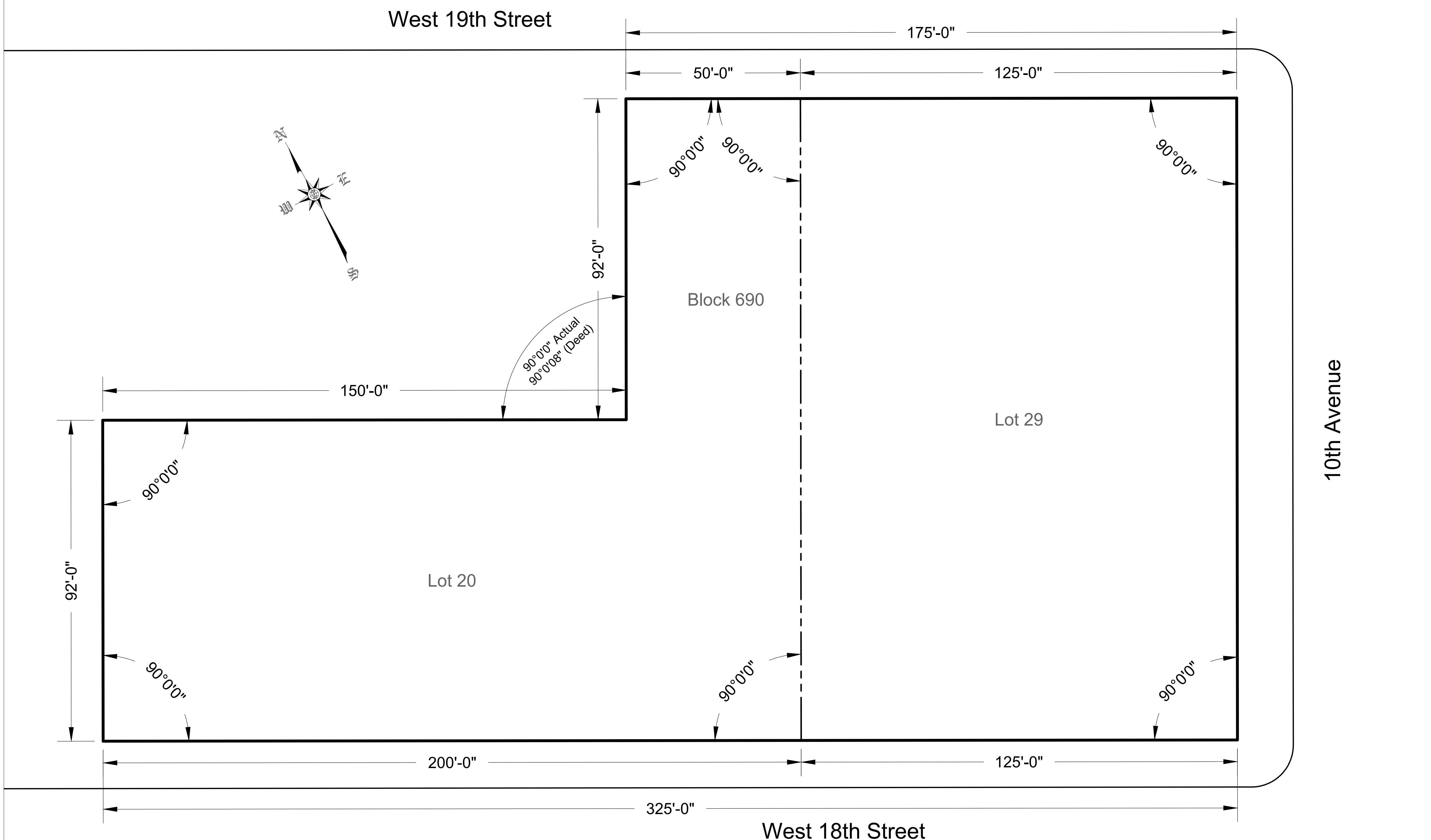
Drawn By	Checked By	Date	Scale
LM	AP	June 2018	As Noted

Drawing Title
Site Layout Map

Drawing No
Figure 4



Legend

Property Boundary

Lot Line

0 15' 30' 60'

Drawing Scale

Source:
Fehringer Surveying, P.C., Seaford, NY
Survey of Property Situated in: 515 West 18th Street, New York, NY
Surveyed December 1, 2014, Revised May 30, 2018

SITE

Draft Site Management Plan
515 West 18th Street
New York, NY 10011
Block 690, Lots 20 & 29

CONSULTANT

TENEN ENVIRONMENTAL

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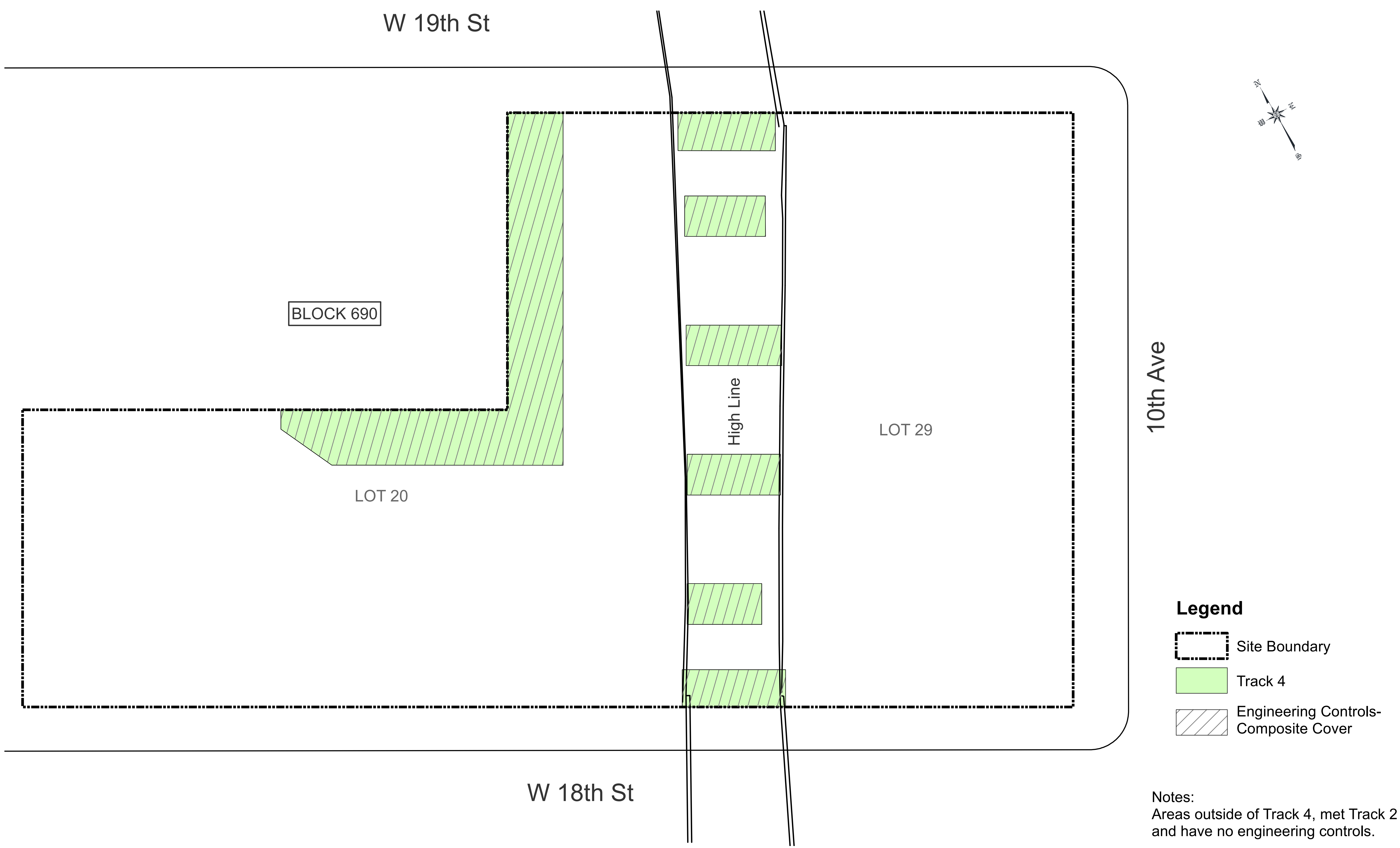
DRAWN BY	CHECKED BY	DATE	SCALE:
LM	AP	June 2018	As Noted

DRAWING TITLE:
Institutional Control Boundaries

DRAWING NO.
Figure 5



Notes:
Areas outside of Track 4, met Track 2 and have no engineering controls.

Source:
Integral Engineering p.c., New York, NY,
515 West 18th Street, New York, NY
Remedial Action Work Plan, Extent of Excavation for Alternative II - Figure 20

Site
Draft Site Management Plan
515 West 18th Street
New York, NY 10011
Block 690, Lots 20 & 29

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Drawn By	Checked By	Date	Scale
LM	AP	July 2018	As Noted

Drawing Title
Engineering Control Location

Drawing No
Figure 6

Tables

Table 2.
Groundwater Elevation Measurements
Site Management Plan
515 West 18th Street
New York, New York

Location	Measuring Point Elevation - feet (NAVD)	Depth to Water (ft)	Water Elevation - feet (MVD)
MW-7A	8.42	7.8	0.62
MW-12A	8.81	8.67	-0.36
MW-219	8.16	6.88	1.28
MW-224	9.06	8.76	0.3

Notes:
1. Data collected by ARCADIS on January 21, 2009 and reported in "*Site-Wide Remedial Investigation Report, Former West 18th Street Gas Works, December 2009.*"
2. All elevations shown are in NAVD 1988 (NAVD) vertical datum.
3. Depth to water measurements are in feet below measuring point (top of casing).

Table 3.
Soil Quality Standards for Imported Backfill
Site Management Plan
515 West 18th Street
New York, New York

Contaminant	Units	Restricted-Residential*	Protection of Groundwater**
Metals			
Arsenic	mg/kg	16	16
Barium	mg/kg	400	820
Beryllium	mg/kg	72	47
Cadmium	mg/kg	4.3	7.5
Chromium, hexavalent	mg/kg	110	19
Chromium, trivalent	mg/kg	180	NS
Copper	mg/kg	270	1720
Total Cyanide	mg/kg	27	40
Lead	mg/kg	400	450
Manganese	mg/kg	2000	2000
Total Mercury	mg/kg	0.81	0.73
Nickel	mg/kg	310	130
Selenium	mg/kg	180	4
Silver	mg/kg	180	8.3
Zinc	mg/kg	10000	2480
Volatile Organic Compounds (VOCs)			
1,1,1-Trichloroethane	mg/kg	100	0.68
1,1-Dichloroethane	mg/kg	26	0.27
1,1-Dichloroethene	mg/kg	100	0.33
1,1,2,2-Tetrachloroethane	mg/kg	NS	0.6
113 Freon (1,1,2-TFE)	mg/kg	NS	6
1,2-Dichlorobenzene	mg/kg	100	1.1
1,2-Dichloroethane	mg/kg	3.1	0.02
cis-1,2-Dichloroethene	mg/kg	100	0.25
trans-1,2-Dichloroethene	mg/kg	100	0.19
1,2,3-Trichloropropane	mg/kg	ND	0.34
1,2,4-Trichlorobenzene	mg/kg	NS	3.4
1,3-Dichlorobenzene	mg/kg	49	2.4
1,3-Dichloropropane	mg/kg	NS	0.3
1,4-Dichlorobenzene	mg/kg	13	1.8
1,4-Dioxane	mg/kg	13	0.1
2-Butanone	mg/kg	NS	0.3
2,6-Dinitrotoluene	mg/kg	NS	0.17
4-methyl-2-pentanone	mg/kg	NS	1
Acetone	mg/kg	100	0.05
Benzene	mg/kg	4.8	0.06
Butylbenzene	mg/kg	100	12
Carbon disulfide	mg/kg	ND	2.7
Carbon tetrachloride	mg/kg	2.4	0.76
Chlorobenzene	mg/kg	100	1.1
Chloroform	mg/kg	49	0.37
Ethylbenzene	mg/kg	41	1
Hexachlorobenzene	mg/kg	1.2	3.2
Isopropylbenzene	mg/kg	NS	2.3
p-Isopropylbenzene	mg/kg	NS	10
Methyl ethyl ketone	mg/kg	100	0.12
Methyl tert-butyl ether	mg/kg	100	0.93
Methylene chloride	mg/kg	100	0.05
n-Propylbenzene	mg/kg	100	3.9
sec-Butylbenzene	mg/kg	100	11
tert-Butylbenzene	mg/kg	100	5.9
Tetrachloroethene	mg/kg	19	1.3
Toluene	mg/kg	100	0.7
Trichloroethene	mg/kg	21	0.47
1,2,4-Trimethylbenzene	mg/kg	52	3.6
1,3,5-Trimethylbenzene	mg/kg	52	8.4
Vinyl Chloride	mg/kg	0.9	0.02
Xylene (mixed)	mg/kg	100	1.6
Semivolatile Organic Compounds (SVOCs)			
Acenaphthene	mg/kg	100	98
Acenaphthylene	mg/kg	100	107
Aniline	mg/kg	100	0.33
Anthracene	mg/kg	100	1000
Bis(2-ethylhexyl)phthalate	mg/kg	NS	435
Benzo(a)anthracene	mg/kg	1	1
Benzo(a)pyrene	mg/kg	1	22
Benzo(b)fluoranthene	mg/kg	1	1.7
Benzo(g,h,i)perylene	mg/kg	100	1000
Benzo(k)fluoranthene	mg/kg	3.9	1.7
Benzoic Acid	mg/kg	NS	2.7
Butylbenzyl-phthalate	mg/kg	NS	122
4-Chloroaniline	mg/kg	NS	0.22
Chloroethane	mg/kg	NS	1.9
Chrysene	mg/kg	3.9	1
Dibenzo(a,h)anthracene	mg/kg	0.33	1000
Di-n-butyl-phthalate	mg/kg	NS	8.1
2,4-Dichlorophenol	mg/kg	NS	0.4
Diethylphthalate	mg/kg	NS	7.1
2,4-Dinitrophenol	mg/kg	NS	0.2
2,6-Dinitrotoluene	mg/kg	NS	1
Dimethylphthlate	mg/kg	NS	27
Di-n-octylphthlate	mg/kg	NS	120
Fluoranthene	mg/kg	100	1000
Fluorene	mg/kg	100	386
Hexachloro-benzene	mg/kg	NS	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.5	8.2
Isophorone	mg/kg	NS	4.4
m-Cresol	mg/kg	100	0.33
4-methyl-2-pentanone	mg/kg	NS	1
2-methyl-naphthalene	mg/kg	NS	36.4
Naphthalene	mg/kg	100	12
2-Nitroaniline	mg/kg	NS	0.4
3-Nitroaniline	mg/kg	NS	0.5
Nitrobenzene	mg/kg	15	0.17
2-Nitrophenol	mg/kg	NS	0.3
4-Nitrophenol	mg/kg	NS	0.1
o-Cresol	mg/kg	100	0.33
p-Cresol	mg/kg	100	0.33
Pentachlorophenol	mg/kg	6.7	0.8
Phenanthrene	mg/kg	100	1000
Phenol	mg/kg	100	0.33
Pyrene	mg/kg	100	1000
2,4,5-Trichlorophenol	mg/kg	NS	0.1
PCBs/Pesticides			
2,4,5-T	mg/kg	NS	1.2
2,4,5-TP Acid (Silvex)	mg/kg	100	3.8
2,4-D (2,4-Dichloro-phenoxyacetic acid)	mg/kg	NS	0.5
4,4'-DDE	mg/kg	8.9	17
4,4'-DDT	mg/kg	7.9	136
4,4'-DDD	mg/kg	13	14
Aldrin	mg/kg	0.097	0.19
alpha-BHC	mg/kg	0.48	0.02
beta-BHC	mg/kg	0.36	0.09
Chlordane (alpha)	mg/kg	4.2	2.9
delta-BHC	mg/kg	100	0.25
Dibenzofuran	mg/kg	59	6.2
Dieldrin	mg/kg	0.2	0.1
Endosulfan I	mg/kg	24	102
Endosulfan II	mg/kg	24	102
Endosulfan sulfate	mg/kg	24	1000
Endrin	mg/kg	11	0.06
Gamma chlordane	mg/kg	NS	14
Heptachlor	mg/kg	2.1	0.38
Heptachlor epoxide	mg/kg	NS	0.02
Lindane	mg/kg	1.3	0.1
Methoxychlor	mg/kg	NS	900
Parathion	mg/kg	NS	1.2
Polychlorinated biphenyls	mg/kg	1	3.2

Notes:
NS = No Standard
* = 6 NYCRR Part 375 Restricted-Residential Soil Cleanup Objectives
** = 6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objectives

Appendix A

Environmental Easement & Other Easements

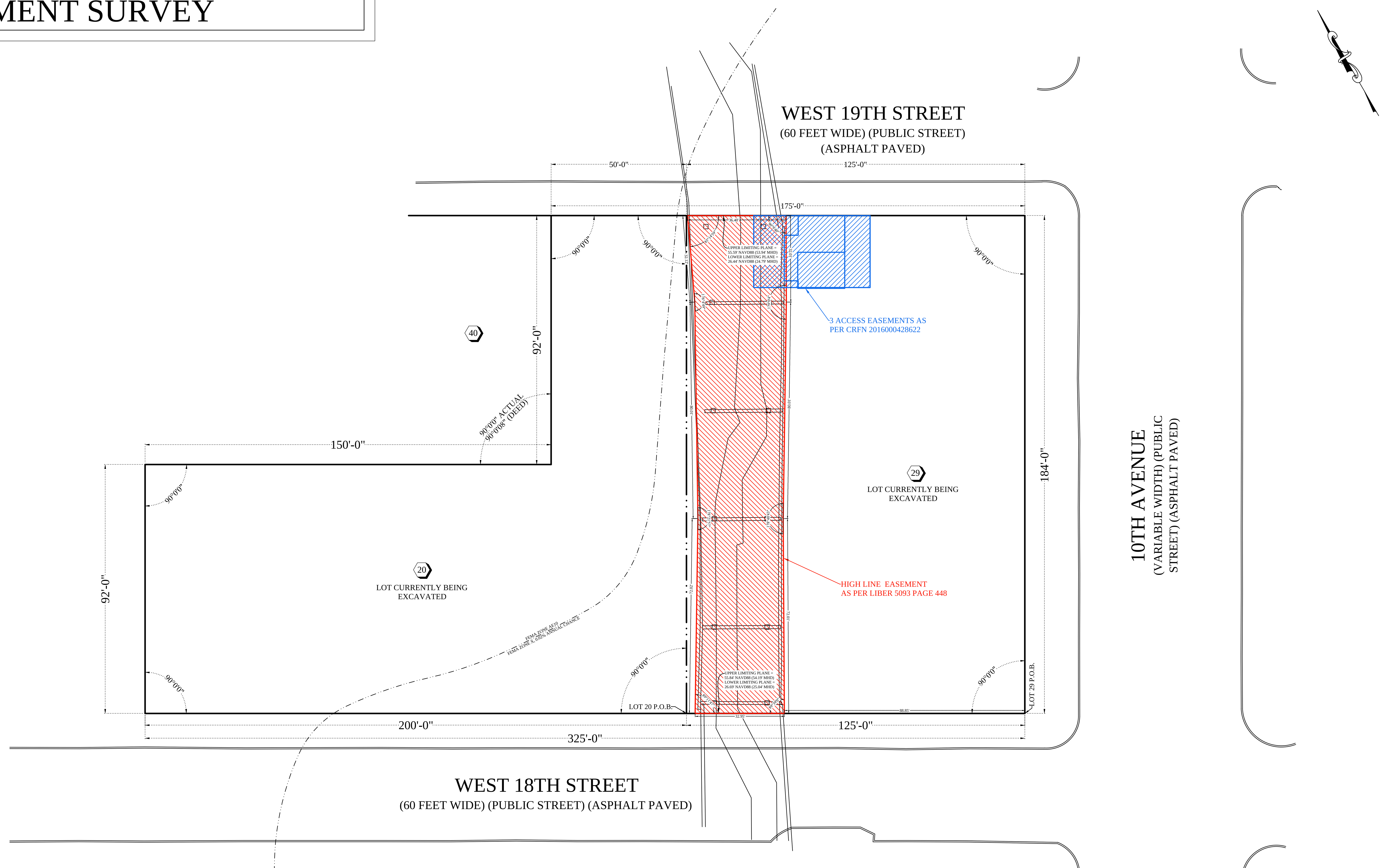
EASEMENT SURVEY

BLOCK: 690
LOT: 20, 29

LOT 20 AREA:
SQ. FT.: 23,000.00
ACRES: 0.5280

LOT 29 AREA:
SQ. FT.: 23,000.00
ACRES: 0.5280

TOTAL LOT AREA:
SQ. FT.: 46,000.00
ACRES: 1.0560



ENVIRONMENTAL EASEMENT DESCRIPTION

LOT 29:

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the westerly side of 10th Avenue with the northerly side of West 18th Street; running

THENCE westerly along the northerly side of West 18th Street, 125 feet;

THENCE northerly, parallel with 10th Avenue, 184 feet to the southerly side of West 19th Street; and

THENCE easterly, along the southerly side of West 19th Street, 125 feet to the corner formed by the intersection of the said southerly side of West 19th Street with the westerly side of 10th Avenue;

THENCE southerly, along the westerly side of 0th Avenue 184 feet to the corner, the point or place of BEGINNING.

THE ABOVE MENTIONED DESCRIPTION HAS AN ACREAGE OF 0.5280 AND A SQUARE FOOTAGE OF 23,000.00

LOT 20:

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

BEGINNING at a point on the northerly side of West 18th Street distant 125 feet westerly from the corner formed by the intersection of the westerly side of Tenth Avenue with the northerly side of West 18th Street:

RUNNING THENCE northerly, parallel with 10th Avenue, 184 feet to the southerly side of West 19th Street;

THENCE westerly along the southerly side of West 19th Street, 50 feet to a point;

THENCE southerly, parallel with 10th Avenue, 92 feet to a point;

THENCE westerly along a line forming an interior angle of 90 degrees 00 minutes 08 seconds on its northerly side with the previous course, 150 feet to a point;

THENCE southerly, parallel with 10th Avenue, 92 feet to the northerly side of West 18th Street;

THENCE easterly along the northerly side of West 18th street, 200 feet to the point or place of BEGINNING.

THE ABOVE MENTIONED DESCRIPTION HAS AN ACREAGE OF 0.5280 AND A SQUARE FOOTAGE OF 23,000.00

"This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law. The engineering and institutional controls for this Easement are set forth in the Site Management Plan (SMP). A copy of the SMP must be obtained by any party with an interest in the property. The SMP can be obtained from NYS Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@dec.ny.gov".

LEGEND

Symbol	Description	Symbol	Description
CON ED	CON ED MANHOLE COVER		TAX LOT
E	ELECTRIC MANHOLE COVER		STREET LIGHT
—E—E—	UNDERGROUND ELECTRIC DUCTS	LP	LIGHT POLE
W	DEPARTMENT OF WATER SUPPLY MANHOLE COVER	TSP	TRAFFIC SIGN POLE
—W—W—	WATER MAIN	HYD.	FIRE HYDRANT
S	SEWER MANHOLE COVER	PM	PARKING METER
—S—S—	SANITARY SEWER	CB	CATCH BASIN
—ST—ST—	STEAM MAIN	O.F.	OIL FILL
W.G.	DEPARTMENT OF WATER SUPPLY WATER GATE	S.P.	STAND PIPE
W.V.	WATER VALVE	A.S.	AUTO SPRINKLER
—G—G—	GAS MAIN	T.P.	TREE PIT
G	GAS CO. MANHOLE	P.A.	PLANTED AREA
G.V.	GAS VALVE	D.C.	DROP CURB
C.O.	CLEAN OUT MANHOLE COVER	TC	TOP OF CURB
T	TELEPHONE MANHOLE COVER	BC	BOTTOM OF CURB
—T—T—	TELEPHONE LINES	CL	CENTER LINE OF ROAD
OHW	OVERHEAD UTILITY WIRES	BW	BACK OF WALK
U.P.	UTILITY COMPANY POLE	CLF	CHAIN LINK FENCE
		WIF	WROUGHT IRON FENCE
		WSF	WOOD STOCKADE FENCE
		PRF	POST AND RAIL FENCE

NOTES:
THIS IS TO CERTIFY THAT THERE ARE NO VISIBLE STREAMS OR NATURAL WATER COURSES IN THE PROPERTY AS SHOWN ON THIS SURVEY.

ALL ELEVATIONS ARE IN NAVD88 DATUM.
ELEVATIONS IN PARENTHESIS ARE IN MANHATTAN HIGHWAY DATUM.
UNLESS OTHERWISE NOTED, ELEVATIONS INDICATE EXISTING CONDITIONS

ALL UNDERGROUND UTILITIES INDICATED HEREON HAVE BEEN PLOTTED FROM MAPS AS PROVIDED BY THE RESPECTIVE UTILITY COMPANIES AND/OR GOVERNMENTAL AGENCIES. WE BEAR NO RESPONSIBILITY FOR THEIR ACCURACY OR COMPLETENESS. IT IS THE OWNERS RESPONSIBILITY TO CONTACT THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY EXCAVATION IN ORDER TO VERIFY ALL UTILITY LOCATIONS.

ALL MANHOLE COVERS PLOTTED FROM ACTUAL FIELD MEASUREMENTS.
INVERT ELEVATIONS FIELD VERIFIED.

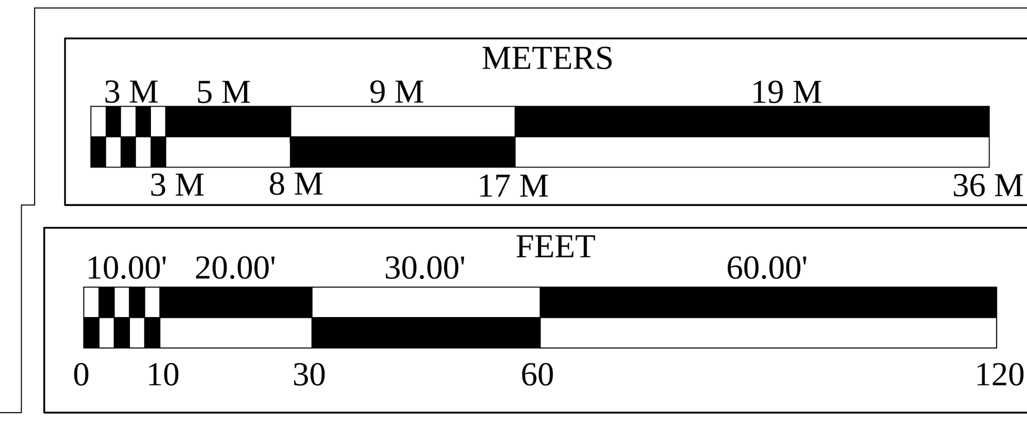
CAUTION:
BEFORE DOING ANY DIGGING OR DRILLING ON THIS SITE IT IS REQUIRED THAT SUB-SURFACE SERVICE, INCLUDING THE UNDERGROUND MAINS, DUCTS & CABLES BE MARKED AND IDENTIFIED BY THE UTILITY INVOLVED. THIS SHOULD BE DONE BY PROVIDING THE AFFECTED UTILITY WITH THE NOTICE REFERRED TO IN THE STATE OF NEW YORK INDUSTRIAL CODE 53.

SUBJECT PROPERTY LIES IN FLOOD ZONE "X" AND "AE"
Panel 0182F Community: 360497 Effective Date: September 5, 2007

REVISED: MAY 30, 2018
UPDATED: SEPTEMBER 6, 2017
UPDATED: FEBRUARY 2, 2017
REVISED: FEBRUARY 18, 2015: WATER MAIN ADDED
REVISED: DECEMBER 19, 2014: LABELS

CERTIFIED ONLY TO:

1. 18th Highline Associates, L.L.C., a Delaware limited liability company
2. Talos Capital Designated Activity Company, a designated activity company organized under the laws of Ireland, as administrative agent for the benefit of itself and the Lenders, together with their respective successors and/or assigns
3. Royal Abstract of New York LLC
4. Chicago Title Insurance Company
5. First American Title Insurance Company
6. Stewart Title Insurance Company



DRAWN BY: MF

SCALE: 1" = 20'

SURVEYED: DECEMBER 1, 2014

SURVEY OF PROPERTY SITUATED IN:
515 WEST 18TH STREET
BOROUGH OF MANHATTAN
COUNTY OF NEW YORK
CITY OF NEW YORK
STATE OF NEW YORK

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY

GUARANTEES INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED, AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. GUARANTEES ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

FEHRINGER SURVEYING, P.C.
ROBERT FEHRINGER
LICENSED LAND SURVEYOR
WWW.FEHRINGERSURVEYING.COM
2200 JACKSON AVENUE
SEAFORD, N.Y. 11783
(516) 763 - 5515 FAX NO. (516) 763 - 5525
FS@FEHRINGERSURVEYING.COM

Appendix B

Site Contacts

Appendix B - Site Contacts
515 West 18th Street
NYSDEC BCP No. C231093
Site Management Plan

Contact Name	Email	Phone
New York State Department of Environmental Conservation		
Douglas MacNeal, Project Manager	douglas.macneal@dec.ny.gov	(518) 402-9662
New York State Department of Health		
Dawn Hettrick, Project Manager	dawn.hettrick@health.ny.gov	(518) 402-9662
18th Highline Associates, L.L.C. (Site Owner)		
Frank Montresi, Project Manager	FMonterisi@Related.com	(212) 801-3511 (o); (917) 226-8265 (m)
Environmental Consultant - Tenen Environmental, L.L.C.		
Matthew Carroll, PE, Remedial Engineer	mcarroll@tenen-env.com	(212) 440-6714 (o); (917) 510-5147 (m)
Alana Carroll, Project Manager	acarroll@tenen-env.com	(212) 440-6706 (o); (646) 895-1430 (m)

Appendix C

Geotechnical Boring Logs

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-1
SHEET 1 OF	3
FILE NO.	12320
SURFACE ELEV.	SIDEWALK/8.3±
RES. ENGR.	J. BIELBY/T. SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	**SAMPLE DESCRIPTION**	STRATA	DEPTH	CASING BLOWS	**REMARKS**
10:15							DRILLED	Hand auger to 5'.
05-18-15							AHEAD	
Monday							4"	
Cloudy								
63°F					**F**	**5**		Vacuum excavated to
								6'.
	1D	6.0	1-1	Brown silty fine sand, trace medium to coarse				
		8.0	1-1	sand, clay (SM)		**8**		
	2D	8.0	1-1	Black to brown organic silty clay, some fine				2D-3D, 9D: REC=5"
		10.0	2-2	sand, trace gravel (OL)		**10**		
	3D	10.0	3-4	Black organic clayey fine sand (SC)				
		12.0	3-2					
					O			
						15		
	4D	15.0	2-2	Black organic clayey fine sand, trace shells (SC)				WC=65, pp=0.23
		17.0	2-3					
						18.5		
						20		
	5D	20.0	7-7	Red brown clayey fine to medium sand, trace				REC=2"
		22.0	8-12	gravel, coarse sand (SC)				
	6D	22.0	12-9	Top 10": Gray brn fine sand, some silt (SM)				
		24.0	9-8	Bot 4": Red brn f-m sand, some silt (SM)				
	7D	24.0	4-4	Red brown fine sand, some silt (SM)		**25**		
		26.0	5-7					
	8D	26.0	8-6	Red brown silty fine sand (SM)				
		28.0	7-7		**S**			WC=Water Content
	9D	28.0	5-6	Red brown clayey silt (ML)				in percent of dry
		30.0	6-8			**30**		weight.
	10D	30.0	5-4	Red brown silty fine sand varved with some				
		32.0	7-11	fine sand, some silt (SM)				pp=Pocket
								Penetrometer
								Unconfined Compres-
						35		sive Strength in tsf.
	11D	35.0	5-12	Top 5": Red brn f-m sand, sm silt, gravel (SM)		**36**		
		36.4	100/5"	Bot 4": Brn f-c sa, tr rock fgmts, silt, mica (DR) (SP-SM)	**	**36.5**		**Decomposed rock
09:00	1C	37.0	REC=94%	Hard unweathered gray gneissic schist,				from 36' to 36.5'.
05-19-15		42.0	RQD=86%	moderately jointed				Rig chatter at 36.5'.
Tuesday						**40**	*	1C: *Coring time from
Cloudy								09:20 to 09:38.
60°F					**R**			
	2C	42.0	REC=100%	Do1C			*	*Coring time from 09:51
		47.0	RQD=94%					to 10:09.
						45		
10:15						**47**		End of Boring at 47'.
						50		

MRCE Form BL-1

BORING NO. M-1

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
T: 917 339-9300 F: 917 339-9400
www.mrce.com

ROCK CORE SKETCH

BORING NO. M-1
SHEET 2 OF 3
FILE NO. 12320
SURFACE ELEV. 8.3±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100% / 94%	1C	94% / 86%

TOP

Run 2C: J0°XF13; J0°XF13; J10°XF13; J10°XF13; J5°XF13

Run 1C: J45°XF13; J0°XF13; J15°XF13; J0°XF13; J30°XF13

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-1
SHEET 3 **OF** 3

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. SIDEWALK/8.3±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 37
SKID		HYDRAULIC		DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER	TRACK CME-45							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	37	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS DANNY ROMERO
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JEREMY M. BIELBY/TERESA SANDIFORD DATE 05-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-2
SHEET 1 OF	4
FILE NO.	12320
SURFACE ELEV.	8.8±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:15							DRILLED	Vacuum excavated to
05-11-15							AHEAD	6'.
Monday							4"	Hand augered to 6'.
Sunny								
80°F						5		
	1D	6.0	3-2	Black, brown clayey fine to medium sand (SC)				1D, 4D: REC=6"
		8.0	1-1					
	2D	8.0	1/12"	Black brown fine to medium sand, some silt,				Odor.
		10.0	1-1	trace wood (SM)	F	10		2D: REC=7"
	3D	10.0	1-3	Black brown silty fine sand (SM)				
		12.0	1-1					
						15		
	4D	15.0	5-10	Black brown fine to medium sand, some silt,				
		17.0	9-9	trace gravel (SM)				
						18.5		
						20		
	5D	20.0	6-13	Brown black gravelly fine to coarse sand, trace				
		22.0	11-13	silt (SP-SM)	S			
	6D	22.0	8-15	Do 5D (SP-SM)				
		24.0	16-14			24		
	7D	24.0	10-10	Brown clayey silt, trace fine sand, gravel (ML)		25		WC=18
		26.0	11-11					
	8D	26.0	4-8	Brown fine to medium sand, trace gravel, silt				
		28.0	10-11	(SP-SM)				
	9D	28.0	7-12	Brown fine to coarse sand, trace gravel, silt				
		30.0	9-7	(SP-SM)		30		
	10D	30.0	12-10	Brown fine to coarse sand, trace silt, gravel				
		32.0	11-12	(SP-SM)				
					S			
14:15						35		
09:00	11D	35.0	2-2	Brown silty fine sand (SM)				
05-12-15		37.0	3-4					
Tuesday								
Sunny								
88°F						40		
	12D	40.0	1-4	Top: Do 11D (SM)		41		
		41.5	100/5.5"	Bot: Gray micaceous fine to medium sand, trace				
				silt (Decomposed Rock) (SP-SM)	DR			
								Easy drilling at 44'.
						45		
	1C	45.0	REC=100%	Medium hard to hard gray schistose gneiss,			*	*Coring time from 11:45
		50.0	RQD=85%	trace pegmatite, slightly weathered to				to 12:18.
				unweathered to intermediate to moderately				
				jointed, weathered joints	R			
						50		
	2C	50.0	REC=100%	Hard unweathered gray, green gneiss, some			*	*Coring time from 12:35
		55.0	RQD=90%	pegmatite, moderately jointed to jointed				to 12:45.

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT:	WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION:	NEW YORK, NEW YORK

BORING NO.	M-2
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	8.8±
RES. ENGR.	TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	**SAMPLE DESCRIPTION**	STRATA	DEPTH	CASING BLOWS	**REMARKS**
Cont'd 05-12-15 Tuesday Sunny 88°F, 14:00					R	**55**		Paused run near 2' at 13:10. End of Boring at 55'.
						60		WC=Water Content in percent of dry weight.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-2
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 8.8±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100% / 90%	1C	100% / 85%

TOP

Run 2C: J30°//F13; J40°U13; J5°x13; J0°x13

Run 1C: J5°xF13; J xF13; J10°//F13; J5°x13; J0°x 13

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-2
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 8.8±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK	X	MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM 0	TO 30	
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM	TO	
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM	TO	
OTHER							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	45	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-12-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-3
SHEET 1 OF 3
FILE NO. 12320
SURFACE ELEV. 9.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:30							DRILLED	Hand augered with
05-07-15							AHEAD	vacuum to 6'.
Thursday							4"	
Sunny								
70°F						5		
						10		
						15		
						20		
	1D	20.0	9-16	Brown, black clayey fine to medium sand (SC)				Medium sand & black
		22.0	19-14					3" band mid sample.
	2D	22.0	17-17	Brown fine to medium sand, trace gravel, silt				
		24.0	25-32	(SP-SM)				
	3D	24.0	6-4	Top: Brown clayey silt, trace fine sand (ML)		25		3D Top: WC=18
09:00		26.0	10-8	Bot: Brown f-m sand, tr silt, coarse sand (SP-SM)				
05-08-15	4D	26.0	8-11	Brown fine to coarse sand, trace gravel, silt				
Friday		28.0	10-9	(SP-SM)				
Sunny	5D	28.0	5-6	Brown silty fine sand (SM)				
75°F		30.0	7-6		S	30		
						35		
								Hard drilling from 37.5'
	1C	38.5	REC=88%	Medium hard slightly weathered gray gneissic		38.5		to 38.5'. Top of rock at
		43.5	RQD=52%	schist, jointed to closely jointed, weathered		40		38.5'. Mica & black rock
				joints				in wood.
	2C	43.5	REC=87%	Medium hard unweathered gray gneissic schist,	R			Hole collapsed; drilling
		48.5	RQD=76%	jointed		45		out before 2C.
13:00								
						48.5		End of Boring at 48.5'.
						50		WC=Water Content
								in percent of dry
								weight.

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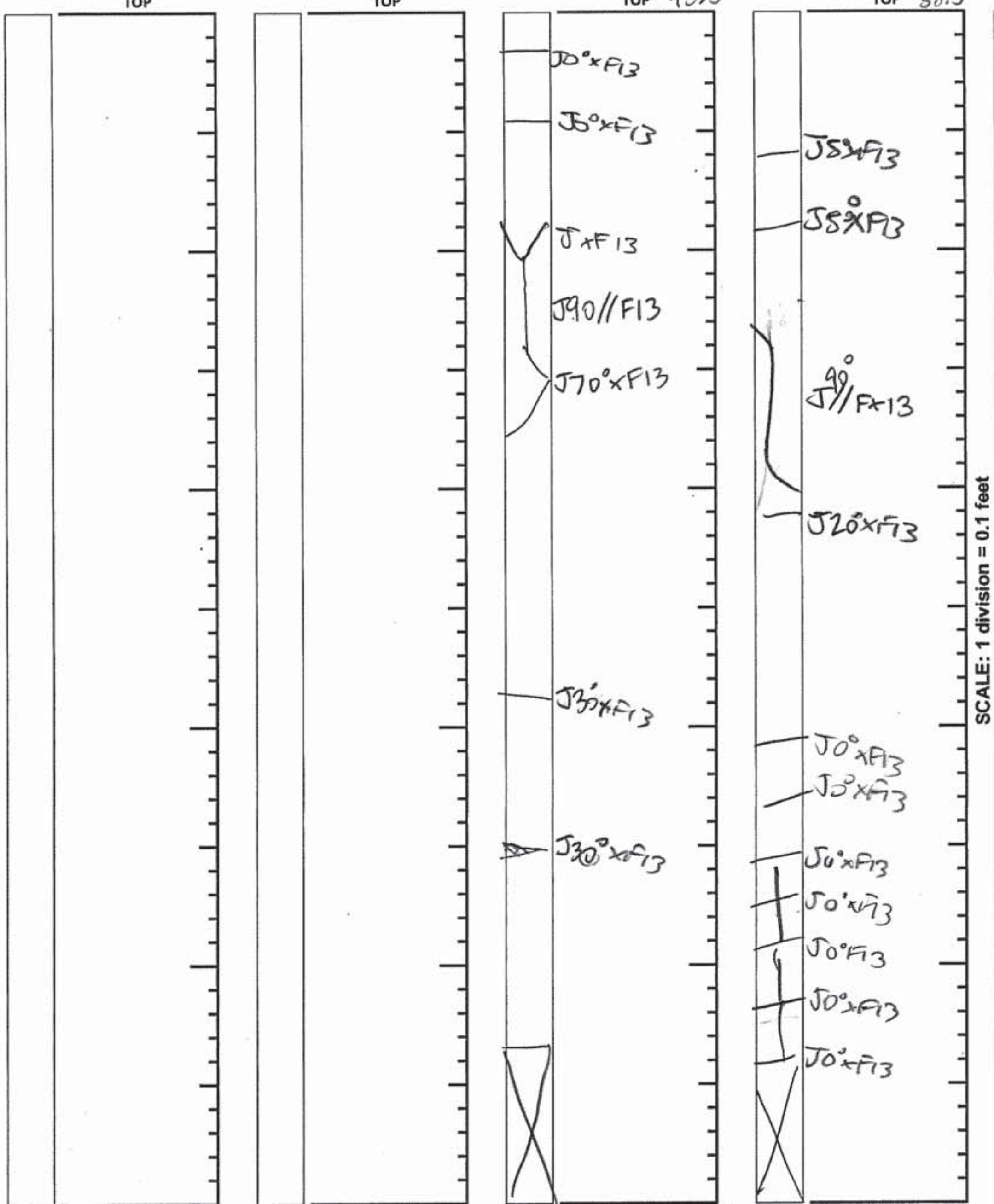
ROCK CORE SKETCH

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

BORING NO. M-3
SHEET 2 OF 3
FILE NO. 12320
SURFACE ELEV. 9.0±
RES ENGR. T. SANDIFORD

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	87% / 76%	1C	88% / 52%

TOP | TOP | TOP 43.5 | TOP 38.5



BOTTOM | BOTTOM | BOTTOM 48.5 | BOTTOM 43.5

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- θ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

JOINT SURFACE
- C - Curved
- I - Irregular
- S - Straight

JOINT CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-3
SHEET 3 **OF** 3
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 9.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER	TRACK							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	38.5	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-08-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT:	WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION:	NEW YORK, NEW YORK

BORING NO.	M-4P
SHEET 1 OF	5
FILE NO.	12320
SURFACE ELEV.	12.0±
RES. ENGR.	NATHAN SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:00	1D	0.0	23-14	Dark brown to black fine to coarse sand, some	**	0.25	DRILLED	**Pavement from 0' to
04-22-15		2.0	15-15	silt, gravel (Fill) (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	8-10	Brown silty fine to medium sand, some gravel			4"	
Clear		4.0	10-15	& brick fragments (Fill) (SM)				
60°F	3NR	4.0	7-6	No recovery		5		
		6.0	5-4					
	4D	6.0	4-10	Dark gray silt, some fine sand, gravel (ML)				
		8.0	10-6					
	5D	8.0	3-16	Brown fine to coarse sandy gravel, some silt				5D, 10D, 14D: REC=6"
		10.0	9-11	(Fill) (GM)		10		
	6D	10.0	7-6	Red brown brick fragments, some fine to				Spoon bouncing on
14:40		12.0	8-50/2"	coarse sand, some silt & wood fgmts (Fill) (SM)				wood; tip from 10' to
09:00	7D	12.0	52-5	Wood & gravel wash (Fill) (GP)				12'; REC=1"
04-23-15		14.0	7-7					
Thursday	8D	14.0	4-7	Dark gray coarse to fine sand, some gravel,	F	15		REC=4"
Clear		16.0	8-8	trace wood, silt, brick (Fill) (SP-SM)				
55°F								
						20		
	9D	20.0	4-11	Dark gray gravelly coarse to fine sand, trace				Casing moved down
		22.0	26-12	brick, silt (Fill) (GP)				with blows from 0" to
	10D	22.0	2-2	Dark gray fine to medium sand, gravel, trace				18".
		24.0	5-28	silt (Fill) (GP-GM)				9D, 14D: REC=6"
	11D	24.0	11-27	Dark gray fine to coarse sandy gravel, trace		25		
		26.0	17-11	silt, brick (GP-GM)				
	12D	26.0	5-9	Gray fine to coarse sand, some gravel, trace				
		28.0	12-18	silt (SP-SM)		28		
	13D	28.0	11-12	Red brown coarse to fine sand, some gravel,				
		30.0	11-11	trace silt (SP-SM)		30		
	14D	30.0	1-1	Red brown fine to coarse sand, trace silt				
		32.0	2-9	(SP-SM)				
						35		
	15D	35.0	3-3	Red brown silty fine sand varved with some				
		37.0	8-7	brown silt layers (SM&ML)				
					S			
						40		
	16D	40.0	4-4	Brown silty fine sand (SM)				
		42.0	5-5					
						45		
	17D	45.0	6-7	Top 15": Red brn fine sand, sm silt, tr mica (SM)				
		46.9	10-50/5"	Bot 3": Gray brn f-m sand, tr silt (DR) (SP-SM)		46.6		
	1C	47.0	REC=79%	Intermediate slightly weathered gray gneissic	DR	48		
		54.0	RQD=14%	schist, broken to closely jointed, iron stained				
				& weathered joints	R	50		

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BORING NO. M-4P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-4P
SHEET 2 OF 5
FILE NO. 12320
SURFACE ELEV. 12.0±
RES. ENGR. JAMES BRICKMAN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	**SAMPLE DESCRIPTION**	STRATA	DEPTH	CASING BLOWS	**REMARKS**
Cont'd								
04-23-15					R		*	*Coring time not taken.
Thurs., Clear								Inspecting two rigs.
55°F, 14:00						54		End of Boring at 54'.
						55		
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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BORING NO. M-4P

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ROCK CORE SKETCH

BORING NO. M-4P
SHEET 3 OF 5
FILE NO. 12320
SURFACE ELEV. 12.0±
RES ENGR. J. Brickman

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				1C Con'd	79/14	1C	79/14

TOP

Column 3 (RUN 1C):
Broken
J30°XFI3 w/jt
J45°//FI3
Broken

Broken
J90°XFI3 w/jt fe-st
Broken
J30°XFS3
J30°//FS3
J30°//FS2
J45°//FS2
J45°XFI3
J30°//FS2
J20°XFI3
J20°XFS3
J10°XFI3 w/jt fe-st
J0°XFI3 w/jt fe-st
Broken

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

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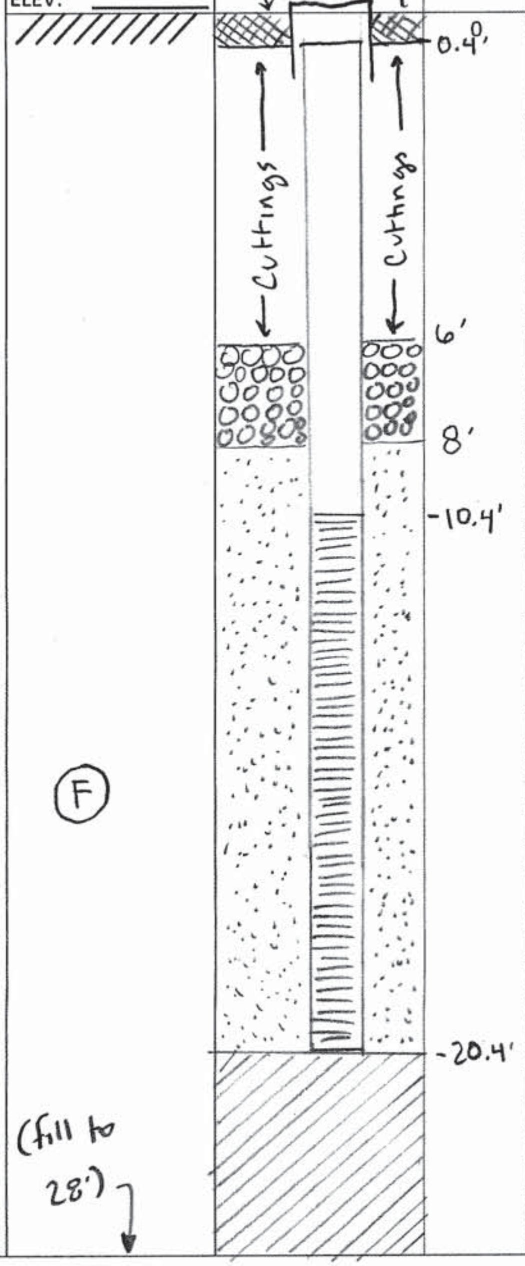
PIEZOMETER RECORD

PIEZOMETER OR BORING NO. M-4P
SHEET 4 OF 5
FILE NO. 12320
INSTALLATION DATE 4-24-15
RES ENGR. J. Brickman

PROJECT: W 18th - 19th St / 10th Ave
LOCATION: Ctr of site, just E of highline (see BLP)
PIEZOMETER LOCATION: New York, NY

☐ SEE SKETCH ON BACK

STRATA	PIEZOMETER INSTALLATION DETAILS	DEPTH (FT)
GROUND SURFACE ELEV.		AC



PIEZOMETER TYPE PVC Std. Pipe

INTAKE POINT
depth to bottom, ft = 20.4'
depth to top, ft = 10.4'
length, ft = 10' = L
diameter, in = 2', ft = 0.167 = 2R

STANDPIPE/RISER
elevation of rim, ft =
diameter, in = 2', ft = 0.167 = 2r

READING TIME DATE	READING TIME CLOCK	DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
4/27/15	1108		11.7	over weekend
4/29/15	1115		12.4	After flushing
4/30/15	1300		11.7	
5/5/15	1300		11.7	
5/6/15	1200		11.8	
5/11/15	1100		11.7	
5/15/15	1030		11.9	
5/22/15	1350		11.9	
5/26/15	1500		12.0	

SAND	GRAVEL	BENTONITE	GROUT

GROUND SURFACE ELEV.

PIEZOMETER NO. M-4P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-4P
SHEET 5 **OF** 5

PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	12.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	45
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER									

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES / NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED X YES NO SKETCH SHOWN ON SEE SHEET NO. 4

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	7	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINIC PEPE HELPERS GEORGE RAYMOND
REMARKS PIEZOMETER INSTALLED.
RESIDENT ENGINEER NATHAN SEGUIN/JAMES BRICKMAN DATE 04-23-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-5
SHEET 1 OF 3
FILE NO. 12320
SURFACE ELEV. 10.0±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00							DRILLED	Vacuum excavated to
05-14-15							AHEAD	5'.
Thursday							4"	Advanced unsampled
Sunny								6' to 20'.
65°F						5		Casing shifting East
								at 4'. Driller will not
								pull & realign.
					F	10		
						15		
						20		
	1D	20.0	2-3	Brown silty fine sand, trace mica (SM)				
		22.0	2-4					
	2D	22.0	4-4	Do 1D (SM)				
		24.0	6-6					
	3D	24.0	2-4	Brown clayey silt varved with trace light brown		25		
		26.0	4-6	silty clay (ML)				
	4D	26.0	6-3	Brown silty fine sand, trace mica (SM)				
		28.0	5-8					
	5D	28.0	3-5	Do 4D (SM)				
		30.0	5-7		S	30		
						35		
								Advanced unsampled
								to top of rock at 40'.
								Soft rock at 38'.
								Core to realign at
						40		40' at 12:00.
	1C	40.0	REC=93%	Medium hard slightly weathered to unweathered			*	*Coring time from
		45.0	RQD=88%	gray gneissic schist to schistose gneiss, jointed				12:05 paused at 12:10,
				to iron stained & weathered joints				12:12 to 12:40.
								Slow drilling; core
						45		bouncing side to side.
	2C	45.0	REC=100%	Medium hard unweathered gray gneissic schist			*	*Coring time from
		50.0	RQD=90%	to schistose gneiss, jointed to moderately	R			12:55 to 13:38; slow
				jointed to moderately jointed, weathered joints				drilling.
13:45						50		End of Boring at 50'.

MRCE Form BL-1

BORING NO. M-5

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ROCK CORE SKETCH

BORING NO. M-5
SHEET 2 OF 3
FILE NO. 12320
SURFACE ELEV. 10.0±
RES ENGR. T. SANDIFORD

PROJECT: W18th – W19th ST /10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100 % / 90 %	1C	93 % / 88%

TOP	TOP	TOP 45	TOP 40
		J0°xF13	J0°xF13
		J10°xF13	J0°xF13
		J0°xF13	J10°xF13
		J0°xF13	J0°xF13
		J40°xF13	J0°xF13
			J10°xF13
			J40°xF13
BOTTOM	BOTTOM	BOTTOM 50	BOTTOM 45

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-5
		SHEET	3 **OF** 3
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	10.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES / NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS.		AVERAGE FALL, IN.	
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	40	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.

DRILLER JOHN CAMPBELL HELPERS

REMARKS BOREHOLE GROUTED UPON COMPLETION.

RESIDENT ENGINEER TERESA SANDIFORD DATE 05-14-15

CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-6
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +12.0±
RES. ENGR. NATHAN SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:30	1D	0.0	49-13	Black fine to coarse sand, some silt, trace	**	0.25	DRILLED	**Pavement from 0' to
04-21-15		2.0	24-45	gravel, brick fragments (Fill) (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	39-66	Red brick, brown fine to medium sand, silt			4"	
Partly Sunny		4.0	72-80	(Fill) (SM)				
60°F	3D	4.0	9-54	Do 2D (Fill) (SM)		5		
		5.8	112-65/3"					
	4D	6.0	7-100	Do 2D (Fill) (SM)				
		7.0						
	5D	8.0	48-100/3"	Do 2D (Fill) (SM)				
		8.8				10		
	6D	10.0	50-100/1"	Brown silty fine to medium sand, some brick				
		10.6		fragments (Fill) (SM)				
					F			
						15		
	7D	15.0	115/3"	Do 6D (Fill) (SM)				REC=2"
		15.3						Difficult advancement
								with roller bit below 16'.
						20		
	8NR	20.0	100/3"	No recovery				
		20.3						Highly contaminated;
	9D	22.0	100/3"	Red brown brick fragments, some fine to				sheen/petroleum.
		22.3		coarse sand, silt (Fill) (SM)				
	10D	24.0	100/3"	Brown silty fine to medium sand, some gravel		25		Rig bounce from 24.5'
		24.3		(Fill) (SM)				to 25'.
	11NR	25.0	26-17	No recovery		27		
		27.0	7-10					
	12D	27.0	12-23	Red brown gravelly fine to coarse sand, some				Spoon sample split
		29.0	23-21	silt (SM)		30		at 29.5'.
	13D	29.0	29-8	Brown fine to coarse sand, trace silt, gravel				
		31.0	8-8	(SP-SM)				Spoon sample split
	14D	31.0	7-7	Top 1.5': Do 13D (SP-SM)				at 32.5'.
		33.0	8-6	Bot 0.5': Red brown silty fine to medium sand				
				(SM)		35		
09:00	15D	35.0	6-7	Red brown fine sandy silt (ML)				REC=6"
04-22-15		37.0	7-6		S			
Thursday								
Clear								
60°F						40		
	16NR	40.0	6-5	No recovery				
		42.0	7-9					
						45		Weathered rock in tip.
	17D	45.0	7-100/5"	Brown fine to coarse sand, some silt, gravel		45.9		
		45.9		(SM)			*	*Coring time at 7
	1C	47.0	REC=100%	Medium hard slightly weathered to unweathered				minutes per foot.
		52.0	RQD=58%	gray schistose gneiss, closely jointed to jointed,	R			
				iron stained & weathered joints		50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-6
SHEET 2 OF 4
FILE NO. 12320
SURFACE ELEV. +12.0±
RES. ENGR. NATHAN SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	**SAMPLE DESCRIPTION**	STRATA	DEPTH	CASING BLOWS	**REMARKS**
Cont'd								
04-22-15							*	*Coring time from 12
Thursday	2C	52.0	REC=100%	Medium hard slightly weathered gray schistose				to 13 minutes per foot.
Clear		54.0	RQD=0%	gneiss, broken to closely jointed, Fe & WJts	R		*	*Coring time at 5
60°F	3C	54.0	REC=100%	Medium hard slightly weathered to unweathered		55		minutes per foot.
		57.0	RQD=90%	gray schistose gneiss to gneissic schist,				
11:50				jointed, iron stained joints		57		End of Boring at 57'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-6
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. +12+/-
RES ENGR. N. SEGUIN

PROJECT: W 18th - W 19th ST. /10th AVE
LOCATION: NEW YORK, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100%/0%	1C	100%/58%
				3C	100%/90%		

TOP | TOP | TOP 52 | TOP 47

Run 2C/3C (TOP 52 – BOTTOM 57):
J98° // FS2 sl fe jt
J10° x FS3
J10° x FS3
J10° x FI3 fe + w jts
BOT 2C
TOP 3C
J10° x FS2 fe + w jt
J10° x FI2
J15° x I3
J60° x FI3
J60° x FI3
J15° x FS3
BOT 3C

Run 1C (TOP 47 – BOTTOM 52):
J0° x FS3
J0° x FS3 fe jt
J10° x FS3 fe jt
J FI3 60° // F
J15° x FS3
J10° x FS3
J0° x FS3
J10° x FI3 fe jt
J15° x FS2 Fe jt
J0° x FS3
J0° x FS3
J80° // FS2
J15° // FS3
BOT 1C

BOTTOM | BOTTOM | BOTTOM 57 | BOTTOM 52

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-6
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	+12.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES	NO	
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 40
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES / NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER THERESA SANDIFORD DATE 04-22-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-7
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 8.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:00							DRILLED	
05-01-15							AHEAD	
Friday							4" 3"	
Cloudy								
55°F						5		
	1D	6.0	5-5	Brown, tan gravel (GP)				1D, 4D: REC=1"
		8.0	4-4		F			
	2D	8.0	4-3	Brown, tan fine to coarse sandy gravel, trace				REC=2"
		10.0	3-3	silt (GP-GM)		10		
	3D	10.0	7-5	Brown gravelly fine to coarse sand, some silt				
		12.0	3-5	(SM)				
	4D	12.0	2-7	Black gravel, trace fine to coarse sand (GP)				
		14.0	5-7					
						14.5		
	5D	15.0	19-7	Stiff gray organic silty clay, trace shells, fine				WC=53
		17.0	4-3	sand (OH)				
					O			
						20		
	6D	20.0	7-11	Stiff gray organic silty clay, some fine sand (OH)				WC=36
		22.0	15-19			22		Blows from driller.
	7D	22.0	11-9	Brown fine to medium sand, some silt, trace				
		24.0	11-11	coarse sand (SM)				Cobbles spun from
	8D	24.0	8-8	Brown fine to medium sand, trace silt (SP-SM)		25		10:40 to 12:00.
		26.0	9-8					Blows from driller.
	9D	26.0	10-9	Do 8D (SP-SM)				Blows from driller.
		28.0	9-9					
	10D	28.0	6-8	Brown, green silt, some fine sand (ML)				
		30.0	6-7			30		
	11D	30.0	9-10	Brown fine to coarse sand, some silt, trace				
		32.0	9-9	gravel, clay (SM)				
						35		
	12D	35.0	6-17	Brown gravel, trace fine to coarse sand (GP)				
		37.0	14-10					
09:00					S			
05-04-15								
Monday						40		
Sunny	13NR	40.0	26-13	No recovery				
80°F		42.0	17-12					
						45		
	14D	45.0	8-5	Brown silty fine sand, trace clay (SM)				
		47.0	5-8					
						50		
	15D	50.0	5-4	Brown, red brown silty fine sand, trace mica				
		52.0	5-5	(SP)				

BORING NO. M-7

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-7
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	8.9±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 05-04-15 Monday Sunny 80°F					S	55	DRILLED AHEAD 3"	
	16D	55.0 57.0	8-5 6-8	Do 15D (SM)				Hard drilling at 58'.
						60		3" Casing to 60'.
	1C	60.0 65.0	REC=92% RQD=83%	Medium hard slightly weathered to unweathered gray gneissic schist, closely jointed to jointed, slightly weathered joints	R		*	*Coring time from 12:55 to 13:15 at 4 minutes per foot.
						65		
	2C	65.0 70.0	REC=100% RQD=80%	Medium hard unweathered gray schistose gneiss & gneissic schist, closely jointed to jointed, slightly weathered joints				Did not get core times; covering two rigs.
14:30						70		End of Boring at 70'.
								WC=Water Content in percent of dry weight.
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-7

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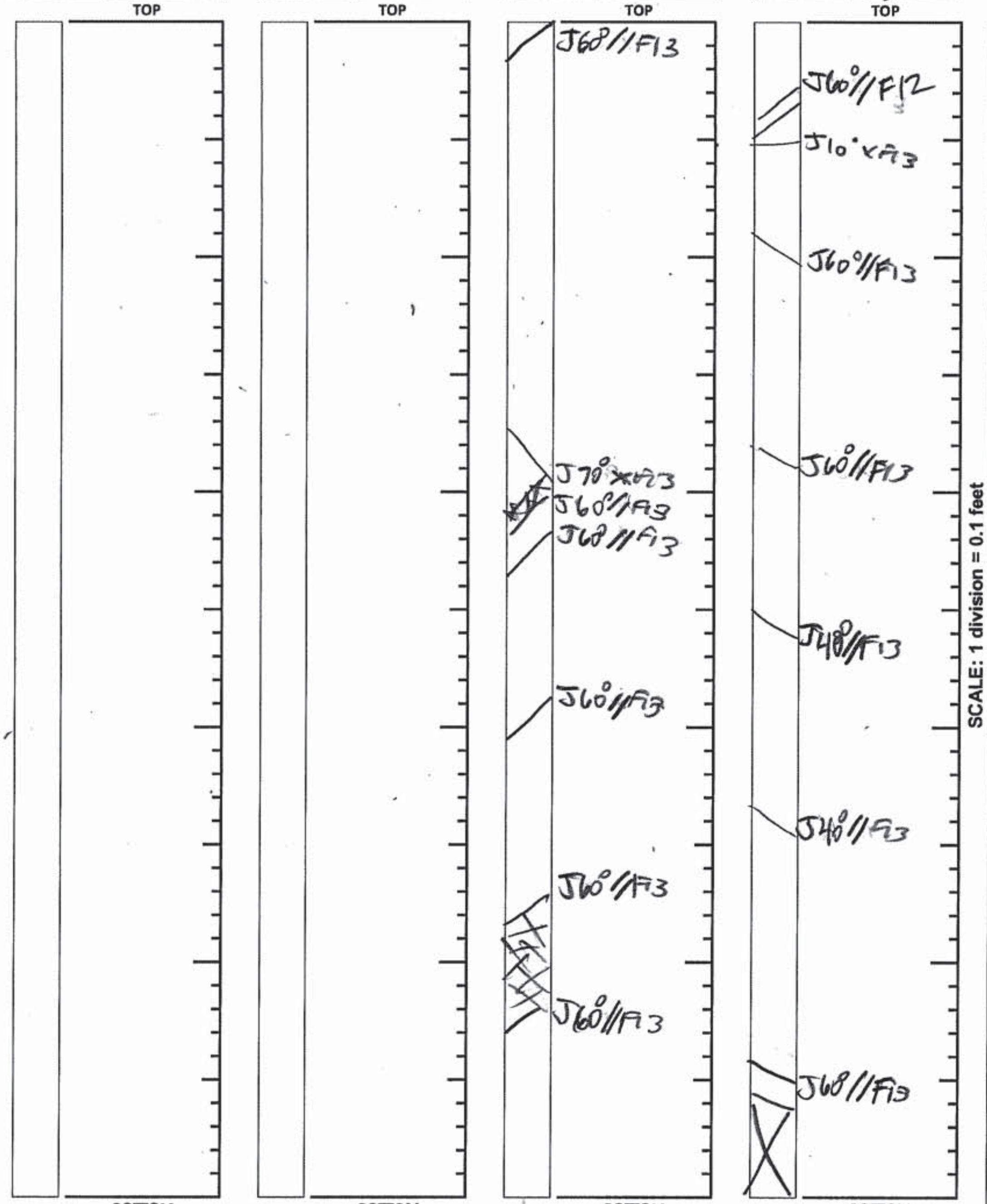
ROCK CORE SKETCH

BORING NO. M-7
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 8.9±
RES ENGR. T. SANDIFORD

PROJECT: W 18th St / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT See BLP
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100 % / 80 %	1C	92 % / 83 %

TOP TOP TOP TOP



BOTTOM BOTTOM BOTTOM BOTTOM

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- Θ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

JOINT SURFACE
- C - Curved
- I - Irregular
- S - Straight

JOINT CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-7
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 8.9±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK		MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM 0	TO 40	
SKID		HYDRAULIC	X	DIA., IN. 3	DEPTH, FT. FROM 0	TO 60	
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM	TO	
OTHER	TRACK						

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	60	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS CHRIS RUBAN
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-04-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-8
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 9.6±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:00 04-30-15 Thursday Sunny 60°F							DRILLED AHEAD 4"	Drove casing to 20'.
						5		
						10		
						15		
						20		
	1D	20.0	8-6	Red brown fine to coarse sandy gravel, trace				REC=2"; no contami-
		22.0	7-5	silt (GP)				nation from 20' to 30'.
	2D	22.0	8-7	Red brown fine to coarse sand, some gravel,				
		24.0	7-6	trace silt (SP-SM)				
	3D	24.0	4-5	Red brown fine to coarse sand, trace gravel,		25		
		26.0	6-7	silt (SP-SM)				
	4D	26.0	8-7	Red brown silty fine sand, trace mica (SM)				
		28.0	10-10					
	5D	28.0	17-12	Do 4D (SM)				
		30.0	10-9			30		
						35		
					S			
						40		
						45		
						50	*	*Coring time from
	1C	50.0	REC=100%	Medium hard slightly weathered gray gneissic	R			13:28 to 13:44 at 3.2
		55.0	RQD=83%	schist, moderately jointed to jointed, WJts				minutes per foot.

MRCE Form BL-1

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-8
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	9.6±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 05-20-15 Wednesday Partly Sunny 65°F					R	55		
	2C	55.0 60.0	REC=85% RQD=58%	Top 1.5": Do 1C Bot: Hard unweathered gray pegmatite, moderately jointed			*	*Coring time from 14:00 to 14:28 at 5.6 minutes per foot.
14:30						60		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-8
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 9.6 ±
RES ENGR. T.SANDIFORD

PROJECT: W 18th St - W 19th St / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	85% / 88%	1C	100% / 83%

Column 3: TOP 55
J40°xFI3
J60°//FI3
J60°//FI3
J60°//FI3
J60°//FI3
J10° x FI3
J20°xUFI3
60 BOTTOM

Column 4: TOP 50
J0°xFI3
WJT
J10°xFI3
J70°//FI2
J0°xFI3
J40°xFI3
BOTTOM 55

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-8
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	9.6±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO			
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER	TRACK								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES ☐ NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	☐ YES X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. ______ AVERAGE FALL, IN. ______
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED ☐ YES X NO SKETCH SHOWN ON ______

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	50	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR: AQUIFER DRILLING & TESTING CO., INC.
DRILLER: DOUG WOOD HELPERS: ______
REMARKS: BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER: TERESA SANDIFORD DATE: 04-30-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: ______

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-9
SHEET 1 OF 3
FILE NO. 12320
SURFACE ELEV. 8.8±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:45							DRILLED	Hand auger to 1.5'.
05-11-15							AHEAD	Vacuum excavated to
Monday							4"	1.5'. Roller bit slowly
Sunny								through brick obstruc-
50°F	1D	4.0	5-3	Brown, red fine to coarse sand, some gravel,		5		tion.
		6.0	2-2	clay, trace brick fragments (SC)				Harder drilling at 3.5'.
	2D	6.0	3-3	Do 1D (SC)				Wash shows brick &
		8.0	4-4		F			gravel pieces; 4'
	3NR	8.0	16-5	No recovery				softened.
		10.0	4-2			10		1D: REC=6"
	4D	10.0	1-1	Brown clayey fine to coarse sand, trace gravel				2D: REC=2"
		12.0	1-3	(SC)				4D: REC=3"
						15		
	5D	15.0	2-2	Black, brown gravelly organic silty clay (OH)				
		17.0	8-11					
						20		
	6D	20.0	7-7	Brown black clayey silt, some fine sand (ML)				1" Coarse gravel & 2"
14:45		22.0	7-11					medium sand at top of
09:00	7D	22.0	12-11	Interlayered brown fine to medium sand, some				sample.
05-12-15		24.0	10-8	silt & fine to coarse sand, trace silt (SM&SP-SM)				6D: WC=19
Tuesday	8D	24.0	6-8	Brown black fine to coarse sand, trace silt		25		Top had 1" band of
Sunny		26.0	9-12	(SP-SM)				silty clay.
86°F	9D	26.0	4-5	Brown fine to coarse sand, trace silt (SP-SM)				
		28.0	9-12		S			
	10D	28.0	11-11	Brown clayey fine sand, trace silt, gravel (SM)				REC=1"
		30.0	11-12			30		
	11D	30.0	9-7	Brown silty fine sand varved with some clayey				
		32.0	7-10	silt (SM&ML)				
						35		
	12D	35.0	1-2	Red brown silty fine sand (SM)				WC=Water Content
		37.0	4-8					in percent of dry
								weight.
						39.5		Hard drilling at 39.5'.
	13D	40.0	100/1"	Gray micaceous fine to medium sand, trace	DR	41	*	1C: *Coring time from
		40.1		silt (Decomposed Rock) (SP-SM)				12.58 to 13:11 at 8.6
	1C	41.0	REC=83%	Medium hard unweathered to slightly weathered				minutes per foot.
		42.5	RQD=50%	gray gneissic schist, jointed to MdJtd				At 13:11, core barrel
	2C	42.5	REC=98%	Do 1C		45		jammed.
		46.0	RQD=98%		R		*	2C: *Coring time from
	3C	46.0	REC=97%	Do 1C				13:25 to 13:40 at 4.3
		51.0	RQD=87%					minutes per foot.
							*	3C: *Coring time from
						50		13:51 to 14:02 at 2.2
14:00						51		minutes per foot.
								End of Boring at 51'.

MRCE Form BL-1

BORING NO. M-9

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
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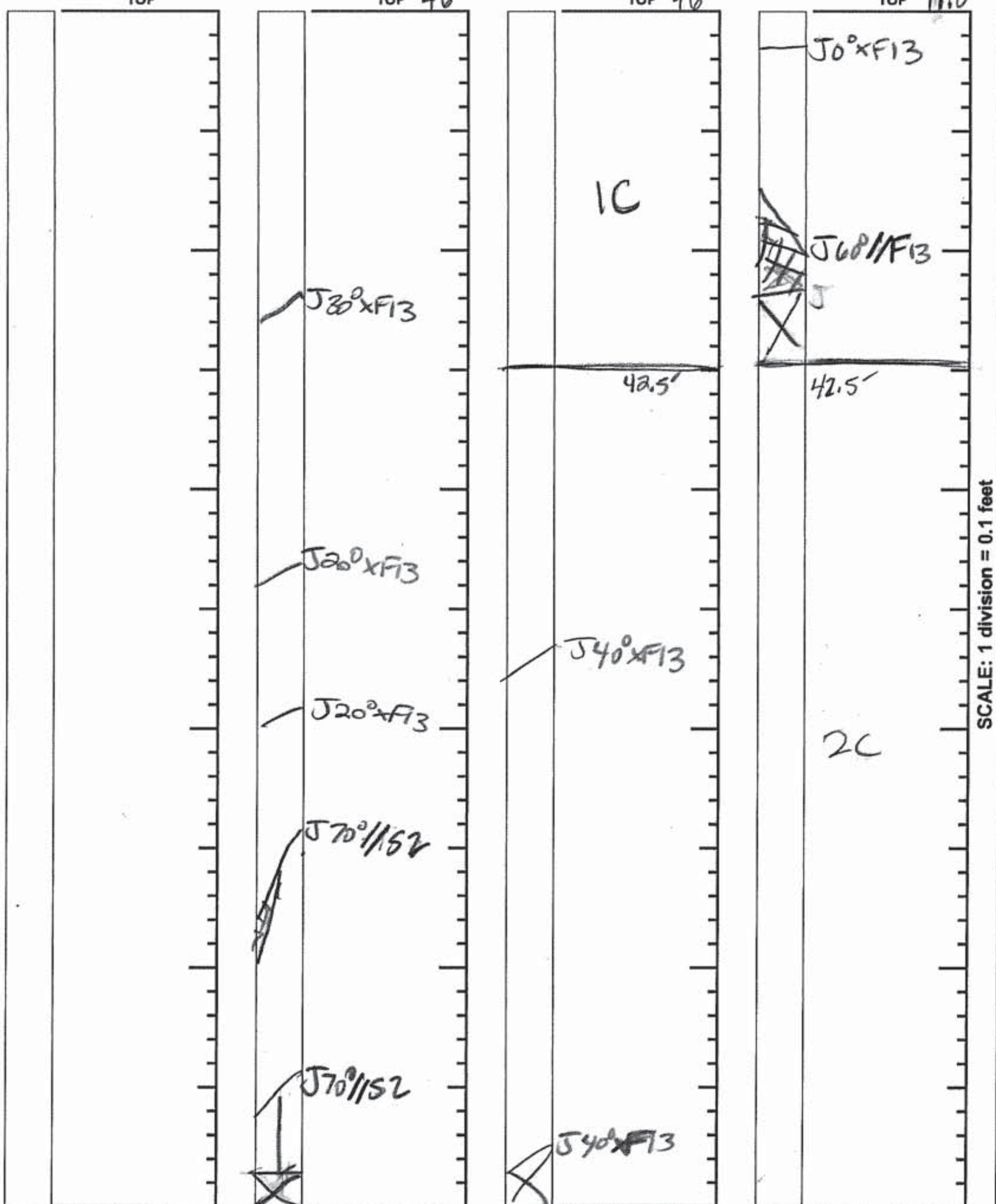
www.mrce.com

ROCK CORE SKETCH

BORING NO. M-9
SHEET 2 OF 3
FILE NO. 12320
SURFACE ELEV. 8.8±
RES ENGR. T. SANDIFORD

PROJECT: W 18th – W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
		3C	97 % / 87 %	2C	98 % / 98 %	1C	83 % / 50 %
TOP		TOP 46		TOP 46		TOP 41.0	



BOTTOM | BOTTOM 51 | BOTTOM 46 | BOTTOM 46

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-9
		SHEET	3 **OF** 3
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	8.8±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES [ ] NO			
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER	TRACK							

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES [ ] NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	[ ] YES [X] NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. ______ AVERAGE FALL, IN. ______
SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON ______

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	41	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-12-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-10
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 14.0±
RES. ENGR. J. BRICKMAN/T. SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
14:00	1D	0.0	27-18	Black fine to coarse sand, some silt, trace gravel,	**	0.33	DRILLED	**Asphalt from 0' to
04-23-15		2.0	28-31	brick (SM)			AHEAD	0.33'.
Thurs., Clear	2D	2.0	20-24	Gray fine to coarse sand, some silt, trace			4"	
55°F, 14:15		4.0	20-21	gravel (SM)				
11:30	3D	4.0	13-9	Gray & brown fine to coarse sand, some silt,		5		3D, 5D, 8D: Petroleum
04-24-15		6.0	10-10	trace gravel (SM)	F			odor.
Friday	4D	6.0	10-14	Gray fine to coarse sand, some silt, gravel (SM)				
Clear		8.0	15-18					
50°F	5D	8.0	9-16	Gray fine to coarse sand, some gravel, silt				
		10.0	62-33	(SM)		10		
	6D	10.0	17-21	Gray fine to coarse sand, some gravel fragments,				
		12.0	41-22	trace silt (SP-SM)				
						15		
	7D	15.0	12-14	Gray gravel fragments, some fine to coarse				REC=3"
		17.0	12-10	sand, trace silt (GP)	S			
14:00						20		
09:15	8D	20.0	100/4"	Brown fine to coarse sand, some gravel, trace				
04-27-15		20.3		clayey silt (SP-SM)				Wood pieces from 22'
Monday	9D	22.0	15-73	Brown fine to medium sand, some gravel, silt				to 24'.
Cloudy		24.0	50-17	(SM)		24		
60°F	10D	24.0	41-60	Red brown fine to coarse sand, some gravel,		25		
		26.0	36-34	silt (SM)				
	11D	26.0	27-21	Do 10D (SM)				
		28.0	20-39					
	12D	28.0	15-25	Do 10D (SM)				
		30.0	20-20			30		
	13D	30.0	10-15	Brown fine to medium sand, trace silt (SP-SM)				
		32.0	15-17					
						35		
	14D	35.0	8-9	Do 13D (SP-SM)				
		37.0	9-13		S			
						40		
	15D	40.0	4-7	Brown fine sand, some silt, trace mica (SM)				
		42.0	11-11					
						45		
	16D	45.0	WH-2	Brown silty fine sand, trace mica (SM)				
		47.0	4-7					
	1C	48.0	REC=92%	Medium hard slightly weathered gray gneissic		48		Hard drilling at 48'.
		53.0	RQD=92%	schist, jointed, iron stained joints			*	*Coring time between
					R	50		13:06 to 13:20 at 2.8
								minutes per foot.

MRCE Form BL-1

BORING NO. M-10

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-10
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	14.0±
RES. ENGR.	J. BRICKMAN/T. SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-27-15 Monday Cloudy 60°F								Coring time not taken; covering two rigs.
	2C	53.0	REC=100%	Medium hard unweathered gray gneissic schist,	R			
		58.0	RQD=88%	jointed		55		
14:00						58		End of Boring at 58'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-10
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 14.0±
RES ENGR. T. SANDIFORD

PROJECT: W 18TH - W 19th ST / 10 TH AVE
LOCATION: NEW YORK, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100% / 100%	1C	92% / 92%

TOP

Run 2C (top to bottom):
- J30°xF13
- J45°xF13
- J40°xF13
- J0°xF13
- J0°xF13
- J45°xF13

Run 1C (top to bottom):
- J20°xF13
- J20°xF13
- J45°xF13
- J45°xF13
- J30°xF13
- J20°xF13

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-10
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	14.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER	TRACK (CME)							

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES / NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. ______ AVERAGE FALL, IN. ______
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE	OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL	OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	48	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG/DOMINICK PEPE HELPERS LEO/GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER JAMES BRICKMAN/TERESA SANDIFORD DATE 04-27-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-11
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 11.8±
RES. ENGR. N. SEGUIN/J. BRICKMAN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:30	1D	0.0	35-51	Dark brown to black silty fine to coarse sand,	**	0.25	DRILLED	**Pavement from 0' to
04-22-15		2.0	34-22	some gravel, trace brick fragments (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	12-20	Red brick & fine to coarse sand, some gravel,			4"	
Clear		3.5	47-25/0"	silt (SM)	F			
65°F	3D	4.0	11-16	Red brown fine to coarse sand, trace brick,		5		REC=6"
		6.0	21-15	silt (SP-SM)				
	4D	6.0	6-10	Top: Red brn f-c sand, some silt, gravel (SM)		7		4D, 10D: Spoon sample
		8.0	6-9	Bot: Brown silty fine sand, trace gravel (SM)				split.
	5D	8.0	11-11	Brown silty fine sand, some gravel (SM)				
		10.0	7-8			10		
	6D	10.0	6-5	Do 5D (SM)	S			
		12.0	6-6					
						13.5		
						15		
	7D	15.0	3-2	Dark gray to brown clayey silt, some fine sand				
		17.0	2-3	(ML)				
					M			
						20		
	8D	20.0	2-1	Dark gray clayey silt, some fine sand, trace				
		22.0	1-3	gravel (ML)		22		
	9D	22.0	4-6	Dark gray gravelly fine to coarse sand, some				
		24.0	7-11	silt (SM)				
	10D	24.0	7-11	Dark gray fine to medium sand, some silt, trace		25		
		26.0	29-29	gravel (SM)				
	11D	26.0	14-13	Red brown fine to medium sand, some silt				
		28.0	17-19	(SP-SM)				
	12D	28.0	13-15	Red brown fine to coarse sand, some gravel,				
		30.0	21-18	trace silt (SP-SM)		30		
	13D	30.0	11-9	Top: Brown fine to coarse sand, some gravel,				Highly contaminated
		32.0	8-9	silt (SM)				spoon sample split.
				Bot: Brown silty fine sand (SM)				
					S			
						35		
	14D	35.0	8-9	Brown silty fine sand (SM)				
14:40		37.0	10-11					
09:00								
04-23-15								
Thursday						40		
Clear	15D	40.0	7-11	Brown silty fine sand (SM)				
55°F		42.0	12-12					
						45		Intermediate rock from
	16D	45.0	69-50/1"	Gray brown micaceous fine to medium sand,	DR	46		46' to 48.5', medium
		45.6		some silt (Decomposed Rock) (SM)			3.5*	hard below.
	1C	46.0	REC=92%	Medium hard slightly weathered to unweathered			4*	*Coring time in
		51.0	RQD=87%	gray gneissic schist, schistose gneiss, jointed	R		4*	minutes per foot.
				to blocky, iron stained & weathered joints		50	5*	
							3*	

MRCE Form BL-1

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-11
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	11.8±
RES. ENGR.	JAMES BRICKMAN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd					DR	51		
04-23-15	2C	51.0	REC=100%	Hard unweathered gray schistose gneiss,			-	- No coring time taken.
Thursday		56.0	RQD=100%	massive			-	
Clear					R		-	
55°F						55	3.5*	
12:00						56	3*	End of Boring at 56'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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14 Penn Plaza - 225 West 34th Street
New York, NY 10122
T: 917 339-9300 F: 917 339-9400
www.mrce.com

ROCK CORE SKETCH

BORING NO. M-11
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 11.8±
RES ENGR. J. Brickman

PROJECT: W 18th-19th St / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100/100	1C	92/87

TOP

Run 1C:
80//FS2
fe+wjts
J30°xFI2
wtjt fe-st
J10°xFI3
wtjt
hiwjt+
fe ut
70//FS2
M. hard
Slw
J30°xFI3
wjt

Run 2C:
J60°xFI
3

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-11
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 11.8±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO	
TRUCK		MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM	0	TO
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER	TRACK						

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ
WITH 2' AWJ ABV SPOON

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING LIN. FT. 46 NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING LIN. FT. NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK LIN. FT. 10 OTHER:

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER NATHAN SEGUIN/JAMES BRICKMAN DATE 04-23-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-12
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 11.0±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00	1D	0.0	32-11	Gray fine to coarse sand, some silt, trace gravel	**	0.33	DRILLED	**Asphalt from 0' to
04-27-15		2.0	17-15	(SM)			AHEAD	0.33' at surface.
Monday	2NR	2.0	11-13	No recovery			4"	No recovery.
Cloudy		4.0	14-11					
50°F	3D	4.0	7-7	Gray fine to coarse sand, some gravel, silt (SM)		5		
		6.0	5-6					
	4D	6.0	4-5	Gray fine to coarse sand, some gravel, silt (SM)				4D, 13D: REC=1"
		8.0	5-3					
	5D	8.0	9-12	Gray & red fine to coarse sand, some brick				REC=5"; brick in
		10.0	4-3	fragments, gravel, silt (Fill) (SM)		10		sample.
	6D	10.0	1-1	Gray black fine to medium sand, some organic				Rig chatter; stopped
		12.0	2-1	clay (SC)				filling from 12:24 to
								11:27.
						15		
	7D	15.0	9-12	Gray black fine to medium sand, some gravel,	F			
		17.0	6-6	trace silt, mica (SP-SM)				
						20		
	8D	20.0	6-5	Gray, red fine to medium sand, some clay, brick				8D-10D: Petroleum
		22.0	3-6	fragments (SC)				odor.
	9D	22.0	100/5"	Gray to black fine to coarse sand, some gravel,				8D: REC=5"
		22.4		silt (SM)				9D: Spoon bouncing.
	10D	24.0	4-5	Do 9D (SM)		25		
		26.0	15-15					
	11D	26.0	12-13	Brown silt, trace fine to coarse sand (ML)				
		28.0	14-26					
	12NR	28.0	15-14	No recovery				
		30.0	14-9			30		
	13D	30.0	6-7	Gray gravel (GP)				
		32.0	9-6					
09:00								
04-28-15								
Tuesday						35		
Cloudy	14D	35.0	2-4	Red brown fine to medium sand, some silt,				
50°F		37.0	2-4	trace mica (SM)				
					S	40		
	15D	40.0	3-4	Brown to red brown silty fine sand, trace mica				
		42.0	3-4	(SM)				
						45		
	16D	45.0	2-1	Brown silty fine sand varved with trace fine sandy				
		47.0	2-3	silt (SM)				
						48.5		
					DR	50		
	17D	50.0	60-100/1"	Gray to black micacaceous fine to medium		51		REC=6"
		50.6		sand, trace silt (Decomposed Rock) (SP-SM)				

BORING NO. M-12

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-12
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	11.0±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								No coring time
04-28-15	1C	51.0	REC=92%	Medium hard unweathered gray gneissic				recorded; covering
Tuesday		56.0	RQD=78%	schist, closely jointed to jointed				2 rigs.
Cloudy								
50°F						55		
					R			
	2C	56.0	REC=79%	Hard unweathered gray schistose gneiss,				
		61.0	RQD=75%	moderately jointed				
						60		
14:00						61		End of Boring at 61'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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BORING NO. M-12

Mueser Rutledge Consulting Engineers
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ROCK CORE SKETCH

BORING NO. M-12
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 11.0±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10 AVE
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	79% / 75%	1C	92% / 78%

TOP

Run 2C: J40°xF13; J15°xF13 BROKEN; END OF RUN 60'

Run 1C: J30°xF13; J50°xF13; J50°xF13; J10°xF13; J10°xF13; J26°xF13; J60°xF13; J60°xF13

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-12
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	11.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO	
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	X YES / NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. ______ AVERAGE FALL, IN. ______
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE	OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL	OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	51	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS/DOMINIC PEPE HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-28-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-13
SHEET 1 OF 3
FILE NO. 12320
SURFACE ELEV. 9.3±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:00							DRILLED	Hand auger to 6'.
05-13-15							AHEAD	Vacuum excavated to
Wednesday							4"	6'.
Cloudy								Advanced unsampled
65°F						5		to 20'.
					F	10		
						15		
						20		
	1D	20.0	3-3	Brown silty fine sand, trace mica (SM)				
		22.0	3-3					
	2D	22.0	2-5	Do 1D (SM)				
		24.0	4-6					
	3D	24.0	2-3	Do 1D (SM)		25		
		26.0	4-4					
	4D	26.0	5-5	Do 1D (SM)				
		28.0	7-9		S			
	5D	28.0	6-7	Do 1D varved with trace silt (SM)				
		30.0	9-9			30		
								Chunky drilling at 33.5'.
								Advanced unsampled
						35		to 35'; top of rock.
	1C	35.0	REC=100%	Medium hard slightly weathered to unweathered			*	*Coring time from 12:15
		40.0	RQD=73%	gray gneissic schist to schistose gneiss,				to 12:34 at 3.8 minutes
				jointed to moderately jointed, weathered joints				per foot.
					R	40		
	2C	40.0	REC=100%	Hard unweathered gray schistose gneiss,			*	*Coring time from 12:45
		45.0	RQD=100%	moderately jointed to jointed				to 13:02 at 3.4 minutes
								per foot.
13:15						45		End of Boring at 45'.
						50		

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ROCK CORE SKETCH

BORING NO.	M-13
SHEET	2 OF 3
FILE NO.	12320
SURFACE ELEV.	9.3±
RES ENGR.	T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th AVE
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100% / 100%	1C	100% / 93%

Column	TOP	Sketch notes	BOTTOM
1	TOP		BOTTOM
2	TOP		BOTTOM
3	TOP 40'	J50°XF13; J0°xF13; J0°xFS3; J0°xFS3; J20°xF13	BOTTOM 45'
4	TOP 35'	J10°xFI3; J30°xFI3; J0°xFS2; J0°xFS3; J10°xFI3; J10°xFI3	BOTTOM 40'

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-13
SHEET 3 **OF** 3
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 9.3±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK	X	MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	35	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER JOHN CAMPBELL HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-13-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-14
SHEET 1 OF 2
FILE NO. 12320
SURFACE ELEV. 10.9±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE		BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:30 04-28-15 Tuesday Sunny 55°F							DRILLED AHEAD 4" 5"	Advanced unsampled to 20'.
						5		
						10		
						15		
						20		4" Casing to 20'.
	1D	20.0	2-3	Black, brown fine to medium sand, some silt,	S			1D-2D: Petroleum
		22.0	2-1	gravel (SM)				odor.
09:00 05-29-15 Wednesday Sunny 65°F, 10:00	2D	22.0	100/4"	Brown fine to coarse sand, some gravel, silt		22.4		5" Casing over top to
		22.4		(SM)				22.4'.
						25		Obstruction at 22.4' causing water pressure from spinning casing to cause leak in pavement 15' away.
						30		Cobbles observed in casing at 22.4'. Boring offset 11' North. End of Boring at 22.4'.
						35		
						40		
						45		
						50		

MRCE Form BL-1

BORING NO. M-14

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-14
SHEET 2 **OF** 2
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 10.9±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK	X	MECHANICAL		DIA., IN.	5	DEPTH, FT. FROM	0	TO 22.5
SKID		HYDRAULIC	X	DIA., IN.	4	DEPTH, FT. FROM	0	TO 20
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED: YES / X NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD

AUGER USED: YES / X NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED: YES / X NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	22.4	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINICK HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-14A
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 10.9±
RES. ENGR. TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30 04-29-15 Wednesday Sunny 65°F				Advanced down to 22' unsampled.			DRILLED AHEAD 4"	Spun 4" casing. Advanced down to 22' unsampled; offset 12' North of M-14.
						5		
						10		
						15		
						20		
						22		
	1D	22.0	4-7	Brown, black gravel, some fine to coarse				REC=4"
		24.0	10-12	sand, trace silt (GP)				
	2D	24.0	10-6	Brown, black medium to fine sand, trace		25		
		26.0	7-8	coarse sand, silt (SP-SM)				
	3D	26.0	4-4	Brown fine to coarse sand, trace gravel, silt				
		28.0	5-4	(SP-SM)				
	4D	28.0	4-5	Brown fine to medium sand, trace silt (SP-SM)				
		30.0	6-4			30		Casing to 30'. Clearing mud tub at 11:20.
						35		
					S			
						40		
						45		
14:45						49		Top of rock at 49'.
09:00	1C	49.0	REC=100%	Medium hard to hard slightly weathered to		50	*	*Coring time from 09:00
04-30, Thurs.		59.0	RQD=78%	unweathered gray gneissic schist, jointed to	R			to 09:55 at 5 minutes
Cldy., 55°F				moderately jointed, iron stained & WJts				per foot 10' core.

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-14A
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	10.9±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-30-15 Thursday Cloudy 55°F					R	55		
14:00						59		Boring offset 12' North of Boring Log M-14. End of Boring at 59'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-14A

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
T: 917 339-9300 F: 917 339-9400
www.mrce.com

ROCK CORE SKETCH

PROJECT: W 18th St - W 19th St / 10 Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

BORING NO. M-14A
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 10.9±
RES ENGR. T. SANDIFORD

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				1C (Cont)		1C	100% / 78%
TOP		TOP		TOP 54'		TOP 49'	

3'-8"
4±

Column 3 (TOP 54'):
J0°xF13
J45°xF13
J88//F52
J30°xF13
J45°xF13
J20°xF13
fc+WJt
Mechanical Break
BOTTOM 59'

Column 4 (TOP 49'):
J0°xF13
J20°xF13
J28xF13
J5°xF13
J5°xF13
J30°xF13
J60°xF13
J0°xF13
BOTTOM 54'

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-14A
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 10.9±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	49	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINICK HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-15
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +10.0±
RES. ENGR. L. LINCOLN/N. SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:30	1D	0.0	61-9	Black fine to coarse sand, some gravel, silt,	**	0.25	DRILLED	**Asphalt from 0' to
04-19-15		2.0	7-16	trace brick (Fill) (SM)			AHEAD	0.25'.
Sunday	2D	2.0	13-9	Black brown fine to medium sand, some			4"	Petroleum odor.
Clear		4.0	22-34	gravel, silt, trace brick (Fill) (SM)				
60°F	3D	4.0	2-6	Black fine to coarse sandy gravel, trace silt,		5		3D, 6D: REC=5"
		6.0	12-7	brick (Fill) (GP-GM)				
	4D	6.0	4-4	Black fine to coarse sand, some silt, trace				
		8.0	4-4	gravel (Fill) (SM)				
	5NR	8.0	9-5	No recovery				
		10.0	1-1			10		
	6D	10.0	WH/12"	Black fine to coarse sand, some clay (SC)				
		12.0	1/12"					
	7D	12.0	WH/24"	Dark brown fine to medium sand, trace silt,	F			
		14.0		clayey silt seams (SP-SM)				
						15		
	8D	15.0	1-2	Black fine to coarse sand, some gravel, trace				REC=3"
		17.0	1-4	silt (SP-SM)				
						20		
	9D	20.0	1-100/4"	Black fine to coarse sandy gravel, trace brick,				REC=4"
		22.0		silt (GP-GM)				
	10D	22.0	19-18	Brown fine to coarse sandy gravel, some silt				
		24.0	14-13	(GM)		24		
	11D	24.0	4-3	Brown silty fine sand varved with trace clayey	S	25		
		26.0	3-4	silt seams (SM)		26		
	12D	26.0	28-34	Brown fine sand, some silt varved with some	C			
		28.0	24-10	clayey silt (SM&ML)		28.5		
10:00	13D	28.0	4-12	Brown fine to coarse sandy gravel, trace silt				
04-20-15		30.0	8-7	(GP-GM)		30		
Monday	14D	30.0	6-4	Top: Red brown fine to coarse sand, some		31		Spoon sample split.
Rain		32.0	5-5	gravel, silt (SM)				
50°F				Bot: Red brown fine to medium sand, some				
				silt (SM)				
						35		
	15NR	35.0	4-5	No recovery				
		37.0	4-3					
					S	40		
	16D	40.0	2-3	Red brown fine sand, some silt (SM)				
		42.0	3-4					
						45		
	17D	45.0	6-5	Red brown silty fine sand (SM)				
		47.0	7-7					
						49		
						50		
	1C	50.0	REC=100%	Hard unweathered to slightly weathered gray	R		*	*Coring time at 4
		55.0	RQD=91%	gneissic schist, jointed to MdJtd, Fe & WJts				minutes per foot.

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-15
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	+10.0±
RES. ENGR.	L. LINCOLN/N. SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-20-15 Monday Rain 50°F					R	55		
	2C	55.0	REC=100%	Hard unweathered gray gneissic schist, blocky			*	*Coring time at 4
		60.0	RQD=97%					minutes per foot.
13:15						60		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-15

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
T: 917 339-9300 F: 917 339-9400
www.mrce.com

ROCK CORE SKETCH

BORING NO. M-15
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. +10±
RES ENGR. N. SEGUIN

PROJECT: W 18th - W 19th ST, /10th Ave.
LOCATION: NEW YORK, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
2C	100%/97%	1C	100%/91%				

Column 1 — TOP 55 2C
J60° X FS2
J45° X FS2
J60° X FS3
BOTTOM 60

Column 2 — TOP 50 1C
J60°//FS3
MB
J45° X FS3
J30° X FI3
J30° X FS3
MB BOT 1C
BOTTOM 55

Column 3 — TOP
BOTTOM

Column 4 — TOP
BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-15
SHEET 4 **OF** 4

PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. +10.0±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED		X YES		NO
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM 0	TO	50
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM	TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM	TO	
OTHER								

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	50	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER LYSANDRA LINCOLN/NATHAN SEGUIN DATE 04-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-16
SHEET 1 OF 2
FILE NO. 12320
SURFACE ELEV. +12.0±
RES. ENGR. ALEXANDRA PATRONE

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:15	1D	0.0	36-18	Brown fine to medium sand, some silt, trace	**	0.25		**Asphalt from 0' to
04-18-15		2.0	20-20	gravel, concrete, brick (Fill) (SM)	F	2		0.25'.
Saturday	2D	2.0	11-15	Do 1D (Fill) (SM)				
Clear		3.5	50/2"					
70°F	3D	4.0	50/2"	Red brick fragments (Fill) (GP-GM)	BRICK WALL	5		
		4.2						
								Hard drilling to 8'.
								Offset Boring.
12:30						10		End of Boring at 10'.
	4D	10.0	50/2"					
						15		
						20		
						25		
						30		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO.	M-16
SHEET	2 **OF** 2
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO.	12320
LOCATION	NEW YORK, NEW YORK
SURFACE ELEV.	+12.0±
BORING LOCATION	SEE BORING LOCATION PLAN
DATUM	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[ ] YES [X] NO		
TRUCK		MECHANICAL		DIA., IN.		DEPTH, FT. FROM	TO
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM	TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM	TO
OTHER	TRACK						

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	

DRILLING MUD USED [ ] YES [X] NO
DIAMETER OF ROTARY BIT, IN.
TYPE OF DRILLING MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	10	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.		OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS
REMARKS BOREHOLE OFFSET BACKFILLED.
RESIDENT ENGINEER ALEXANDRA PATRONE DATE 04-18-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-16A
SHEET 1 OF	4
FILE NO.	12320
SURFACE ELEV.	+12.0±
RES. ENGR.	A. PATRONE/L. LINCOLN/N. SEGUIN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
12:30							DRILLED	
04-18-15							AHEAD	
Saturday							4"	
Clear								
70°F					BRICK WALL	5		
						10		Drilled ahead to 10'.
	1D	10.0	16-10	Top 4": Red brick fragments (GP-GM)				1D, 4D: Petroleum
		12.0	4-6	Bot 2": Black fine to medium sand, some				odor.
				organic silt (Fill) (SM)	F			
						15		
	2D	15.0	WH-1	Black organic silty fine sand (SM)				
		17.0	1-2					
					S			
						20		
	3D	20.0	WH-2	Black fine to coarse sand, some silt (SM)				
14:40		22.0	5-14			22		
07:30	4D	22.0	14-25	Black to brown fine to coarse sand, some brick,	F			
04-19-15		24.0	96-66	gravel, silt (Fill) (SM)		24		
Sunday	5D	24.0	14-14	Black to brown, red brown silty fine to medium		25		
Clear		26.0	23-19	sand, trace gravel (SM)				
60°F	6D	26.0	22-26	Brown fine to coarse sand, some gravel, silt				
		28.0	38-21	(SM)				
	7D	28.0	7-8	Brown silty fine to medium sand, trace gravel	S			
		30.0	12-26	(SM)		30		
	8D	30.0	16-17	Brown silty fine sand (SM)				
		32.0	20-29					
						33.5		
						35		
	9D	35.0	7-14	Brown fine sandy silt varved with some silty fine	V			
		37.0	15-19	sand (ML&SM)				
						38.5		
						40		
	10D	40.0	16-14	Red brown coarse to fine sand, some gravel,				
		42.0	14-13	trace silt (SP-SM)				
					G			
						45		
	11D	45.0	17-16	Top: Red brown gravelly coarse to fine sand,		46		
		47.0	19-26	trace silt (SP-SM)				
				Bot 12": Red brown clayey silt, some fine sand				11D Bot: WC=27
				(ML)	V			
						50		
	12D	50.0	12-14	Red brown fine sandy silt, trace gravel (ML)				REC=2"
		52.0	15-21					

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-16A
SHEET 2 OF 4
FILE NO. 12320
SURFACE ELEV. +12.0±
RES. ENGR. A. PATRONE/L. LINCOLN/N. SEGUIN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-19-15 Sunday Clear 60°F					V	55		
14:30	13D	55.0	11-15	Red brown clayey silt varved with silt, some		56		
11:50		56.5	21-50/2"	fine sand (ML&SM)	**	56.5		**Till from 56' to 56.5'.
04-20-15 Monday Rain 55°F	1C	56.5	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time in 2
		61.5	RQD=84%	gneissic schist, trace pegmatite, blocky		60		minutes per foot.
	2C	61.5	REC=100%	Hard slightly weathered to unweathered gray	R		*	*Coring time in 7
		64.8	RQD=93%	pegmatite, trace gneissic schist, jointed				minutes per foot.
	3C	64.8	REC=100%	Hard slightly weathered to unweathered gray		65	*	*Coring time in 10
13:25		66.5	RQD=76%	pegmatite, moderately jointed		66.5		minutes per foot. End of Boring at 66.5'.
						70		WC=Water Content in percent of dry weight.
						75		
						80		
						85		
						90		
						95		
						100		

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
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ROCK CORE SKETCH

BORING NO. M-16A
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 12.0±
RES ENGR. J. Brickman (done after the fact)

PROJECT: W 18th / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100/93	1C	100/84
				3C	100/76		

TOP

J60°//FS2
J20°xUI3
J20°xUI3
J20°xUI3
RUN 2C
RUN 3C
J15°xUI3
J10°xUI3

GRAVEL (T)
J20°xFI3 w/ft
J30°xFI3
J20°xFI3
Broken

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-16A
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	+12.0±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK		MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM 0	TO 35	
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM	TO	
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM	TO	
OTHER	TRACK						

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	YES / X NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	
S-SAMPLER		TYPE OF DRILLING MUD	
CORE BARREL	NX DOUBLE BARREL	AUGER USED	YES / X NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE	OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL	OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	56.5	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR: AQUIFER DRILLING & TESTING CO., INC.
DRILLER: DOUG WOOD HELPERS:
REMARKS: BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER: ALEXANDRA PATRONE/THERESA SANDIFORD/NATHAN SEGUIN DATE 04-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MRCE Form BS-1 **BORING NO.** M-16A

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-17
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. +11.0±
RES. ENGR. A. PATRONE/L. LINCOLN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:30					**	0.25	DRILLED	**Asphalt from 0' to
04-18-15	1D	1.0	10-12	Black, gray, red, medium to fine sand, some			AHEAD	0.25'.
Saturday		3.0	19-32	brick, gravel, concrete, tr silt (Fill) (SP-SM)			4"	Petroleum odor from
Clear	2D	3.0	10-10	Black gravel, some fine to coarse sand, trace				0' to 35'.
70°F		5.0	8-12	silt (GP-GM)		5		2D, 11D: REC=6"
	3NR	5.0	7-8	No recovery				
		7.0	6-8					
	4D	7.0	5-3	Gray medium to fine sand, some silt, trace				
		9.0	4-4	gravel, brick (Fill) (SM)				
	5D	9.0	12-7	Gray fine to medium sand, some silt, trace		10		
		11.0	5-4	coarse sand, gravel (SM)	F			
	6D	11.0	4-2	Gray fine to coarse sand, some gravel, silt,				
		13.0	5-5	trace coarse sand (SM)				
						15		
	7NR	15.0	4-2	No recovery				
		17.0	4-9					
	8D	17.0	2-2	Black to red gravel & brick, trace fine to coarse				REC=2"
		19.0	5-8	sand, silt (Fill) (GP)				
						20		
	9D	20.0	5-50/2"	Black to red fine to coarse sand, trace brick,		20.5		Refusal at 20.8'.
		20.8		gravel, silt (Fill) (SP-SM)				Refusal at 22'.
	1CNR	20.8	REC=0%	No recovery	CONC			
		21.5				23		Drill ahead to 23'; rods
	10D	21.5	100/6"	Do 9D (Fill) (SP-SM)		25		drop.
		22.0						
	11D	23.0	13-19	Brown coarse to fine sand, some gravel, trace				REC=6"
		25.0	15-10	brick, concrete, silt (Fill) (SP-SM)				Safety hammer used
	12D	25.0	29-31	Black fine to medium sand, some gravel, trace	F			for Sample 12D.
		27.0	12-28	silt, coarse sand (Fill) (SP-SM)		30		
	13D	27.0	17-29	Brown black fine to medium sand, some silt,				
		29.0	12-12	trace coarse sand, gravel (SM)				
	14NR	29.0	12-10	No recovery		33		
		31.0	11-13					
						35		Switch mud at 35'.
	15D	35.0	7-7	Red brown fine sand, some silt (SM)				
14:00		37.0	8-12					
07:00								
04-19-15								
Sunday						40		
Clear	16D	40.0	4-5	Red brown silty fine to medium sand (SM)	S			
60°F		42.0	6-7					
						45		
	17D	45.0	4-7	Do 16D varved with trace clayey silt (SM)				
		47.0	9-13					
								Hard drilling at 48'.
						48.5		
						50		
	1C	50.0	REC=100%	Medium hard to intermediate slightly weathered	R			
		55.0	RQD=52%	gray gneissic schist, jointed to broken, Fe & WJts				

MRCE Form BL-1

BORING NO. M-17

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-17
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	+11.0±
RES. ENGR.	A. PATRONE/L. LINCOLN

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-19-15 Sunday Clear 60°F						55		
	2C	55.0 60.0	REC=100% RQD=48%	Intermediate to medium hard slightly weathered gray gneissic schist, broken to jointed, iron stained & weathered joints	R			
09:30						60		End of Boring at 60'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MUESER RUTLEDGE CONSULTING ENGINEERS

ROCK CORE SKETCH

BORING NO. M-17
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEVATION +11.0 ±
RESIDENT ENGINEER A. PATRONE / L. LINCOLN

PROJECT: W18 - W19 / 10TH AVE
LOCATION:

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
1C	100/52	2C	100/48				

Run 1C (TOP)

MB
JXF 10° I3 ↓
JXF10° fe+wjt
JXF10°
JXF10°
JXF 30°
JXF 10° fe+wjts
JXF10° ↓
JXF10°
JXF10°
JXF10°
JXF10°
JXF10°
JXF10°
JXF 60°
JXF10°
JXF10°
J//F 80°

(BOTTOM)

Run 2C (TOP)

JXF 10° I3 ↓
JXF10°
JXF 10°
JXF10°
JXF10°
JXF10°
JXF10°
JXF10°
JXF 30°
JXF10°
JXF10°
JXF10°
JXF 10°
JXF10°
JXF10°
JXF10°
J//F80°

(BOTTOM)

TOP — BOTTOM

TOP — BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
∡ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-17
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** +11.0±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES [ ] NO			
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 40
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE	ID, IN.	LENGTH, FT.	TOP ELEV.	
INTAKE ELEMENT:	TYPE	OD, IN.	LENGTH, FT.	TIP ELEV.	
FILTER:	MATERIAL	OD, IN.	LENGTH, FT.	BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.	NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER GUS SURI HELPERS SCOTT ODWYER
REMARKS
RESIDENT ENGINEER ALEXANDRA PATRONE/LYSANDRA LINCOLN DATE 04-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MRCE Form BS-1 **BORING NO.** M-17

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT:	WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION:	NEW YORK, NEW YORK

BORING NO.	M-18
SHEET 1 OF	4
FILE NO.	12320
SURFACE ELEV.	+10.5±
RES. ENGR.	A. PATRONE/L. LINCOLN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:20	1D	0.0	33-15	Black fine to medium sand, some gravel, silt,	**	**0.25**	DRILLED	**Asphalt from 0' to
04-18-15		2.0	20-14	trace brick, concrete (Fill) (SM)			AHEAD	0.25'.
Saturday	2D	2.0	15-16	Red to black fine to coarse sand, some brick,			5"	Petroleum odor from
Clear		4.0	12-14	gravel, silt (Fill) (SM)				0' to 35'.
70°F	3D	4.0	8-11	Red to green fine to coarse sand, some gravel,		**5**		
		6.0	6-7	brick, silt (Fill) (SM)				
	4D	6.0	15-9	Black to gray fine to medium sand, some gravel,				
		8.0	6-6	silt (Fill) (SM)				
	5D	8.0	6-6	Gray fine to coarse sandy gravel, trace wood,				5D, 7D: REC=2"
		10.0	11-3	silt (Fill) (GP-GM)		**10**		
	6D	10.0	2-11	Gray fine to coarse sand, some gravel, trace	**F**			6D, 12D: REC=6"
		12.0	11-4	silt (Fill) (SP-SM)				
						15		
	7D	15.0	9-1	Gray to red gravel & brick, some fine to coarse				
		17.0	1-6	sand, trace silt (Fill) (GP-GM)				
						20		Free phase (internal)
	8D	20.0	1/12"	Black fine to medium sand, some silt, organic				from 20' to 22'.
		22.0	24-45	silty clay layer, trace gravel (SM&OH)	**M/S**			Contaminated at bot-
	9D	22.0	64-30	Top 2": Brown f-m sand, some silt (SM)		**22.3**		tom of tank from 20' to
		24.0	21-44	Bot 22": Brn f-c sand, tr gvl, brk, si (Fill) (SP-SM)				22.3'.
	10NR	24.0	5-6	No recovery		**25**		
		26.0	9-11					
	11D	26.0	15-15	Black fine to medium sand, some gravel, trace				
		28.0	19-30	silt, coarse sand (Fill) (SP-SM)				
	12D	28.0	30-12	Black fine to coarse sand, some gravel, trace	**F**			
		30.0	15-14	brick, silt (Fill) (SP-SM)		**30**		
	13D	30.0	22-18	Do 13D (Fill) (SP-SM)				Switch mud; drum
		32.0	12-13					cuttings.
						33.5		
						35		
	14D	35.0	3-3	Red brown fine sand, some silt (SM)				
		37.0	3-4					
						40		
	15D	40.0	2-2	Do 14D (SM)				
		42.0	3-4		**S**			
						45		
	16D	45.0	2-2	Do 14D (SM)				
		47.0	4-3					
								Mica in return at 49.5'.
								***Decomposed rock
					***	**49.5**		from 49.5' to 50'.
	17D	50.0	50/0"	Gray micaceous fine to medium sand, trace	**R**			
14:00				silt (Decomposed Rock) (SP-SM)				

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT:	WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION:	NEW YORK, NEW YORK
BORING NO.	M-18
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	+10.5±
RES. ENGR.	A. PATRONE/L. LINCOLN

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
07:00							3*	*Coring time in
04-19-15	1C	50.5	REC=95%	Hard unweathered gray gneissic schist, jointed			2*	minutes per foot.
Sunday		55.5	RQD=92%	to moderately jointed, iron stained joints			2*	
Clear							3*	
60°F						55	3*	
	2C	55.5	REC=100%	Hard unweathered gray gneissic schist, blocky	R		2*	
		60.5	RQD=88%				2*	
							2*	
							2*	
09:15						60	2*	
						60.5		End of Boring at 60.5'.
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-18

MUESER RUTLEDGE CONSULTING ENGINEERS

ROCK CORE SKETCH

BORING NO. M-18
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEVATION +10.5 ±
RESIDENT ENGINEER A. PATRONE / L. LINCOLN

PROJECT: W 18 - W 19 / 10TH AVE
LOCATION: NEW YORK, NY

Run No.	REC/RQD
1C	95/92
2C	100/88

Run 1C

TOP

COBBLE

J X ~~45~~ I3
fe Jt

J X ~~45~~

J X 45°
fe Jt

J X ~~45~~

BOTTOM

Run 2C

TOP

J X F 35° I3

J X F 10°

J X F 10°

J || F 70°

BOTTOM

TOP

BOTTOM

TOP

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- ∡ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

JOINT SURFACE
- C - Curved
- I - Irregular
- S - Straight

JOINT CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-18
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** +10.5±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK	X	MECHANICAL		DIA., IN. 5	DEPTH, FT. FROM	0	TO 35
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

*CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING LIN. FT. NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING LIN. FT. NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK LIN. FT. OTHER:

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMENIC PEPE HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER ALEXANDRA PATRONE/LYSANDRA LINCOLN DATE 04-19-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MRCE Form BS-1 **BORING NO.** M-18

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

PROJECT:	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**BORING NO.**	M-19
LOCATION:	NEW YORK, NEW YORK	**SHEET 1 OF**	4
		FILE NO.	12320
		SURFACE ELEV.	9.8±
		RES. ENGR.	TERESA SANDIFORD

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:00 05-15-15 Friday Cloudy 60°F					F	5, 10, 15, 18	DRILLED AHEAD 4"	Vacuum excavated to 5'. Hand excavated to 5'. Cuttings & drill water contaminated from 0' to 30'. Advanced unsampled from 6' to 18'. Hard drilling at 16' to 16.9'. Mud shows white specs. Possible foundation mat.
	1D	18.0	6-5	Brown fine to coarse sand, some gravel, trace	S			
		20.0	5-4	silt (SP)		20		
	2D	20.0	5-5	Do 1D (SP)				
		22.0	4-5					REC=2"
	3D	22.0	3-4	Brown fine to coarse sand, trace gravel, silt (SP)				
		24.0	5-5					
	4D	24.0	2-3	Brown silty fine sand, trace mica (SM)		25		
		26.0	3-5					
	5D	26.0	3-4	Do 4D (SM)				
		28.0	5-8			28		
	6D	28.0	5-13	Red brown & brown silt, some fine sand (ML)				
		30.0	8-14			30		
						35		
						40		
						45		
						46		Chunky drilling at 46'.
					R		*	*Coring time from 13:22 to 13:37 at 3 minutes per foot.
	1C	47.0	REC=97%	Medium hard slightly weathered to unweathered				
		52.0	RQD=78%	gray gneissic schist, jointed, iron stained & weathered joints				
						50		

MRCE Form BL-1

BORING NO. M-19

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO. M-19
SHEET 2 OF 4
FILE NO. 12320
SURFACE ELEV. 9.8±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-15-15								
Friday	2C	52.0	REC=97%	Hard unweathered gray gneissic schist to			*	*Coring time from
Cloudy		57.0	RQD=92%	schistose gneiss, moderately jointed	R			13:50 to 14:15 at 5
60°F						55		minutes per foot.
								Note: Rig pressure
14:15						57		inconsistant.
								End of Boring at 57'.
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-19
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 9.8±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD

Run No.	REC/RQD

Run No.	REC/RQD
2C	97% / 92%

Run No.	REC/RQD
1C	97% / 78%

TOP | TOP | TOP | TOP 47

Run 2C:
J0°xF13
J0°xF13
J60°xF13
J0°x1F3

Run 1C:
J30°xF13
J60°xF13
J20°xF13
F10°xF13
J0°xF13
F20°x13
F20°x13

BOTTOM | BOTTOM | BOTTOM | BOTTOM 52

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

BOR-3_JAN2013

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-19
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 9.8±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK	X	MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK MUD

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	47	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-15-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MRCE Form BS-1 **BORING NO.** M-19

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-20
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 9.4±
RES. ENGR. MARK CHANCY

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
11:10 04-28-15 Tuesday Sunny 61°F							DRILLED AHEAD 4.5"	Unsampled to 20'. Unsampled from 32' to 55'.
						5		
						10		
						15		
								Hard drilling to 18' approximately; bore-hole keeps collapsing.
						20		
	1D	20.0	13-15	Black fine to coarse sandy gravel, trace silt	S			REC=6"
04-29-15		22.0	13-11	(GP-GM)				
Wednesday	2D	22.0	7-8	Black medium to coarse sand, trace silt				REC=5"
		24.0	7-6	(SP-SM)				
	3D	24.0	11-7	Black gravelly fine coarse sandy gravel, trace		25		REC=2"
		26.0	7-12	silt (SM)				
	4D	26.0	14-14	Black gravel, trace silt, some fine to coarse				REC=3"
		28.0	26-24	sand (GP-GM)				
	5D	28.0	14-10	Light brown fine to coarse sandy gravel, trace				
		30.0	6-4	silt GP-GM)		30		
	6D	30.0	3-3	Brown fine to coarse sand, trace silt (SP-SM)				
		32.0	5-6			32		
						35		
						40		
						45		
						50		

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

BORING NO. M-20
SHEET 2 OF 4
FILE NO. 12320
SURFACE ELEV. 9.4±
RES. ENGR. MARK CHANCY

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-29-15 Wednesday							DRILLED AHEAD 4.5"	
						55	↓	
	1C	55.0 60.0	REC=88% RQD=76%	Medium hard slightly weathered to unweathered gray gneissic schist, trace pegmatite, moderately to jointed, iron stained & weathered jo	R		4* 3.5* 3* 3*	*Coring time in minutes per foot.
						60	3.5*	
	2C	60.0 65.0	REC=96% RQD=93%	Medium hard unweathered gray gneissic schist, moderately jointed, iron stained & weathered joints			5* 1.5* 2* 2*	
						65	3*	End of Boring at 65'.
						70		
						75		
						80		
						85		
						90		
						95		
						100		

Mueser Rutledge Consulting Engineers
14 Penn Plaza - 225 West 34th Street
New York, NY 10122
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ROCK CORE SKETCH

BORING NO. M-20
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 9.4±
RES ENGR. Mark Chaney

PROJECT: West 18th - West 19th / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS NYCBC

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
1C	53/60 =88% / 46/60 =76%	2C	58/60 =96% / 56/60 93%				

Run 1C (TOP to BOTTOM):
MB
J30° x F I3
J20 x F I3
J0° x F I3 fe jt
J0° x F I3
J30 I3 x F
MB

Run 2C (TOP to BOTTOM):
J45 I3 x F
MB x F
J30 I3 x F
J0° x F S2

TOP / BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
D - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-20
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 9.4±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO	
TRUCK		MECHANICAL		DIA., IN. 4.5	DEPTH, FT. FROM	0	TO 55
SKID	X	HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER							

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL
CORE BIT 5-3/4"
DRILL RODS NW

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*SAMPLER HAMMER, LBS. AVERAGE FALL, IN.
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	55	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER MARK CHANCY DATE 04-29-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-21
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 8.6±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
13:15							DRILLED	Vacuum excavated to
04-30-15							AHEAD	6'.
Thursday							4"	Hand excavated to 5'.
Sunny								Cobbles & coarse
65°F						5		gravel observed in
								cuttings of vacuum.
	1D	6.0	3-5	Brown gravel, trace fine to coarse sand (GP)				Part of recovery filled
		8.0	5-3					water observed at 6.5'.
	2D	8.0	5-4	Brown fine to coarse sand, some silt, trace				1D, 16D, 19D: REC=3"
		10.0	5-3	gravel (SM)	F	10		2D: REC=5"
	3D	10.0	2-2	Brown tan gravel, trace fine to coarse sand				REC=1"
		12.0	3-2	(GP)				Shells in sample.
						15		
	4D	15.0	3-3	Brown black fine to coarse sand, gravel,				REC=2"
		17.0	6-3	trace silt, organic clay (GP-GM)				Sand in sample.
						20		Cuttings is clay &
	5NR	20.0	1-1	No recovery				gravel.
		22.0	2-1					
	6D	22.0	3-2	Soft brown black organic silty clay, trace fine				WC=63
14:30		24.0	2-2	sand, shells (OH)				
09:00	7D	24.0	3-3	Brown gray clayey fine to medium sand (SC)		25		
05-01-15		26.0	7-7		O			
Friday	8D	26.0	8-9	Top: Do 7D, trace gravel (SC)				
Cloudy		28.0	7-12	Bot: Stiff light brown silty clay (CL)				8D Bot: WC=30
55°F	9D	28.0	4-6	Do with medium sand, some clay and stiff				
		30.0	11-14	brown silty (SC+CL)		30		
	10D	30.0	10-12	Brown silty fine sand (SM)				
		32.0	13-15					
						35		
	11D	35.0	6-5	Brown silt (ML)				Fixing hammer from
		37.0	6-6					10:00 to 11:45.
						40		
	12D	40.0	8-9	Brown fine to coarse sand with fine gravel	S			
		42.0	10-7	(GP)				
						45		
	13D	45.0	20-18	Do 12D (GP)				REC=6"
		47.0	24-10					
						50		
	14D	50.0	13-10	Do 12D (GP)				
		52.0	7-18					

MRCE Form BL-1

BORING NO. M-21

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO. M-21
SHEET 2 OF 4
FILE NO. 12320
SURFACE ELEV. 8.6±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-01-15								
Fri., Cloudy								
55°F								
13:00						**55**		
10:30	15NR	55.0	9-8	No recovery				
5-5-15		57.0	18-13					
Tuesday								Rig chatter at 58'.
Partly								
Cloudy						**60**		Hole collapsed at 60'.
77°F	16D	60.0	12-10	Purple clay (CL)				
		62.0	11-12					
						65		
	17D	65.0	10-14	Brown fine to medium sand (SP)				
		67.0	30-30					
					S			Rig chatter at 68'.
						70		
	18D	70.0	18-16	Brown medium to coarse sand, trace fine				
		72.0	18-16	gravel (SP)				
						75		
	19D	75.0	19-16	Do 18D (SP)				REC=3"
		77.0	18-12					
14:30						**80**		
09:00	20D	80.0	9-9	Brown fine sand, some silt (SM)				
05-06-15		82.0	10-10					
Wednesday								
Cloudy								
60°F						**85**		
	21D	85.0	8-15	Brown fine to medium sand, some silt, trace		**86**		
		86.1	100/2"	rock fragments (SM)	**DR**			
						88		
	1C	88.0	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time from
		93.0	RQD=92%	schistose gneiss to gneissic schist, jointed		**90**		13:29 to 13:50 at 4.2
				to moderately jointed, slightly weathered				minutes per foot.
				joints				Driller advanced to 88'
					R			for stick up purposes.
	2C	93.0	REC=95%	Hard unweathered gray gneissic schist,			*	*Coring time from
		98.0	RQD=82%	moderately jointed to jointed		**95**		14:09 to 14:28 at 3.8
								minutes per foot.
14:28						**98**		End of Boring at 98'.
						100		WC=Water Content
								in percent of dry
								weight.

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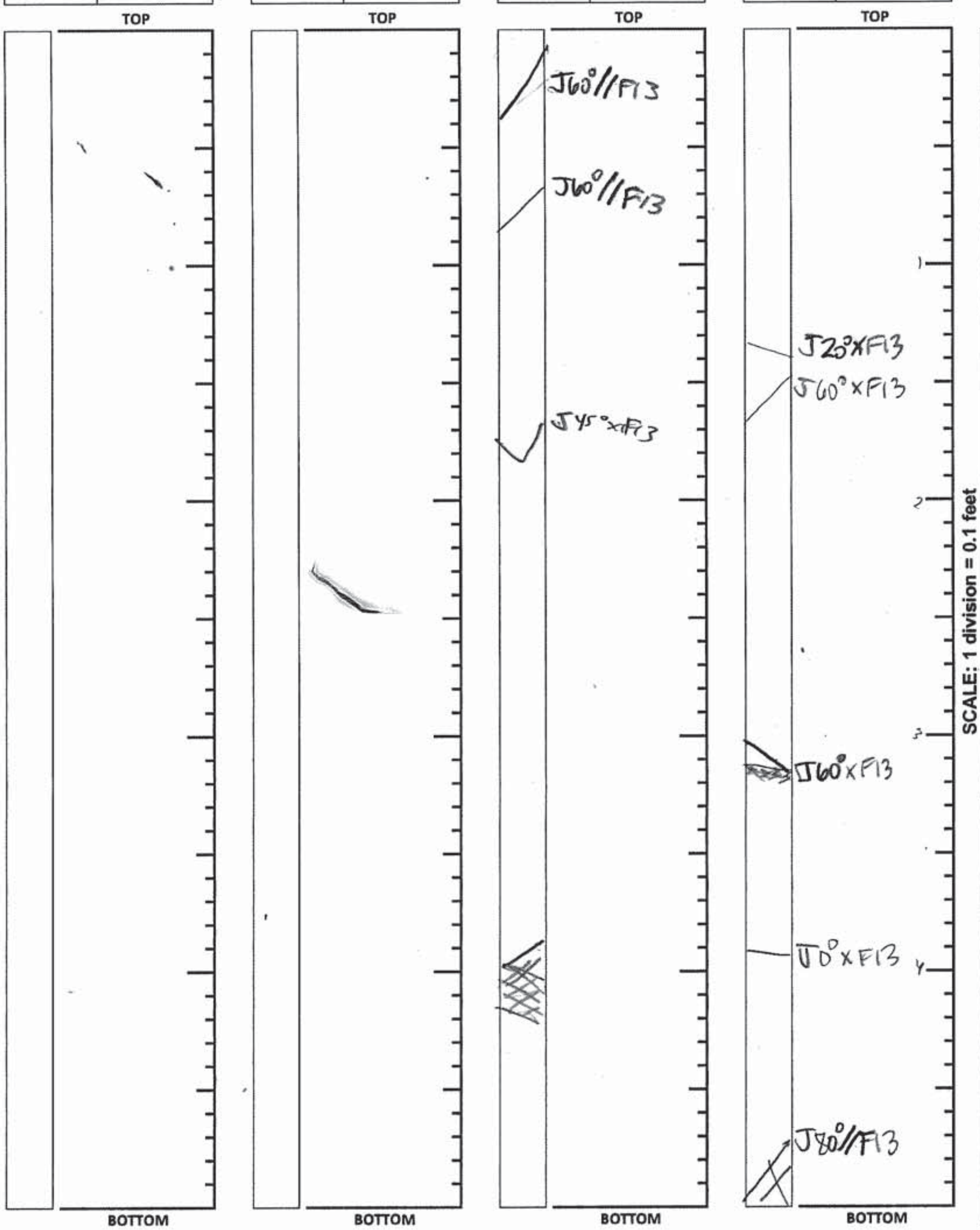
ROCK CORE SKETCH

BORING NO. M-21
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 8.6±
RES ENGR. T. SANDIFORD

PROJECT: W 18th St – W 19th ST / 10 Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	95% / 82%	1C	100% / 92%



ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-21
SHEET 4 **OF** 4
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE
FILE NO. 12320
LOCATION NEW YORK, NEW YORK
SURFACE ELEV. 8.6±
BORING LOCATION SEE BORING LOCATION PLAN
DATUM NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO		
TRUCK	X	MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 35
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER								

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	88	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOMINIC PEPE/PAUL GADDIS HELPERS GEORGE RAYMOND
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-05-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-22P
SHEET 1 OF 7
FILE NO. 12320
SURFACE ELEV. 8.0±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00							DRILLED	Hand auger to 6'.
05-01-15							AHEAD	
Friday							4" 3"	Vacuum cleared of
Cloudy								utilities to 6'.
55°F						5		
								Driller accidentally
								advanced to 15' with-
								out sampling.
						10		Covering 3 rigs,
					F			inspection; did not
								noticed to revert.
						15		
	1D	15.0	22-21	Brown gravel, some fine to coarse sand, trace				REC=3"
		17.0	9-5	silt (GP-GM)				
						20		
	2D	20.0	18-14	Brown, purple, gravel, some fine to coarse				Driller blows.
		22.0	10-10	sand, trace silt (GP-GM)				River deposit with
	3D	22.0	13-7	Top: Brn f-c sand, tr gravel, silt (SP-SM)				shell fragments from
		24.0	5-4	Bot: Brn blk organic si clay, tr f sand, shells (OH)				23' to 26'.
	4D	24.0	1-2	Do 3D Bottom (OH)		25		
		26.0	2-3					
	5D	26.0	7-4	Do 3D Bottom (OH)				WC=52
		28.0	4-4					
	6D	28.0	9-13	Brown fine to coarse sand, some gravel, trace				
		30.0	14-17	silt (SP-SM)		30		
	7D	30.0	29-32	Do 6D (SP-SM)				
		32.0	19-19					
						35		
	8D	35.0	12-19	Brown gravel, some fine to coarse sand, silt	S			
		37.0	25-34	(GM)				
						40		
	9D	40.0	12-17	Brown fine to medium sand, some silt (SM)				
		42.0	14-14					
						45		
	10D	45.0	9-16	Top: Brown fine to coarse sand, some gravel,				
13:15		47.0	18-23	trace silt (SP-SM)				
09:00				Bot: Red brown silt varved with trace clayey silt				10D Bot: WC=29
05-04-15				(ML)				
Monday						50		Casing to 50'.
Sunny	11D	50.0	39-73	Brown, gray gravelly fine to coarse sand (SP-SM				
80°F		52.0	19-20					

MRCE Form BL-1

BORING NO. M-22P

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-22P
SHEET 2 OF	7
FILE NO.	12320
SURFACE ELEV.	8.0±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd							DRILLED	
05-04-15							AHEAD	
Monday							3"	
Sunny								
80°F						55		
	12D	55.0	19-21	Brown fine to medium sand, some gravel, trace				
		57.0	20-17	silt (SP-SM)				
						60		
	13D	60.0	11-29	Brown fine to coarse sand, some gravel, trace				
		62.0	32-37	silt (SP-SM)				
	1C	63.0	REC=	Cobble to sandstone, hard red brown				Hard drilling at 62.5'.
		68.0						1C Cored for 1' then
						65		rods dropped through
								68'.
	14D	68.0	17-26	Brown, red brown gravelly fine to coarse sand,				Borehole collapsed
13:00		70.0	53-42	trace silt (SP-SM)		70		at 70'; clearing out.
09:00	15D	70.0	18-21	Brown fine to coarse sandy gravel, trace silt				
05-05-15		72.0	31-22	(GP-GM)				
Tuesday								
Cloudy								
77°F						75		
	16D	75.0	18-21	Brown fine to coarse sand, trace gravel, silt	S			
		77.0	20-25	(SP-SM)				
						80		Hole collapsed at 80'
	17D	80.0	97-32	Do 16D (SP-SM)				pulling rods created
		82.0	26-24					vacuum for sand to
								fill hole up to 76'.
								Keeping possible
13:00						85		head while putting
09:00	18D	85.0	18-20	Brown fine to coarse sand, some gravel, trace				rods.
05-06-15		87.0	21-16	silt (SP-SM)				
Wednesday								
Cloudy,								
Rain						90		
60°F	19D	90.0	21-31	Brown clayey gravel (GC)				REC=0.25"
		92.0	31-46					
						95		
	20D	95.0	19-24	Brown fine to coarse sand, trace gravel, silt				
		97.0	26-26	(SP-SM)				
						100		
	21D	100.0	15-26	Do 20D (SP-SM)				
		102.0	33-34					

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-22P
SHEET 3 OF 7
FILE NO. 12320
SURFACE ELEV. 8.0±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd								
05-06-15					S			
Wednesday								Mica & decomposed
Cldy., Rain						104		rock in wash at 104'.
60°F					DR	105		Hard drilling at 104'.
09:00	22D	105.0	50/1.5"	Top: Brn f-m sand, some silt (SP-SM)	R			Bit punched through
05-07-15		105.1		Bot: Gray f-m sand, some silt (DR) (SM)				to 105'.
Thursday	1C	105.0	REC=100%	Medium hard slightly weathered to unweathered				22D: REC=1.5"
Sunny		110.0	RQD=88%	gray & black hornblende schist, trace			*	*Coring time from
75°F				pegmatite, jointed, weathered joints		110		10:09 to 10:29 at 4
	2C	110.0	REC=100%	Hard unweathered gray hornblende schist,				minutes per foot.
		115.0	RQD=100%	moderately jointed, mineral coated & iron				
				stained joints				
14:25						115		End of Boring at 115'.
								WC=Water Content
								in percent of dry
								weight.
						120		
						125		
						130		
						135		
						140		
						145		
						150		

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New York, NY 10122
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ROCK CORE SKETCH

PROJECT: W 18th - W 19th St / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

BORING NO. M-22P
SHEET 4 OF 7
FILE NO. 12320
SURFACE ELEV. +8.0±
RES ENGR. T. SANDIFORD

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	100% / 100%	1C	100% / 88%

TOP

Run 2C:
J5°xFI3 MIN St
J10°xFI3
J10°xFI3 fe St
J30°xFI3

Run 1C:
J15°xFI3
J60°//FI3
J0°xFI3
J60°//FS2 PEGMATITE W St
J10°xFI3
J30°xFI3

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
Ɵ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

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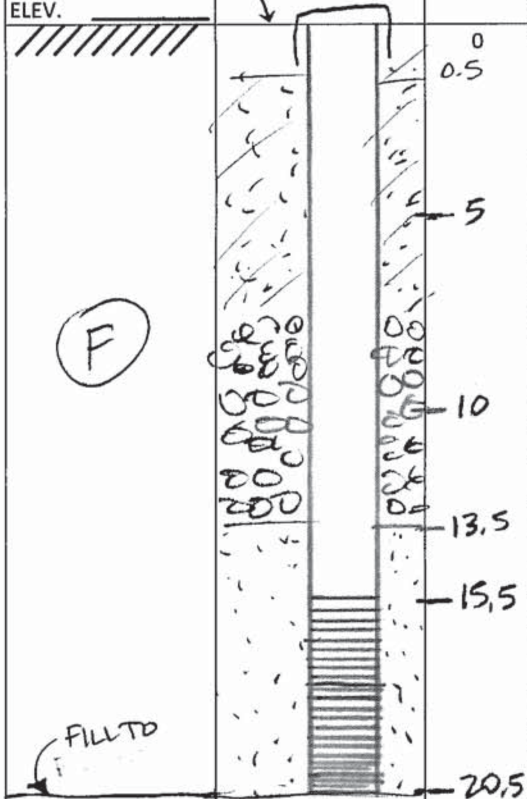
PIEZOMETER RECORD

PIEZOMETER OR BORING NO. M-22P-A
SHEET 5 OF 7
FILE NO. 12320
INSTALLATION DATE 5/18/15-5/19/15
RES ENGR. T. SANDIFORD

PROJECT: W 18th ST - W 19th ST / 10th Ave
LOCATION: New York, NY
PIEZOMETER LOCATION:

☐ SEE SKETCH ON BACK

STRATA	PIEZOMETER INSTALLATION DETAILS	DEPTH (FT)
GROUND SURFACE ELEV.		



PIEZOMETER TYPE 5' SCREEN

INTAKE POINT
depth to bottom, ft = 20.5
depth to top, ft = 15.5
length, ft = 5 = L
diameter, in = 2 , ft = = 2R

STANDPIPE/RISER
elevation of rim, ft =
diameter, in = , ft = = 2r

READING TIME		DEPTH – RIM TO WATER	ELEVATION OF WATER	REMARKS
DATE	CLOCK			
5/21/15	1100	18.5'		INITIAL READING
5/22/15	1345	7.5'		
5/26/15	1000	7.8'		
5/26/15	1500	7.8'		

SAND GRAVEL BENTONITE GROUT

GROUND SURFACE ELEV.

PIEZOMETER NO. M-22P-A

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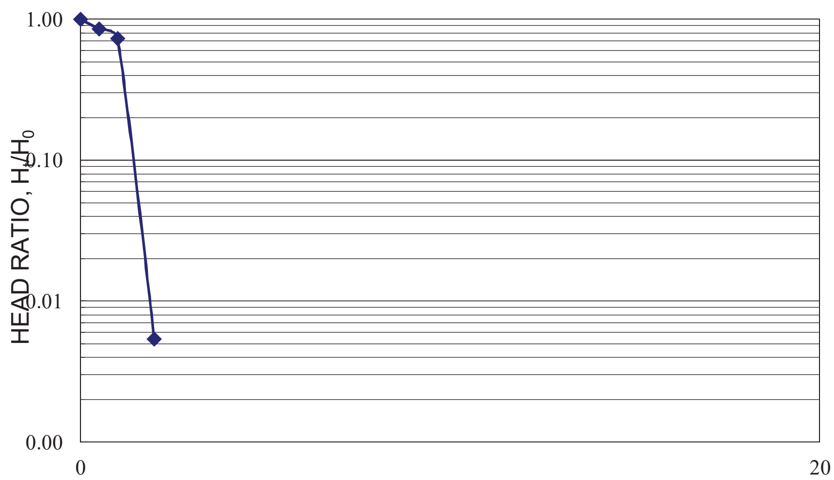
VARIABLE HEAD PERMEABILITY TEST

☐ BOREHOLE OR ☑ PIEZOMETER NO. M-22P-A

PROJECT: W 18th - W 19th St / 10th Ave
LOCATION: New York, NY
PIEZOMETER LOCATION: B-22P-A

SHEET 6 OF 7
FILE NO. 12320
TEST NO. 1
RES ENGR. Teresa Sandiford
CALC. BY TJS DATE 5/21/2015
CH'KD BY DATE



INTAKE POINT
depth to bottom, ft = 20.5
depth to top, ft = 15.5
length, ft = 5 = L
diameter, in = 2 , ft = 0.17 = 2R

STANDPIPE/RISER
elevation of rim, ft = 0
diameter, in = 2 , ft = 0.17 = 2r

depth of casing, ft =

depth to which standpipe was bailed, ft = = Z

READING TIME			ORIGINAL TEST DEPTH, H_0 (ft.)	DEPTH AT TIME t, H_t (ft.)	UNBALANCED HEAD $DH_t = H_t - H_0$ (ft.)	HEAD RATIO DH_t/DH_0	REMARKS
DATE	CLOCK	Δt MIN.					
5/21/2015	10:00	0	18.5	0	18.5	1.00	Falling Head Test
	10:00	0.5		2.7	15.8	0.85	
	10:01	1		5	13.5	0.73	
	10:02	2		18.4	0.1	0.01	

PIEZOMETER NO. M-22P-A

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING NO. M-22P
SHEET 7 **OF** 7
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE **FILE NO.** 12320
LOCATION NEW YORK, NEW YORK **SURFACE ELEV.** 8.0±
BORING LOCATION SEE BORING LOCATION PLAN **DATUM** NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES		NO
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM 0	TO 20
SKID		HYDRAULIC	X	DIA., IN.	3	DEPTH, FT. FROM 0	TO 80
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM	TO
OTHER	TRACK						

TYPE AND SIZE OF:

D-SAMPLER 2" O. D. SPLIT SPOON
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL
CORE BIT NX DIAMOND
DRILL RODS NWJ

DRILLING MUD USED [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN. 3-7/8, 2-7/8
TYPE OF DRILLING MUD QUIK GEL

AUGER USED [ ] YES [X] NO
TYPE AND DIAMETER, IN.

CASING HAMMER, LBS. AVERAGE FALL, IN.
*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					SEE PIEZOMETER SHEET NO. 5.

PIEZOMETER INSTALLED [X] YES [ ] NO SKETCH SHOWN ON SEE SHEET NO. 5

STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV.
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV.
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV.

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING LIN. FT. NO. OF 3" SHELBY TUBE SAMPLES
3.5" DIA. U-SAMPLE BORING LIN. FT. NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK LIN. FT. OTHER:

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER DOUG WOOD HELPERS LEO
REMARKS PIEZOMETER INSTALLED.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-07-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS
BORING LOG

BORING NO.	M-23
SHEET 1 OF	4
FILE NO.	12320
SURFACE ELEV.	7.7±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
10:45							DRILLED	Hand excavated to 5'.
05-20-15							AHEAD	
Wednesday							4"	
Partly Cloudy								
65°F						5		
	1D	6.0	4-5	Brown gravelly fine to coarse sand, some silt,				
		8.0	6-6	trace organic silt clay layer (SM)				
	2D	8.0	3-3	Brown fine to coarse sand, some silt, trace				Petroleum odor.
		10.0	3-5	gravel (SM)		10		
	3D	10.0	5-3	Brown black fine to coarse sand, trace gravel,	F			REC=4"
		12.0	3-4	silt (SP-SM)				
						15		
	4D	15.0	4-3	Gray gravelly fine to coarse sand, trace silt				REC=1", possible
		17.0	3-2	(SP)				wash.
						20		
	5D	20.0	10-18	Top: Gray f-c sand, gravel, tr silt (GP-GM)		21		5D: WC=52
		22.0	6-2	Bot: Black organic silty clay (OH)				5D Bot: Petroleum
	6D	22.0	4-3	Black organic silty clay, some fine to coarse				odor.
15:00		24.0	3-2	sand, trace shells (OH)				6D: WC=42
09:00	7D	24.0	8-6	Black silty clay, trace fine sand, shell, wood		25		WC=51
05-21-15		26.0	3-4	(OH)				
Thursday	8D	26.0	6-6	Black organic silty clay, trace fine to medium				WC=41
Cloudy		28.0	3-3	sand, shells (OH)				
60°F	9D	28.0	5-4	Soft gray organic silty clay, trace shells (OH)				WC=56
		30.0	5-4		O	30		
	10D	30.0	WH/24"	Do 9D (OH)				WC=58
		32.0						
						35		
	11D	35.0	9-11	Do 9D, trace gravel (OH)				11D, 16D-17D:
		37.0	10-11					REC=1"
						38.5		
						40		
	12D	40.0	12-9	Brown fine to medium sand, some silt (SM)				
		42.0	9-8					
						44		
						45		
	13D	45.0	18-12	Brown clayey silt, trace silty clay (ML)				WC=33
		47.0	6-5		M			
						48.5		
						50		
	14D	50.0	15-14	Brown silty fine to medium sand, trace coarse	S			
		52.0	9-11	sand, gravel (SM)				

BORING NO. M-23

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-23
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	7.7±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	**SAMPLE DESCRIPTION**	STRATA	DEPTH	CASING BLOWS	**REMARKS**
Cont'd							DRILLED	
05-21-15							AHEAD	
Thursday							4"	
Cloudy								
60°F						**55**		
	15D	55.0	9-11	Brown gravelly fine to coarse sand, trace silt				
		57.0	9-10	(SP-SM)				
						60		
	16D	60.0	25-24	Brown gravel (GP)				Gravel stuck in spoon
		62.0	28-17					tip.
					S			
						65		
	17D	65.0	10-9	Brown gravel, trace coarse to fine sand (GP)				
		67.0	11-7					
						70		
	18D	70.0	9-10	Brown coarse to fine sand, some gravel, trace				
14:00		72.0	7-9	silt (SP-SM)				
09:00								
05-22-15								Hard drilling from 74'
Friday						**74.5**		to 74.5'. TOR=74.5
Sunny	19D	75.0	100/0.5"	Boulder				from drilling.
70°F		75.0						Hard drilling from 75'
								to 80'.
13:30						**80**		
09:45	20D	80.0	100/0"	Gray rock fragments (GP)				
05-26-15	1C	80.0	REC=100%	Medium hard unweathered gray gneissic			*	Coring time from 10:32
Tuesday		85.0	RQD=84%	schist, moderately jointed to jointed				to 10:46 at 2.5
Sunny								minutes per foot.
70°F					**R**	**85**		
	2C	85.0	REC=100%	Hard unweathered gray gneissic schist,			*	Coring time from 11:02
		90.0	RQD=100%	massive				to 11:03 at 2 minutes
								per foot.
						90		
	3C	90.0	REC=92%	Hard unweathered gray gneissic schist,			*	*Coring time from
		95.0	RQD=92%	moderately jointed				11:44 to 11:58 at
								2.75 minutes per foot.
12:00						**95**		End of Boring at 95'.
								WC=Water Content
								in percent of dry
								weight.
						100		

BORING NO. M-23

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ROCK CORE SKETCH

BORING NO. M-23
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 7.7±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
		3C	92% / 92%	2C	100% / 100%	1C	100% / 74%

	Run 3C	Run 2C	Run 1C
TOP	TOP	TOP 85'	TOP 80'
	J60°xFI3 V. Soft. JT.	MB//F70°	J70°xFI3
	J50°xFI3		J0°xFI3 wth. JT
	J20°xFI3 MB		J70°//S2
			Broken, V. Soft, H. WTH.
			J75°//S2
BOTTOM	BOTTOM	BOTTOM 90'	BOTTOM 85'

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
- J - Joint
- MB - Mechanical Break
- θ - Angle w/ Horizontal
- // - Parallel
- X - Crossing
- F - Foliation
- S - Stratification
- U - Unfoliated or Unstratified

JOINT SURFACE
- C - Curved
- I - Irregular
- S - Straight

JOINT CONDITION
- 1 - Slick
- 2 - Smooth
- 3 - Rough

SKETCH SYMBOLS
- Joint
- Healed Joint
- Broken
- Part of Core Not Recovered
- Cavities or Vugs in Core
- Clay
- Sand
- Empty Space

NOTES 2C, no fractures, Solid 5' RUN.

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-23
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	7.7±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	X YES	NO	
TRUCK	X	MECHANICAL		DIA., IN. 4	DEPTH, FT. FROM	0	TO 60
SKID		HYDRAULIC	X	DIA., IN.	DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.	DEPTH, FT. FROM		TO
OTHER							

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON
U-SAMPLER	
S-SAMPLER	
CORE BARREL	NX DOUBLE BARREL
CORE BIT	NX DIAMOND
DRILL RODS	NWJ

DRILLING MUD USED: [X] YES [ ] NO
DIAMETER OF ROTARY BIT, IN.: 3-7/8
TYPE OF DRILLING MUD: QUIK MUD

AUGER USED: [ ] YES [X] NO
TYPE AND DIAMETER, IN.:

CASING HAMMER, LBS.: AVERAGE FALL, IN.:
*SAMPLER HAMMER, LBS.: 140 AVERAGE FALL, IN.: 30
*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	80	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	15	OTHER:	

BORING CONTRACTOR: AQUIFER DRILLING & TESTING CO., INC.
DRILLER: JOHN CAMPBELL HELPERS:
REMARKS: BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER: TERESA SANDIFORD DATE: 05-26-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MRCE Form BS-1 **BORING NO.** M-23

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-24
SHEET 1 OF	3
FILE NO.	12320
SURFACE ELEV.	7.7±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00							DRILLED	Hand excavated to 3'.
05-20-15							AHEAD	Brick layer encountered
Wednesday							4"	roller bit from 3' to 6'.
Partly Sunny								
65°F						5		
	1D	6.0	9-3	Top: Brn gravelly f-c sand, some clay (SC)	F			
		8.0	2-1	Bot: Black clayey f-m sand, trace gravel (SC)				
	2D	8.0	4-5	Black gravel, some medium to coarse sand (GP)				REC=1"
		10.0	5-4			10		
	3D	10.0	10-6	Brown, red gravelly fine to coarse sand, some				
		12.0	2-4	clay (SC)				
						13.5		
						15		
	4D	15.0	3-1	Soft black organic silty clay, trace fine sand &				WC=65
		17.0	1-2	gravel (OH)				REC=3"
					O			
						20		
	5D	20.0	1-2	Soft gray organic silty clay, trace fine sand, shells				WC=58
		22.0	2-2	(OH)				5D, 12D: REC=6"
	6D	22.0	3-6	Do 5D (OH)				WC=48
		24.0	8-3			24		
	7D	24.0	3-4	Brown silty clay, trace to some fine sand, gravel		25		
		26.0	4-6	(CL)				
	8NR	26.0	5-9	No recovery	V			
		28.0	12-18					WC=30
	9D	28.0	11-8	Brown & red brown silt varved with some clayey				
		30.0	8-13	silt (ML)		30		
	10D	30.0	36-14	Red brown silty fine sand varved with some				
		32.0	11-13	brown fine sand, some silt (SM)				
						35		
	11D	35.0	8-8	Brown fine sand, some silt (SM)	S			
		37.0	13-20					
								WC=Water Content
						40		in percent of dry
	12D	40.0	8-5	Top 1": Red brown silty fine sand (SM)	DR			weight.
		41.2	100/3"	Bot: Gray mic f-m sand, some silt (DR) (SM)		42		
	1C	42.0	REC=97%	Hard, unweathered to slightly weathered, gray			*	*Coring time from 13:42
		47.0	RQD=88%	gneissic schist, blocky, iron stained weathered				to 14:00.
				joints		45		
					R			
	2C	47.0	REC=96%	Hard unweathered gray gneissic schist, trace			*	*Coring time from 14:13
		52.0	RQD=96%	pegmatite, moderately jointed, iron stained				to 14:30.
				joints		50		
14:30						52		End of Boring at 52'.

MRCE Form BL-1

BORING NO. M-24

Mueser Rutledge Consulting Engineers
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ROCK CORE SKETCH

BORING NO. M-24
SHEET 2 OF 3
FILE NO. 12320
SURFACE ELEV. 7.7±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10th Ave
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	96% / 96%	1C	97% / 88%

TOP

Run 2C:
J60°//FI3
fe Jt
J40°xFI3
J60°// I3

Run 1C:
J10°xFI3
J60°xFI3
fe + WJt
J90°//FS2

BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH
LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-24
		SHEET	3 **OF** 3
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	7.7±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES [ ] NO			
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO 30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO
OTHER	TRACK							

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES [ ] NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK MUD
CORE BARREL	NX DOUBLE BARREL	AUGER USED	[ ] YES [X] NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS.		AVERAGE FALL, IN.	
*SAMPLER HAMMER, LBS.	140	AVERAGE FALL, IN.	30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	42	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.
DRILLER PAUL GADDIS HELPERS
REMARKS BOREHOLE GROUTED UPON COMPLETION.
RESIDENT ENGINEER TERESA SANDIFORD DATE 05-20-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-25
SHEET 1 OF 4
FILE NO. 12320
SURFACE ELEV. 12.4±
RES. ENGR. TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE
LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
09:00	1D	0.0	38-25	Gray black fine to coarse sandy gravel, trace	**	0.33	DRILLED	**Asphalt from 0' to
04-28-15		2.0	21-24	silt (Fill) (GM)			AHEAD	0.33'.
Tuesday	2D	2.0	11-17	Brown fine to medium sand, brick, trace gravel,			4"	
Sunny		4.0	16-9	coarse sand, silt (Fill) (SP-SM)				
55°F	3D	4.0	8-18	Brown fine to coarse sand, some brick, trace		5		
		6.0	17-11	gravel, silt (Fill) (SM)				
	4D	6.0	8-9	Gray black fine to coarse sand, some silt,				4D-6D: Petroleum
		8.0	8-7	trace gravel (Fill) (SM)				odor.
	5D	8.0	11-17	Do 4D (Fill) (SM)				
		10.0	15-11			10		
	6D	10.0	19-16	Gray black fine to coarse sandy gravel, trace				
		12.0	30-41	silt (Fill) (GP-GM)				
					F			
						15		
	7NR	15.0	5-2	No recovery				
		17.0	2-1					
						20		
	8D	20.0	3-8	Red brown fine to coarse sand and brick				8D-12D: Petroleum
		22.0	7-100/4"	fragments, trace gravel, silt (Fill) (SP-SM)				odor.
								Cobble dropped from
								22' to 24'.
	9D	24.0	1/12"	Brown gravel and brick fragments, trace fine		25		REC=2"
		26.0	1-4	to coarse sand (Fill)		26		
	10D	26.0	17-22	Black brown fine to coarse sand, trace silty				
		28.0	21-19	gravel (SP-SM)				
	11D	28.0	5-6	Red brown fine to medium sand, trace silt,				
		30.0	10-12	some silt layer (SP-SM+ML)		30		
	12D	30.0	9-8	Red brown fine to medium sand, some silt,				
		32.0	11-12	trace mica (SM)				
					S	35		
	13D	35.0	4-5	Red brown silty fine sand, trace mica (SM)				
		37.0	9-10					
						40		
	14D	40.0	3-8	Red brown fine to medium sand, some silt,				
		42.0	7-13	trace mica (SM)				
						43		
	1C	44.0	REC=87%	Medium hard slightly weathered gray gneissic		45	*	Coring time from
		49.0	RQD=78%	schist, closely jointed to jointed				01:09 to 01:14 at 3.8
								minutes per foot.
					R			2C: Didn't observe
								coring time for 2C.
	2C	49.0	REC=93%	Medium hard slightly weathered to		50		Run paused for 20
		54.0	RQD=67%	unweathered gray gneissic schist, jointed to				minutes to fix pump.
				closely jointed				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO.	M-25
SHEET 2 OF	4
FILE NO.	12320
SURFACE ELEV.	12.4±
RES. ENGR.	TERESA SANDIFORD

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE

LOCATION: NEW YORK, NEW YORK

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-28-15 Tues., Sunny 55°F, 14:30					R	54		End of Boring at 54'.
						55		
						60		
						65		
						70		
						75		
						80		
						85		
						90		
						95		
						100		

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ROCK CORE SKETCH

BORING NO. M-25
SHEET 3 OF 4
FILE NO. 12320
SURFACE ELEV. 12.4 ±
RES ENGR. T. SANDIFORD

PROJECT: W 18th - W 19th ST / 10 AVE
LOCATION: New York, NY
TEST/INSP. EQUIPMENT
REF. CODES/STANDARDS

Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD	Run No.	REC/RQD
				2C	93% / 61%	1C	87% / 78%

TOP | TOP | TOP 49' | TOP 44'

Run 2C (TOP 49'):
J15°xF13
J0°xF13
J30°xF13
J0°xF13
J10°xF13
J10°xF13
J5°xF13
54'

Run 1C (TOP 44'):
J30°xF13
Broken
J0°xF13
J0°xF13
J0°xF13
J10°xF13
J30°xF13
J20°xF13
49'

BOTTOM | BOTTOM | BOTTOM | BOTTOM

SCALE: 1 division = 0.1 feet

ROCK CORE SKETCH LEGEND

JOINTING
J - Joint
MB - Mechanical Break
θ - Angle w/ Horizontal
// - Parallel
X - Crossing
F - Foliation
S - Stratification
U - Unfoliated or Unstratified

JOINT SURFACE
C - Curved
I - Irregular
S - Straight

JOINT CONDITION
1 - Slick
2 - Smooth
3 - Rough

SKETCH SYMBOLS
Joint
Healed Joint
Broken
Part of Core Not Recovered
Cavities or Vugs in Core
Clay
Sand
Empty Space

NOTES 1C - PAUSED RUN FOR 2 MIN @ 35' TO FIX PUMP
2C - PAUSED RUN FOR 20 MIN to fix pump.

MUESER RUTLEDGE CONSULTING ENGINEERS

		BORING NO.	M-25
		SHEET	4 **OF** 4
PROJECT	WEST 18TH - WEST 19TH STREET/10TH AVENUE	**FILE NO.**	12320
LOCATION	NEW YORK, NEW YORK	**SURFACE ELEV.**	12.4±
BORING LOCATION	SEE BORING LOCATION PLAN	**DATUM**	NAVD 88

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

TYPE OF BORING RIG		TYPE OF FEED DURING CORING		CASING USED	[X] YES [ ] NO				
TRUCK		MECHANICAL		DIA., IN.	4	DEPTH, FT. FROM	0	TO	30
SKID		HYDRAULIC	X	DIA., IN.		DEPTH, FT. FROM		TO	
BARGE		OTHER		DIA., IN.		DEPTH, FT. FROM		TO	
OTHER	TRACK								

TYPE AND SIZE OF:

D-SAMPLER	2" O. D. SPLIT SPOON	DRILLING MUD USED	[X] YES [ ] NO
U-SAMPLER		DIAMETER OF ROTARY BIT, IN.	3-7/8
S-SAMPLER		TYPE OF DRILLING MUD	QUIK GEL
CORE BARREL	NX DOUBLE BARREL	AUGER USED	[ ] YES [X] NO
CORE BIT	NX DIAMOND	TYPE AND DIAMETER, IN.	
DRILL RODS	NWJ		

CASING HAMMER, LBS. ______ AVERAGE FALL, IN. ______

*SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30

*USED AUTOMATIC HAMMER.

WATER LEVEL OBSERVATIONS IN BOREHOLE

DATE	TIME	DEPTH OF HOLE	DEPTH OF CASING	DEPTH TO WATER	CONDITIONS OF OBSERVATION
					NO WATER LEVEL OBSERVATIONS MADE.

PIEZOMETER INSTALLED [ ] YES [X] NO SKETCH SHOWN ON ______

STANDPIPE:	TYPE		ID, IN.		LENGTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.		LENGTH, FT.		TIP ELEV.	
FILTER:	MATERIAL		OD, IN.		LENGTH, FT.		BOT. ELEV.	

PAY QUANTITIES

3.5" DIA. DRY SAMPLE BORING	LIN. FT.	44	NO. OF 3" SHELBY TUBE SAMPLES	
3.5" DIA. U-SAMPLE BORING	LIN. FT.		NO. OF 3" UNDISTURBED SAMPLES	
CORE DRILLING IN ROCK	LIN. FT.	10	OTHER:	

BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC.

DRILLER DOUG WOOD HELPERS LEO

REMARKS BOREHOLE GROUTED UPON COMPLETION.

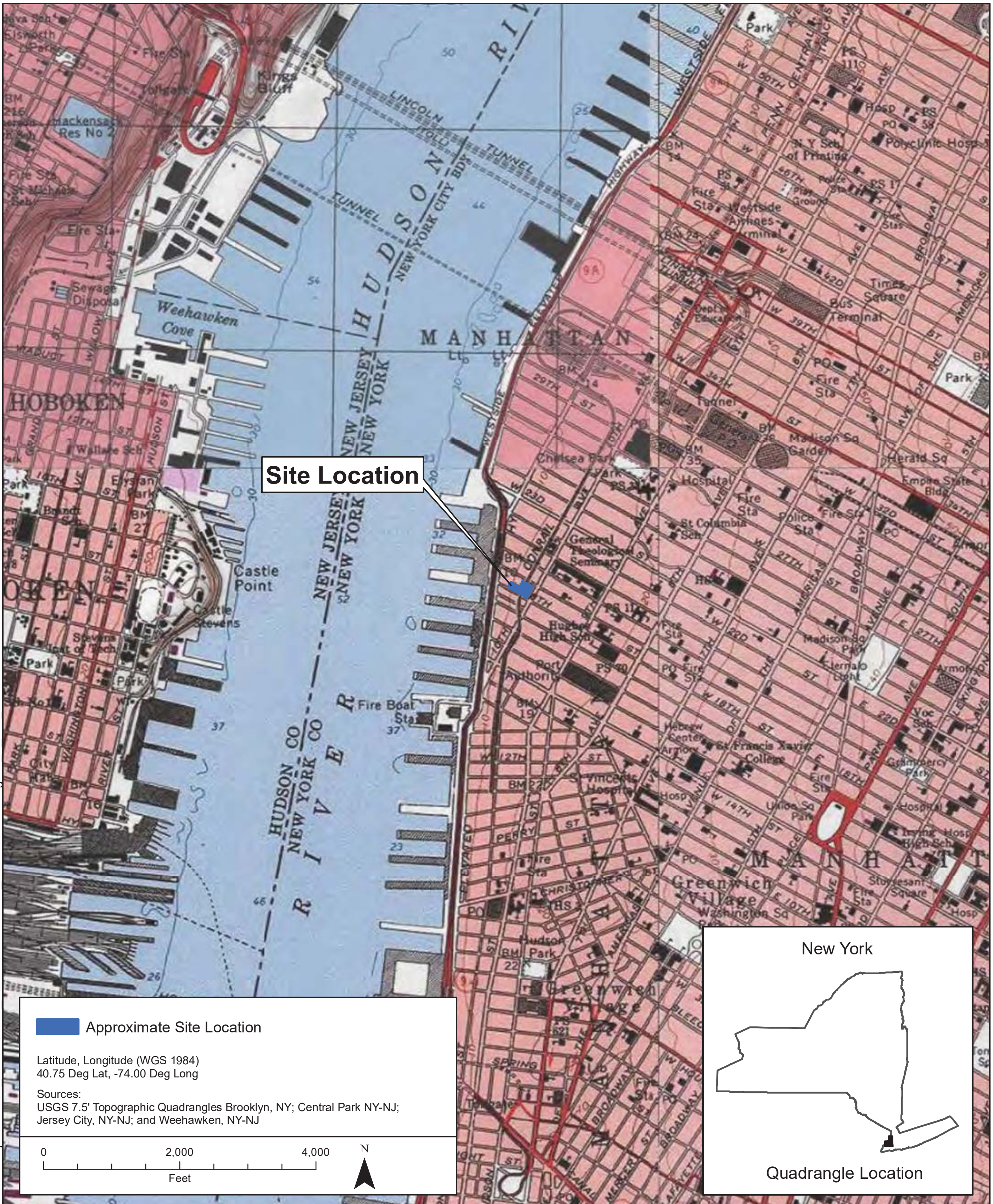
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-28-15

CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: ______

Appendix D

Remedial Action Work Plan Figures & Tables

FIGURES



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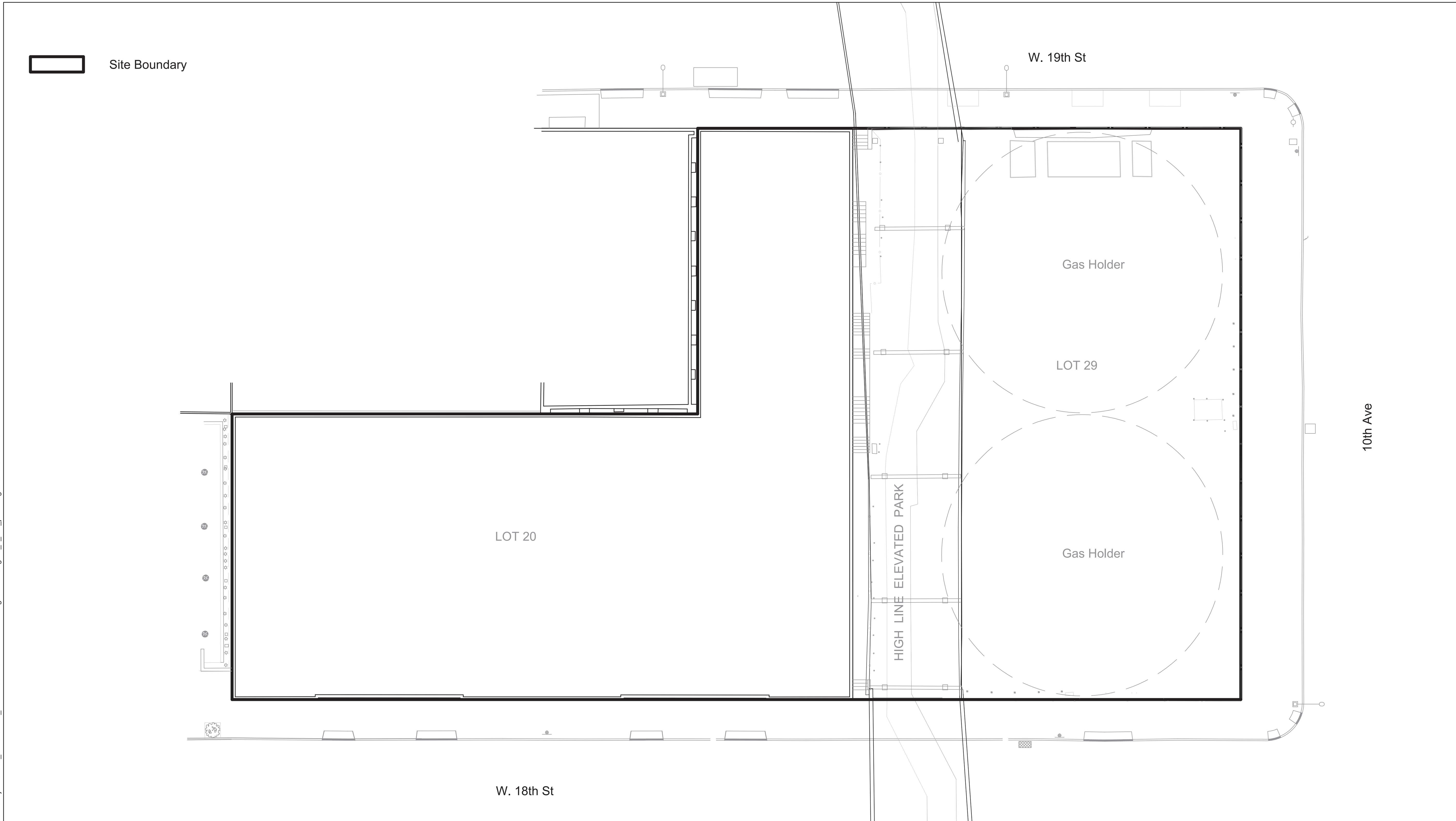
integral engineering p.c.
61 Broadway, Suite 1601
New York, New York 10006
www.integral-corp.com

Figure 1.
Site Location Map
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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NEW YORK, NEW YORK 10006
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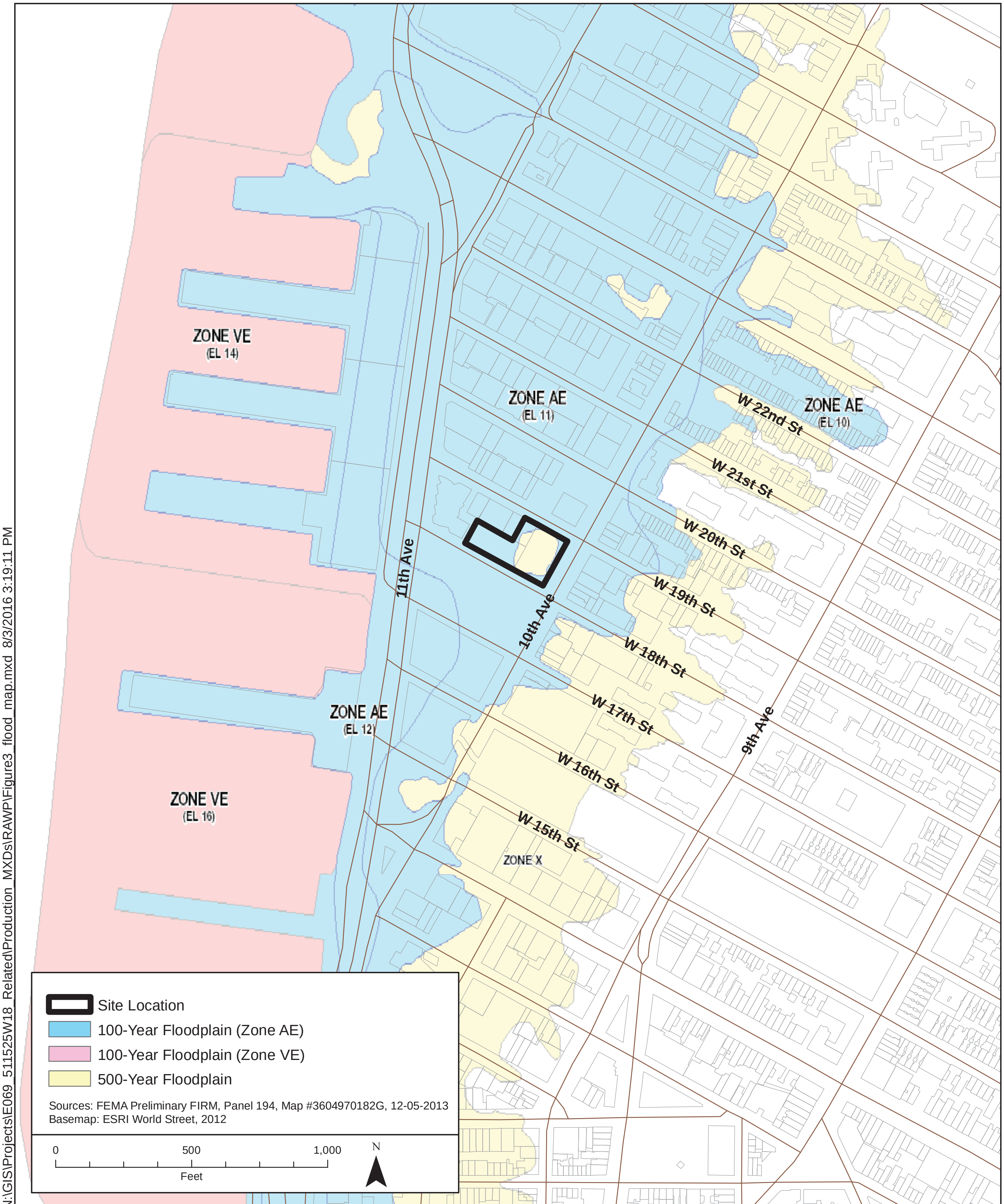
0 15 30
Feet

N

Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Note:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.

Figure 2.
Site Plan
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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New York, New York 10006
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Figure 3.
FEMA Flood Zone Map
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

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61 BROADWAY, SUITE 1601
NEW YORK, NEW YORK 10006
www.integral-corp.com

Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.

Figure 4.
Historic Sample Locations (All Historic Investigations)
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

- Site Boundary
- Monitoring Well/Soil Boring (Arcadis 2006-2007)
- Soil Boring (TRC 2005)
- Soil Boring (Arcadis 2006-2007)
- Monitoring Well/Soil Boring (Core 2012)
- Soil Boring (Core 2012)
- Test Pit (TRC 2005)

Sample ID	
Date	Part 375 Unrestricted
Analyte	Use SCOs*
VOCs	mg/kg
1,2-Dichloroethane	0.02
2-Butanone	0.12
Acetone	0.05
Benzene	0.06
Ethylbenzene	1
Methyl tert-butyl ether	0.93
Methylene Chloride	0.05
Toluene	0.7
Xylenes (total)	0.26
n-Propylbenzene	3.9

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. * = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
4. **Bold** and *Italicized* value indicates concentration exceeds Unrestricted SCOs
5. B = Analyte is found in the associated analysis batch blank
6. B-Dil = Detected in method blank(s) associated with sample analysis
7. J = Estimated value
8. NA = Not analyzed
9. ND = Not detected
10. D = The compound was found at a dilution factor

SB-209			
Depth	9.4-10'	11-13'	19-20'
Date	1/20/2007	1/20/2007	1/20/2007
VOCs	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND
2-Butanone	ND	ND	***0.46 J***
Acetone	***0.067***	***0.053***	ND
Benzene	0.0022 J	0.021	***2.1***
Ethylbenzene	ND	ND	***2.4***
Methyl tert-butyl ether	ND	ND	ND
Methylene Chloride	ND	ND	ND
Toluene	ND	ND	ND
Xylenes (total)	ND	ND	***2.0***
n-Propylbenzene	NA	NA	NA

SB-208			
Depth	2-3'	9.5-10'	19-20'
Date	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND
2-Butanone	ND	ND	ND
Acetone	0.025 J	ND	ND
Benzene	0.0006 J	ND	***0.86***
Ethylbenzene	ND	ND	ND
Methyl tert-butyl ether	ND	ND	ND
Methylene Chloride	0.0021 J	ND	ND
Toluene	ND	ND	ND
Xylenes (total)	ND	ND	ND
n-Propylbenzene	NA	NA	NA

SB-210					
Depth	7-9'	11-113'	21-23'	25-27'	36-37'
Date	12/16/2006	12/16/2006	12/16/2006	12/16/2006	12/16/2006
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND
Acetone	ND	ND	0.024 J	0.025 J	ND
Benzene	0.0011 J	0.0025 J	0.044	0.0079	0.0068
Ethylbenzene	ND	ND	0.0051 J	ND	ND
Methyl tert-butyl ether	ND	ND	0.0014 J	0.0008 J	ND
Methylene Chloride	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	0.0058 J	ND	ND
n-Propylbenzene	NA	NA	NA	NA	NA

SB-9					
Depth	4-5'	8-10'	20-22'	26-28'	32-34'
Date	9/12/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	***0.038***	ND	ND
2-Butanone	ND	ND	0.028	ND	ND
Acetone	0.030 J	***0.054 J***	***0.092***	0.014 J	0.010 J
Benzene	ND	0.009	***0.88***	0.006	ND
Ethylbenzene	ND	ND	***9.1***	0.011	ND
Methyl tert-butyl ether	ND	ND	0.0028	0.0041 J	0.0013 J
Methylene Chloride	ND	0.0012 J	0.0150	ND	0.0016 J
Toluene	ND	0.0017 J	***0.7700***	ND	ND
Xylenes (total)	0.0044	ND	***1.4063***	0.0032	ND
n-Propylbenzene	NA	NA	NA	NA	NA

SB-MTP-2				
Depth	9-10'	18-19'	22-23'	24-25'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
Acetone	ND	ND	ND	0.032 J
Benzene	0.0007 J	***16***	0.0088	0.001 J
Ethylbenzene	ND	***85***	0.023	0.0052 J
Methyl tert-butyl ether	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND
Toluene	0.0008 J	***24***	0.013	0.0020 J
Xylenes (total)	ND	***230***	0.076	0.014 J
n-Propylbenzene	NA	NA	NA	NA

SB-12					
Depth	5-7'	7-9'	15-17'	25-27'	49-51'
Date	9/11/2004	9/11/2004	9/11/2004	9/12/2004	9/12/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND
Acetone	0.019 J	0.013 J	0.046 J	0.025 J	ND
Benzene	ND	ND	0.018	0.1100	ND
Ethylbenzene	ND	ND	ND	ND	ND
Methyl tert-butyl ether	ND	ND	0.002 J	ND	ND
Methylene Chloride	ND	ND	ND	ND	0.0012 J
Toluene	ND	0.0016 J	0.0081	ND	ND
Xylenes (total)	ND	0.0071 J	ND	0.007 J	ND
n-Propylbenzene	NA	NA	NA	NA	NA

TP-2N	
Depth	10-11'
Date	9/12/2014
VOCs	mg/kg
1,2-Dichloroethane	ND
2-Butanone	ND
Acetone	0.032 J
Benzene	0.049
Ethylbenzene	ND
Methyl tert-butyl ether	0.069 J
Methylene Chloride	ND
Toluene	0.0019 J
Xylenes (total)	0.0092
n-Propylbenzene	NA

MW/SB-213		
Depth	8-9'	19-20'
Date	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
Acetone	ND	***0.074 J***
Benzene	ND	0.021
Ethylbenzene	0.0063	0.012
Methyl tert-butyl ether	ND	0.0060 J
Methylene Chloride	ND	ND
Toluene	0.0018 J	0.011
Xylenes (total)	0.019	0.051
n-Propylbenzene	NA	NA

SB-214		
Depth	11-13'	19-20'
Date	1/21/2007	1/21/2007
VOCs	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
Acetone	***0.056***	***0.061***
Benzene	0.0021 J	ND
Ethylbenzene	ND	ND
Methyl tert-butyl ether	ND	ND
Methylene Chloride	ND	ND
Toluene	ND	ND
Xylenes (total)	ND	ND
n-Propylbenzene	NA	NA

SB-MTP-3		
Depth	8-9'	24-25'
Date	3/3/2007	3/3/2007
VOCs	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
Acetone	ND	ND
Benzene	ND	***6.7***
Ethylbenzene	ND	ND
Methyl tert-butyl ether	ND	ND
Methylene Chloride	ND	ND
Toluene	0.0007 J	0.27 J
Xylenes (total)	ND	ND
n-Propylbenzene	NA	NA

SB-10					
Depth	5-6'	6-8'	8-10'	20-22'	48-50'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	ND
Benzene	ND	***4.6 J***	***7.2***	***0.064***	ND
Ethylbenzene	***7.70***	***53***	***24***	0.049 J	ND
Methyl tert-butyl ether	ND	ND	ND	0.280	0.0022 J
Methylene Chloride	ND	ND	ND	ND	ND
Toluene	***2.6***	***74***	***37***	0.033 J	ND
Xylenes (total)	***56***	***350***	***127***	***0.276***	ND
n-Propylbenzene	NA	NA	NA	NA	NA

SB-221				
Depth	2-4'	6-8'	9.5-10'	24-25'
Date	1/20/2007	1/20/2007	1/20/2007	1/20/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	***0.47 J***
Acetone	ND	ND	***0.067***	ND
Benzene	ND	ND	0.0014 J	***0.71***
Ethylbenzene	ND	ND	ND	0.69
Methyl tert-butyl ether	ND	ND	0.0010 J	ND
Methylene Chloride	0.0017 J	ND	ND	ND
Toluene	ND	***2.5***	ND	0.14 J
Xylenes (total)	ND	ND	ND	***0.68***
n-Propylbenzene	NA	NA	NA	NA

SB-14A				
Depth	4-5'	11-13'	17-19'	23-25'
Date	9/11/2004	10/3/2004	10/3/2004	10/3/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
Acetone	ND	ND	ND	***28 J***
Benzene	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Methyl tert-butyl ether	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND
n-Propylbenzene	NA	NA	NA	NA

MW/SB-6	
Depth	10-0.5'
Date	1/26/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	0.011 J
Methyl tert-butyl ether	NA
Methylene Chloride	0.0062 B-Dil JB
Toluene	0.019 J
Xylenes (total)	0.028 J
n-Propylbenzene	0.12

MW/SB-5	
Depth	9-9.5'
Date	1/26/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	ND
Methyl tert-butyl ether	NA
Methylene Chloride	***3.0 JB***
Toluene	ND
Xylenes (total)	ND
n-Propylbenzene	***7.1 J***

MW/SB-4	
Depth	7-8'
Date	1/27/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	ND
Methyl tert-butyl ether	NA
Methylene Chloride	***0.570 JB***
Toluene	ND
Xylenes (total)	0.2 J
n-Propylbenzene	0.150 J

SB-7	
Depth	7-8'
Date	1/27/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	ND
Methyl tert-butyl ether	NA
Methylene Chloride	***0.062 JB***
Toluene	ND
Xylenes (total)	ND
n-Propylbenzene	ND

SB-8	
Depth	8-9'
Date	1/27/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	NA
Methyl tert-butyl ether	NA
Methylene Chloride	0.015 JB
Toluene	ND
Xylenes (total)	ND
n-Propylbenzene	ND

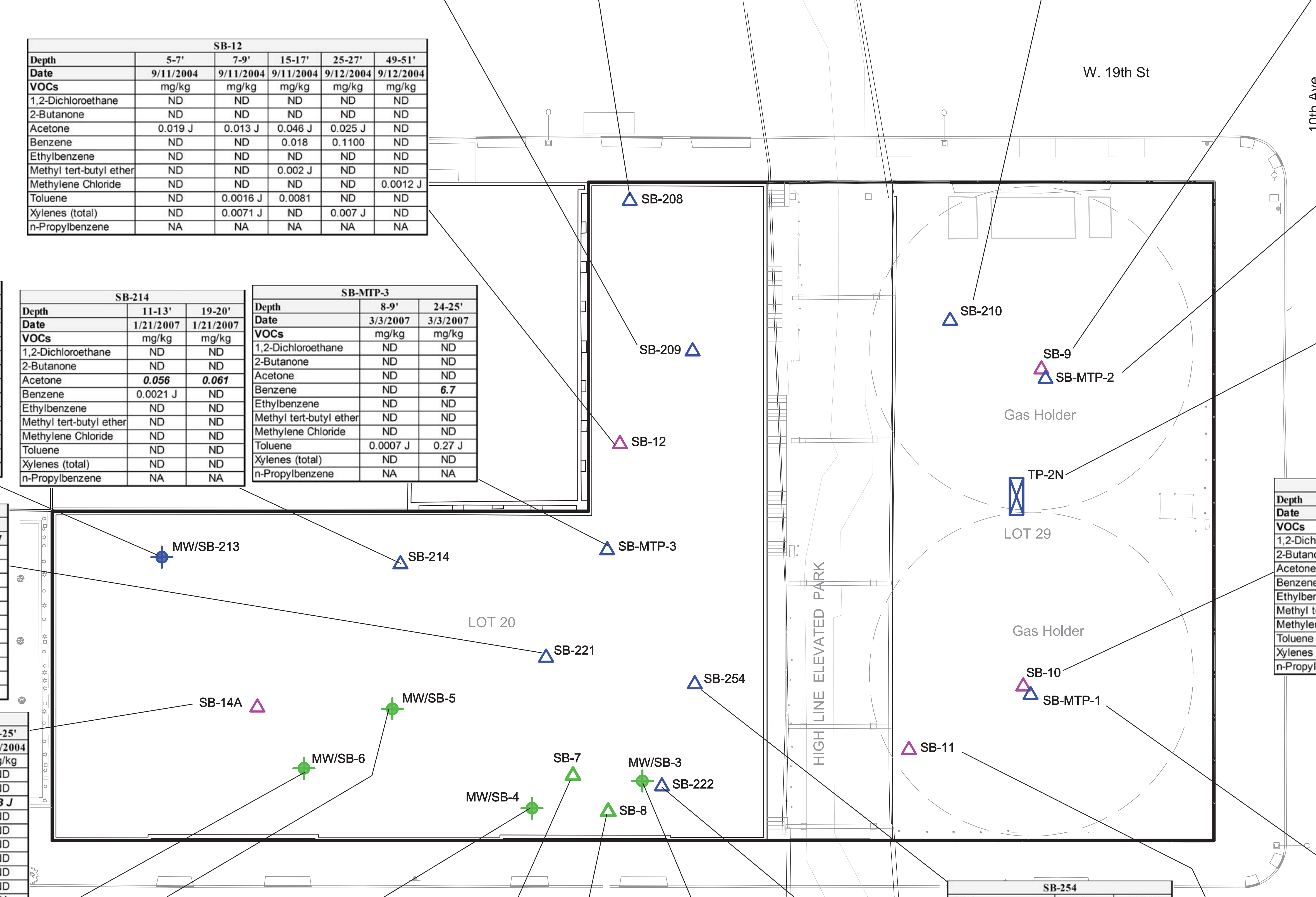
MW/SB-3	
Depth	6-6.5'
Date	1/25/2012
VOCs	mg/kg
1,2-Dichloroethane	NA
2-Butanone	NA
Acetone	NA
Benzene	NA
Ethylbenzene	***7.4***
Methyl tert-butyl ether	NA
Methylene Chloride	***1.20 JB***
Toluene	***1.2 JB***
Xylenes (total)	***68***
n-Propylbenzene	***5.5***

SB-254		
Depth	8-9'	19-20'
Date	3/3/2007	3/3/2007
VOCs	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
Acetone	ND	ND
Benzene	ND	***0.16***
Ethylbenzene	ND	0.17
Methyl tert-butyl ether	ND	0.048
Methylene Chloride	ND	ND
Toluene	0.0014 J	0.0052 J
Xylenes (total)	ND	0.14
n-Propylbenzene	NA	NA

SB-MTP-1				
Depth	3-4'	8-9'	19-20'	23-24'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND
2-Butanone	***0.83 J***	ND	ND	ND
Acetone	ND	ND	***0.11 J***	***0.15 J***
Benzene	***0.29***	***0.31 J***	0.015	0.0028 J
Ethylbenzene	0.72	***20***	0.0012 J	0.002 J
Methyl tert-butyl ether	0.17 J	***0.95 J***	0.0063 J	0.0051 J
Methylene Chloride	ND	ND	ND	ND
Toluene	ND	***3.9***	0.0032 J	0.0023 J
Xylenes (total)	***3.8***	***110***	0.0075 J	0.0084 J
n-Propylbenzene	NA	NA	NA	NA

SB-222				
Depth	1-3'	7.5-8.5'	15-17'	19-20'
Date	1/21/2007	1/21/2007	1/21/2007	1/21/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	***1.4***
Acetone	ND	0.019	ND	ND
Benzene	***0.39 J***	0.0021 J	***0.72***	***4.4***
Ethylbenzene	***17***	0.0038 J	0.024 J	***1.5***
Methyl tert-butyl ether	ND	ND	0.011 J	0.12 J
Methylene Chloride	ND	ND	ND	***0.13 J***
Toluene	***1.0 J***	ND	0.0064 J	0.57
Xylenes (total)	***160***	0.031	0.073 J	***1.3***
n-Propylbenzene	NA	NA	NA	NA

SB-11					
Depth	5-6'	13-15'	27-29'	35-37'	37-39'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND
Acetone	ND	***0.057 J***	***0.120 J***	0.024 J	0.013 J
Benzene	ND	0.0015 J	***26 D***	0.0073	ND
Ethylbenzene	0.31	0.0019 J	***18 D***	ND	0.0015 J
Methyl tert-butyl ether	ND	0.012	0.540 J	0.0029 J	0.0028 J
Methylene Chloride	ND	ND	0.014 J	0.0023 J	0.0017 J
Toluene	ND	ND	***15 D***	0.0031 J	ND
Xylenes (total)	***2.02***	0.0157	***11.0064***	ND	0.0012
n-Propylbenzene	NA	NA	NA	NA	NA



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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5a.
VOCs in Historic Soil Samples Exceeding Part 375 Unrestricted SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

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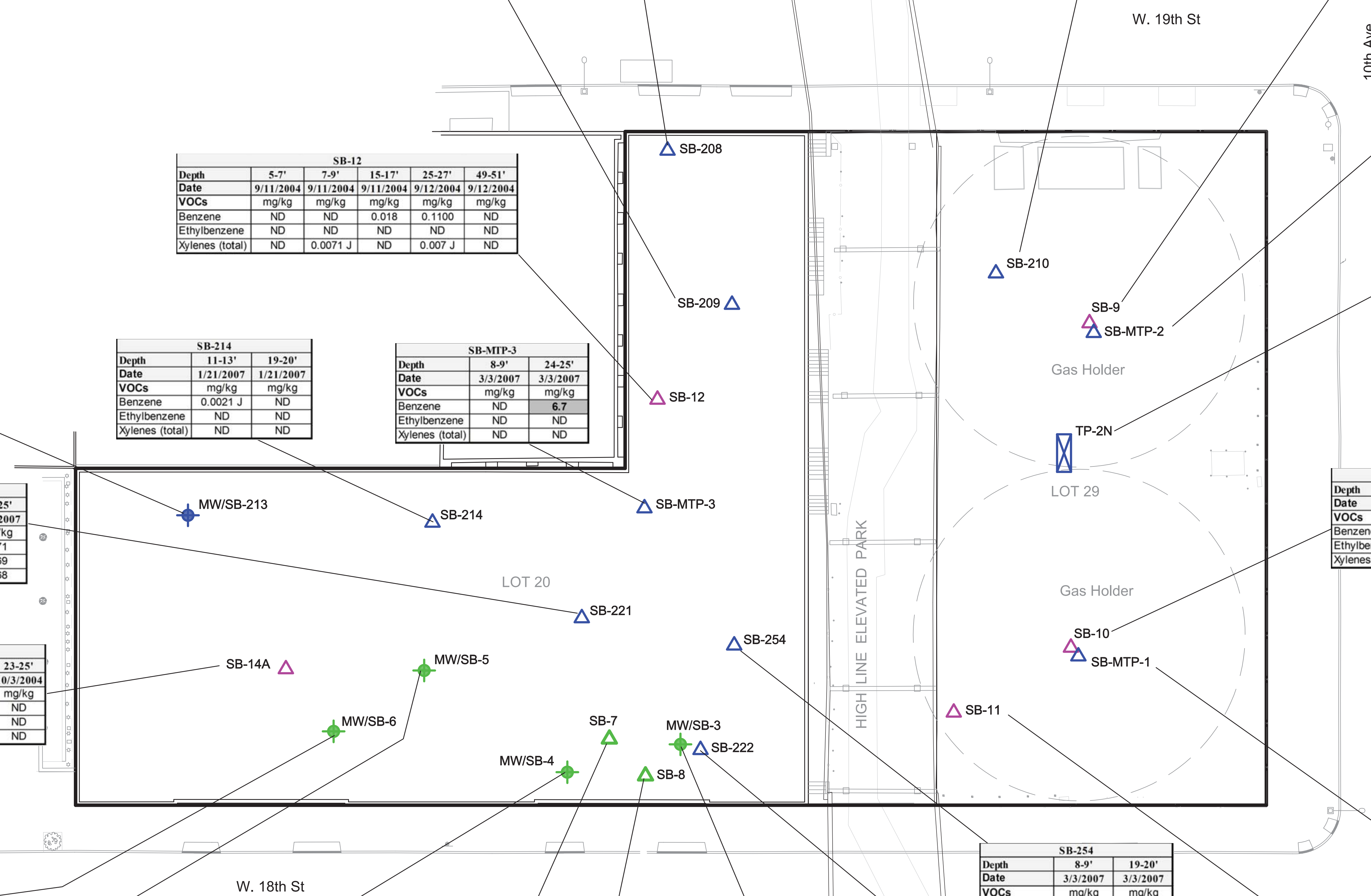
Site Boundary
Monitoring Well/Soil Boring (Arcadis 2006-2007)
Soil Boring (TRC 2005)
Soil Boring (Arcadis 2006-2007)
Monitoring Well/Soil Boring (Core 2012)
Soil Boring (Core 2012)
Test Pit (TRC 2005)

Sample ID	
Date	Part 375 Restricted
Analyte	Residential Use SCOs**
VOCs	mg/kg
Benzene	4.8
Ethylbenzene	41
Xylenes (total)	100

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. ** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential
4. **Bold** and shaded value indicates concentration exceeds Restricted Residential SCOs
5. J = Estimated value
6. NA = Not analyzed
7. ND = Not detected
8. D = The compound was found at a dilution factor



SB-209			
Depth	9.4-10'	11-13'	19-20'
Date	1/20/2007	1/20/2007	1/20/2007
VOCs	mg/kg	mg/kg	mg/kg
Benzene	0.0022 J	0.021	2.1
Ethylbenzene	ND	ND	2.4
Xylenes (total)	ND	ND	2.0

SB-208			
Depth	2-3'	9.5-10'	19-20'
Date	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg
Benzene	0.0006 J	ND	0.86
Ethylbenzene	ND	ND	ND
Xylenes (total)	ND	ND	ND

SB-210					
Depth	7-9'	11-113'	21-23'	25-27'	36-37'
Date	12/16/2006	12/16/2006	12/16/2006	12/16/2006	12/16/2006
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	0.0011 J	0.0025 J	0.044	0.0079	0.0068
Ethylbenzene	ND	ND	0.0051 J	ND	ND
Xylenes (total)	ND	ND	0.0058 J	ND	ND

SB-9					
Depth	4-5'	8-10'	20-22'	26-28'	32-34'
Date	9/12/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	0.009	0.88	0.006	ND
Ethylbenzene	ND	ND	9.1	0.011	ND
Xylenes (total)	0.0044	ND	1.4063	0.0032	ND

SB-MTP-2				
Depth	9-10'	18-19'	22-23'	24-25'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	0.0007 J	**16**	0.0088	0.001 J
Ethylbenzene	ND	**85**	0.023	0.0052 J
Xylenes (total)	ND	**230**	0.076	0.014 J

SB-12					
Depth	5-7'	7-9'	15-17'	25-27'	49-51'
Date	9/11/2004	9/11/2004	9/11/2004	9/12/2004	9/12/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	ND	0.018	0.1100	ND
Ethylbenzene	ND	ND	ND	ND	ND
Xylenes (total)	ND	0.0071 J	ND	0.007 J	ND

TP-2N	
Depth	10-11'
Date	9/12/2014
VOCs	mg/kg
Benzene	0.049
Ethylbenzene	ND
Xylenes (total)	0.0092

MW/SB-213		
Depth	8-9'	19-20'
Date	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg
Benzene	ND	0.021
Ethylbenzene	0.0063	0.012
Xylenes (total)	0.019	0.051

SB-214		
Depth	11-13'	19-20'
Date	1/21/2007	1/21/2007
VOCs	mg/kg	mg/kg
Benzene	0.0021 J	ND
Ethylbenzene	ND	ND
Xylenes (total)	ND	ND

SB-MTP-3		
Depth	8-9'	24-25'
Date	3/3/2007	3/3/2007
VOCs	mg/kg	mg/kg
Benzene	ND	**6.7**
Ethylbenzene	ND	ND
Xylenes (total)	ND	ND

SB-10					
Depth	5-6'	6-8'	8-10'	20-22'	48-50'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	4.6 J	**7.2**	0.064	ND
Ethylbenzene	7.70	**53**	24	0.049 J	ND
Xylenes (total)	56	**350**	**127**	0.276	ND

SB-221				
Depth	2-4'	6-8'	9.5-10'	24-25'
Date	1/20/2007	1/20/2007	1/20/2007	1/20/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	ND	0.0014 J	0.71
Ethylbenzene	ND	ND	ND	0.69
Xylenes (total)	ND	ND	ND	0.68

SB-14A				
Depth	4-5'	11-13'	17-19'	23-25'
Date	9/11/2004	10/3/2004	10/3/2004	10/3/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND

MW/SB-6	
Depth	10-0.5'
Date	1/26/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	0.011 J
Xylenes (total)	0.028 J

MW/SB-5	
Depth	9-9.5'
Date	1/26/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	ND
Xylenes (total)	ND

MW/SB-4	
Depth	7-8'
Date	1/27/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	ND
Xylenes (total)	0.2 J

SB-7	
Depth	7-8'
Date	1/27/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	ND
Xylenes (total)	ND

SB-8	
Depth	8-9'
Date	1/27/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	ND
Xylenes (total)	ND

MW/SB-3	
Depth	6-6.5'
Date	1/25/2012
VOCs	mg/kg
Benzene	NA
Ethylbenzene	7.4
Xylenes (total)	68

SB-254		
Depth	8-9'	19-20'
Date	3/3/2007	3/3/2007
VOCs	mg/kg	mg/kg
Benzene	ND	0.16
Ethylbenzene	ND	0.17
Xylenes (total)	ND	0.14

SB-222				
Depth	1-3'	7.5-8.5'	15-17'	19-20'
Date	1/21/2007	1/21/2007	1/21/2007	1/21/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	0.39 J	0.0021 J	*0.72*	4.4
Ethylbenzene	17	0.0038 J	0.024 J	1.5
Xylenes (total)	**160**	0.031	0.073 J	1.3

SB-MTP-1				
Depth	3-4'	8-9'	19-20'	23-24'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
VOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	0.29	0.31 J	0.015	0.0028 J
Ethylbenzene	0.72	20	0.0012 J	0.002 J
Xylenes (total)	3.8	**110**	0.0075 J	0.0084 J

SB-11					
Depth	5-6'	13-15'	27-29'	35-37'	37-39'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	0.0015 J	**26 D**	0.0073	ND
Ethylbenzene	0.31	0.0019 J	18 D	ND	0.0015 J
Xylenes (total)	2.02	0.0157	11.0064	ND	0.0012

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5b.
VOCs in Historic Soil Samples Exceeding Part 375 Restricted Residential SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Site Boundary
Monitoring Well/Soil Boring (Arcadis 2006-2007)
Soil Boring (TRC 2005)
Soil Boring (Arcadis 2006-2007)
Monitoring Well/Soil Boring (Core 2012)
Soil Boring (Core 2012)
Test Pit (TRC 2005)

Sample ID	
Date	Part 375 Unrestricted Use SCOs*
Analyte	
SVOCs	mg/kg
Acenaphthene	20
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	7
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	12
Phenanthrene	100
Pyrene	100

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. * = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
4. **Bold** and *Italicized* value indicates concentration exceeds Unrestricted SCOs
5. B = Analyte is found in the associated analysis batch blank
6. B-Dil = Detected in method blank(s) associated with sample analysis
7. J = Estimated value
8. NA = Not analyzed
9. ND = Not detected
10. D = The compound was found at a dilution factor

SB-12					
Depth	5-7'	7-9'	15-17'	25-27'	49-51'
Date	9/11/2004	9/11/2004	9/11/2004	9/12/2004	9/12/2004
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	ND	0.049 J	ND	ND	ND
Anthracene	0.035 J	0.150 J	ND	ND	ND
Benzo(a)anthracene	0.052 J	0.240 J	ND	ND	ND
Benzo(a)pyrene	0.052 J	0.220 J	ND	ND	ND
Benzo(b)fluoranthene	0.059 J	0.0240 J	ND	ND	ND
Benzo(k)fluoranthene	ND	0.093 J	ND	ND	ND
Chrysene	0.064 J	0.20 J	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND
Dibenzofuran	ND	0.070 J	ND	ND	ND
Fluoranthene	0.120 J	0.57	ND	ND	ND
Fluorene	ND	0.110J	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	0.100 J	ND	ND	ND
Naphthalene	ND	0.048 J	ND	ND	ND
Phenanthrene	0.080J	0.56	ND	ND	ND
Pyrene	0.120J	0.43	ND	ND	ND

SB-209			
Depth	9.4-10'	11-13'	19-20'
Date	1/20/2007	1/20/2007	1/20/2007
SVOCs	mg/kg	mg/kg	mg/kg
Acenaphthene	ND	ND	0.071 J
Anthracene	ND	ND	0.12 J
Benzo(a)anthracene	ND	ND	0.12 J
Benzo(a)pyrene	ND	ND	0.14 J
Benzo(b)fluoranthene	ND	ND	0.14 J
Benzo(k)fluoranthene	ND	ND	0.15 J
Chrysene	ND	ND	0.12 J
Dibenzo(a,h)anthracene	ND	ND	0.12 J
Dibenzofuran	ND	ND	0.079 J
Fluoranthene	ND	ND	0.13 J
Fluorene	ND	ND	0.096 J
Indeno(1,2,3-cd)pyrene	ND	ND	0.13 J
Naphthalene	ND	ND	0.29 J
Phenanthrene	ND	ND	0.11 J
Pyrene	ND	ND	0.12 J

SB-208			
Depth	2-3'	9.5-10'	19-20'
Date	2/10/2007	2/10/2007	2/10/2007
SVOCs	mg/kg	mg/kg	mg/kg
Acenaphthene	0.24 J	ND	ND
Anthracene	0.44	0.071 J	ND
Benzo(a)anthracene	***1.2***	0.13 J	ND
Benzo(a)pyrene	***1.3***	0.14 J	ND
Benzo(b)fluoranthene	***1.7***	0.17 J	ND
Benzo(k)fluoranthene	0.60	ND	ND
Chrysene	***1.2***	0.13 J	ND
Dibenzo(a,h)anthracene	0.19 J	ND	ND
Dibenzofuran	0.17 J	ND	ND
Fluoranthene	3.1	0.30 J	ND
Fluorene	0.25 J	ND	ND
Indeno(1,2,3-cd)pyrene	***0.88 J***	0.089 J	ND
Naphthalene	0.15 J	ND	ND
Phenanthrene	2.5	0.31 J	ND
Pyrene	2.5	0.23 J	ND

SB-210					
Depth	7-9'	11-113'	21-23'	25-27'	36-37'
Date	12/16/2006	12/16/2006	12/16/2006	12/16/2006	12/16/2006
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	ND	0.17 J	ND	ND	ND
Anthracene	0.13 J	0.091 J	ND	ND	ND
Benzo(a)anthracene	0.44	ND	ND	ND	ND
Benzo(a)pyrene	0.50 J	ND	ND	ND	ND
Benzo(b)fluoranthene	0.60	ND	ND	ND	ND
Benzo(k)fluoranthene	0.55 J	ND	ND	ND	ND
Chrysene	0.51	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.15 J	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND
Fluoranthene	0.72	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.27 J	ND	ND	ND	ND
Naphthalene	0.16 J	0.086 J	0.059 J	ND	ND
Phenanthrene	0.51	ND	ND	ND	ND
Pyrene	0.93 J	0.084 J	0.063 J	ND	ND

SB-9					
Depth	4-5'	8-10'	20-22'	26-28'	32-34'
Date	9/12/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.078 J	0.039 J	2.50	0.038 J	ND
Anthracene	0.049 J	0.091 J	2.9 D	0.056 J	ND
Benzo(a)anthracene	0.190 J	0.29 J	***2.90***	0.039 J	ND
Benzo(a)pyrene	0.240 J	0.26 J	***2.0***	ND	ND
Benzo(b)fluoranthene	0.310 J	0.28 J	***2.2***	ND	ND
Benzo(k)fluoranthene	0.160 J	0.14 J	***1.30 J***	ND	ND
Chrysene	0.280 J	0.26 J	***2.5***	0.05 J	ND
Dibenzo(a,h)anthracene	ND	ND	0.095 J	ND	ND
Dibenzofuran	0.140 J	ND	2.6	ND	ND
Fluoranthene	0.740	0.53	5.7 D	0.1 J	ND
Fluorene	0.690	0.62	5.5 D	0.1 J	ND
Indeno(1,2,3-cd)pyrene	0.100 J	0.13 J	0.044	ND	ND
Naphthalene	ND	0.044 J	***94 D***	0.78	0.075 J
Phenanthrene	0.700	0.25 J	8.5 D	0.14 J	ND
Pyrene	0.69	0.620	5.5 D	0.1 J	ND

SB-MTP-2				
Depth	9-10'	18-19'	22-23'	24-25'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.080 J	***74 J***	0.31 J	0.089 J
Anthracene	0.11 J	81	0.15 J	0.082 J
Benzo(a)anthracene	0.18 J	***46 J***	ND	ND
Benzo(a)pyrene	0.19 J	***35 J***	ND	ND
Benzo(b)fluoranthene	0.21 J	***26 J***	ND	ND
Benzo(k)fluoranthene	0.15 J	***35 J***	ND	ND
Chrysene	0.25 J	***47 J***	ND	ND
Dibenzo(a,h)anthracene	0.11 J	ND	ND	ND
Dibenzofuran	ND	***93***	ND	ND
Fluoranthene	0.18 J	***160***	0.32 J	0.12 J
Fluorene	0.095 J	100	0.068 J	ND
Indeno(1,2,3-cd)pyrene	0.14 J	***20 J***	ND	ND
Naphthalene	0.52	***22,000 D***	0.72	0.54
Phenanthrene	0.37 J	***300***	ND	0.074 J
Pyrene	0.27 J	***130***	0.34 J	0.36 J

TP-2N	
Depth	10-11'
Date	9/12/2014
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

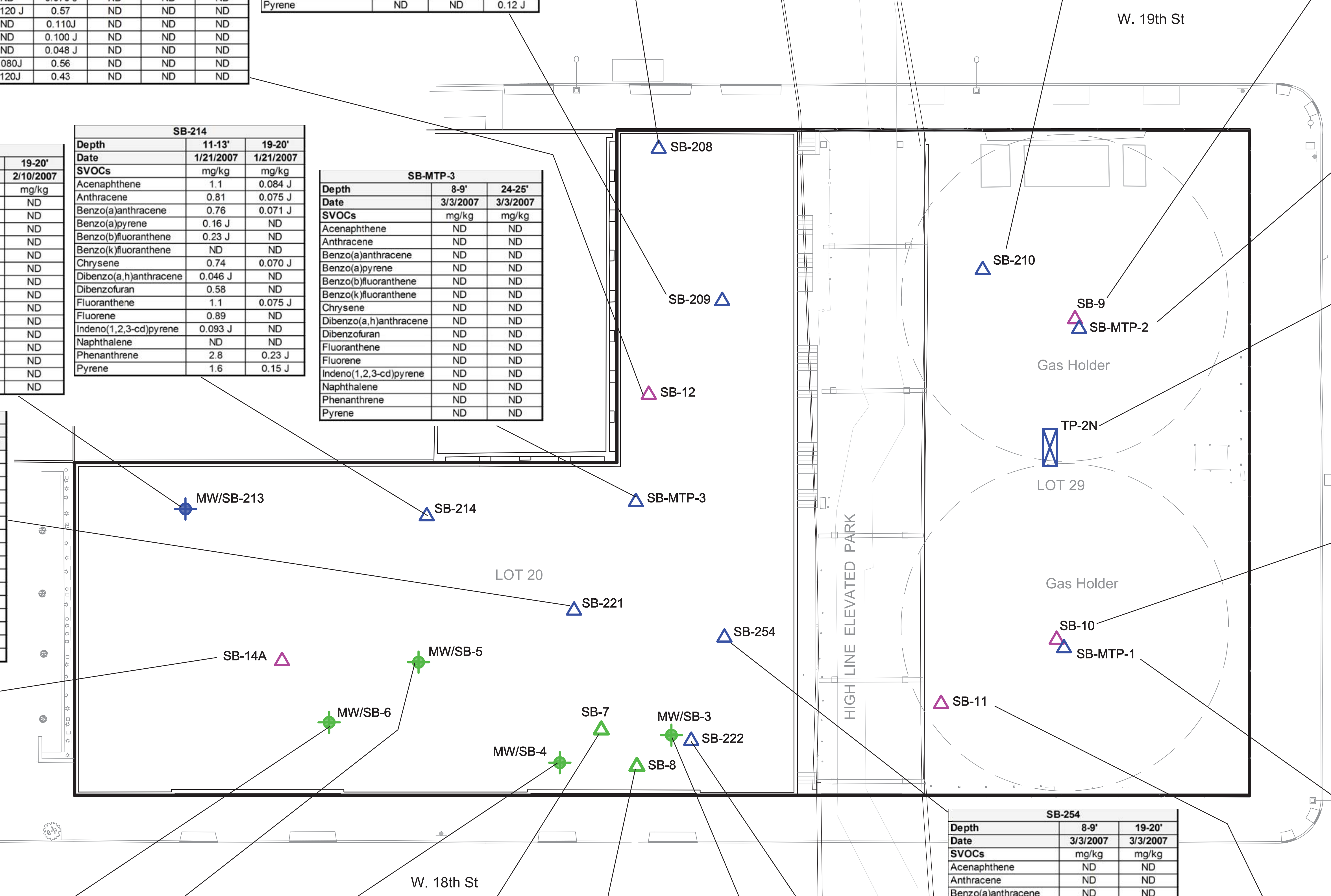
MW/SB-213		
Depth	8-9'	19-20'
Date	2/10/2007	2/10/2007
SVOCs	mg/kg	mg/kg
Acenaphthene	0.48 J	ND
Anthracene	0.52 J	ND
Benzo(a)anthracene	***1.2 J***	ND
Benzo(a)pyrene	***1.1 J***	ND
Benzo(b)fluoranthene	***2.0***	ND
Benzo(k)fluoranthene	***1.0 J***	ND
Chrysene	***1.8***	ND
Dibenzo(a,h)anthracene	0.23 J	ND
Dibenzofuran	0.26 J	ND
Fluoranthene	2.5	ND
Fluorene	0.69 J	ND
Indeno(1,2,3-cd)pyrene	***1.0 J***	ND
Naphthalene	4.6	ND
Phenanthrene	3.1	ND
Pyrene	2.4	ND

SB-214		
Depth	11-13'	19-20'
Date	1/21/2007	1/21/2007
SVOCs	mg/kg	mg/kg
Acenaphthene	1.1	0.084 J
Anthracene	0.81	0.075 J
Benzo(a)anthracene	0.76	0.071 J
Benzo(a)pyrene	0.16 J	ND
Benzo(b)fluoranthene	0.23 J	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	0.74	0.070 J
Dibenzo(a,h)anthracene	0.046 J	ND
Dibenzofuran	0.58	ND
Fluoranthene	1.1	0.075 J
Fluorene	0.89	ND
Indeno(1,2,3-cd)pyrene	0.093 J	ND
Naphthalene	ND	ND
Phenanthrene	2.8	0.23 J
Pyrene	1.6	0.15 J

SB-MTP-3		
Depth	8-9'	24-25'
Date	3/3/2007	3/3/2007
SVOCs	mg/kg	mg/kg
Acenaphthene	ND	ND
Anthracene	ND	ND
Benzo(a)anthracene	ND	ND
Benzo(a)pyrene	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	ND	ND
Dibenzo(a,h)anthracene	ND	ND
Dibenzofuran	ND	ND
Fluoranthene	ND	ND
Fluorene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Naphthalene	ND	ND
Phenanthrene	ND	ND
Pyrene	ND	ND

SB-221				
Depth	2-4'	6-8'	9.5-10'	24-25'
Date	1/20/2007	1/20/2007	1/20/2007	1/20/2007
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	ND	ND	0.30 J	2.4 J
Anthracene	ND	ND	1.2	ND
Benzo(a)anthracene	0.18 J	ND	***6.0 D***	ND
Benzo(a)pyrene	0.12 J	ND	***8.4 D***	ND
Benzo(b)fluoranthene	0.13 J	ND	***8.7 D***	ND
Benzo(k)fluoranthene	0.12 J	ND	***4.2 D***	ND
Chrysene	0.20 J	ND	***5.8 D***	ND
Dibenzo(a,h)anthracene	ND	ND	***1.6***	ND
Dibenzofuran	ND	ND	0.20 J	1.6 J
Fluoranthene	0.38	ND	7.6 D	0.82 J
Fluorene	0.076 J	ND	0.32 J	6.2
Indeno(1,2,3-cd)pyrene	0.12 J	ND	***5.7 JD***	ND
Naphthalene	ND	ND	0.19 J	ND
Phenanthrene	0.34 J	ND	3.2	12
Pyrene	0.41	ND	5.8 D	1.4 J

SB-14A				
Depth	4-5'	11-13'	17-19'	23-25'
Date	9/11/2004	10/3/2004	10/3/2004	10/3/2004
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.320 J	ND	ND	ND
Anthracene	0.340 J	ND	ND	ND
Benzo(a)anthracene	1	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(b)fluoranthene	1.4	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
Chrysene	1.1	ND	ND	ND
Dibenzo(a,h)anthracene	0.120 J	ND	ND	ND
Dibenzofuran	0.41	ND	ND	ND
Fluoranthene	1.5	ND	ND	ND
Fluorene	0.5	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.69	ND	ND	ND
Naphthalene	0.52	***41 J***	ND	ND
Phenanthrene	1.4	ND	ND	ND
Pyrene	1.6	ND	ND	ND



SB-10					
Depth	5-6'	6-8'	8-10'	20-22'	48-50'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.99	0.47 J	ND	0.074 J	ND
Anthracene	1.8	1.1	ND	0.1 J	ND
Benzo(a)anthracene	***2.7***	***1.6***	ND	0.068 J	ND
Benzo(a)pyrene	***2.4***	***1.2***	ND	0.049 J	ND
Benzo(b)fluoranthene	***2.7***	***1.4***	0.5 J	0.056 J	ND
Benzo(k)fluoranthene	***1.2 J***	***0.8 J***	ND	ND	ND
Chrysene	***2.3***	***1.2***	ND	0.075 J	ND
Dibenzo(a,h)anthracene	0.12 J	ND	ND	ND	ND
Dibenzofuran	0.68 J	0.37 J	ND	0.089 J	ND
Fluoranthene	5.3	3.1	0.65 J	0.17 J	ND
Fluorene	6.8 D	3.6	0.79 J	0.17 J	ND
Indeno(1,2,3-cd)pyrene	***0.75***	0.21 J	ND	ND	ND
Naphthalene	9.1 D	9.2 D	4	5.6 D	ND
Phenanthrene	5.3	3.2	0.59 J	0.29 J	ND
Pyrene	6.8 D	3.6	0.79 J	0.17 J	ND

SB-MTP-1				
Depth	3-4'	8-9'	19-20'	23-24'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.085 J	0.17 J	1.2	ND
Anthracene	0.16 J	0.30 J	0.52	ND
Benzo(a)anthracene	0.49	0.39	0.48	ND
Benzo(a)pyrene	0.53	0.28 J	0.36 J	ND
Benzo(b)fluoranthene	0.57	0.31 J	0.43 J	ND
Benzo(k)fluoranthene	0.30 J	0.14 J	0.19 J	ND
Chrysene	0.49	0.34 J	0.43 J	ND
Dibenzo(a,h)anthracene	0.075 J	ND	ND	ND
Dibenzofuran	0.099 J	0.11 J	0.65	ND
Fluoranthene	0.96	0.98	1.5	ND
Fluorene	0.17 J	0.22 J	0.84	ND
Indeno(1,2,3-cd)pyrene	0.33 J	0.15 J	0.19 J	ND
Naphthalene	0.61	5.5	3.9	ND
Phenanthrene	0.76	1.1	2.1	ND
Pyrene	0.91	0.97	1.3	ND

SB-254		
Depth	8-9'	19-20'
Date	3/3/2007	3/3/2007
SVOCs	mg/kg	mg/kg
Acenaphthene	ND	ND
Anthracene	ND	ND
Benzo(a)anthracene	ND	ND
Benzo(a)pyrene	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	ND	ND
Dibenzo(a,h)anthracene	ND	ND
Dibenzofuran	ND	ND
Fluoranthene	ND	0.11 J
Fluorene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Naphthalene	ND	0.13 J
Phenanthrene	ND	0.20 J
Pyrene	ND	0.11 J

MW/SB-6	
Depth	10-0.5'
Date	1/26/2012
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	0.25
Benzo(a)anthracene	***2.33***
Benzo(a)pyrene	***2.66***
Benzo(b)fluoranthene	***1.49***
Benzo(k)fluoranthene	***1.81***
Chrysene	***1.75***
Dibenzo(a,h)anthracene	0.283
Dibenzofuran	ND
Fluoranthene	1.88
Fluorene	0.0715 J
Indeno(1,2,3-cd)pyrene	0.459
Naphthalene	0.116 J
Phenanthrene	NA
Pyrene	2.17

MW/SB-5	
Depth	9-9.5'
Date	1/26/2012
SVOCs	mg/kg
Acenaphthene	0.439
Anthracene	0.233
Benzo(a)anthracene	0.172 J
Benzo(a)pyrene	0.138 J
Benzo(b)fluoranthene	0.137 J
Benzo(k)fluoranthene	0.114 J
Chrysene	0.277
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	0.672
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	0.652

MW/SB-4	
Depth	7-8'
Date	1/27/2012
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	ND
Benzo(a)anthracene	0.0824 J
Benzo(a)pyrene	0.113 J
Benzo(b)fluoranthene	0.0854 J
Benzo(k)fluoranthene	0.0957 J
Chrysene	0.0907 J
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	0.114 J

SB-7	
Depth	7-8'
Date	1/27/2012
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	1.67 J
Benzo(a)anthracene	***6.36***
Benzo(a)pyrene	***6.63***
Benzo(b)fluoranthene	***5.26***
Benzo(k)fluoranthene	***5.15***
Chrysene	***5.69***
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	9.58
Fluorene	ND
Indeno(1,2,3-cd)pyrene	***1.960 J***
Naphthalene	ND
Phenanthrene	NA
Pyrene	6.84

SB-8	
Depth	8-9'
Date	1/27/2012
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	ND

MW/SB-3	
Depth	6-6.5'
Date	1/25/2012
SVOCs	mg/kg
Acenaphthene	ND
Anthracene	ND
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Fluorene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	8.48
Phenanthrene	NA
Pyrene	ND

SB-222				
Depth	1-3'	7.5-8.5'	15-17'	19-20'
Date	1/21/2007	1/21/2007	1/21/2007	1/21/2007
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.099 J	ND	1.1	ND
Anthracene	ND	ND	0.21 J	ND
Benzo(a)anthracene	ND	ND	0.59	ND
Benzo(a)pyrene	ND	ND	***1.4***	ND
Benzo(b)fluoranthene	ND	ND	***1.3***	ND
Benzo(k)fluoranthene	ND	ND	0.65	ND
Chrysene	ND	ND	0.73	ND
Dibenzo(a,h)anthracene	ND	ND	0.24 J	ND
Dibenzofuran	ND	ND	ND	ND
Fluoranthene	ND	ND	0.87	ND
Fluorene	0.20 J	ND	2.0	ND
Indeno(1,2,3-cd)pyrene	ND	ND	***1.3***	ND
Naphthalene	ND	ND	42 D	0.13 J
Phenanthrene	0.34 J	ND	3.8	ND
Pyrene	0.070 J	ND	1.3	ND

SB-11					
Depth	5-6'	13-15'	27-29'	35-37'	37-39'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	0.4	ND	12 D	ND	ND
Anthracene	1	ND	19 D	ND	ND
Benzo(a)anthracene	***2***	ND	***16 D***	ND	ND
Benzo(a)pyrene	***1.7***	ND	***11 D***	ND	ND
Benzo(b)fluoranthene	***2.2***	ND	***12 D***	ND	ND
Benzo(k)fluoranthene	***0.83 J***	ND	***5.2***	ND	ND
Chrysene	***1.8***	ND	***13 D***	ND	ND
Dibenzo(a,h)anthracene	0.12 J	ND	***0.4 J***	ND	ND
Dibenzofuran	0.68	ND	15 D	ND	ND
Fluoranthene	4.3 D	0.064 J	40 JD	ND	ND
Fluorene	4.3 D	0.073 J	32 D	ND	ND
Indeno(1,2,3-cd)pyrene	***0.74***	ND	***1.9***	ND	ND
Naphthalene	2.4	ND	***1300 DJ***	0.28 J	ND
Phenanthrene	4.5 D	0.089 J	63 D	ND	ND
Pyrene	4.3 D	0.073 J	32 D	ND	ND

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integral engineering p.c.
61 BROADWAY, SUITE 1601
NEW YORK, NEW YORK 10006
www.integral-corp.com

0 15 30
Feet

Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5c.
SVOCs in Historic Soil Samples Exceeding Part 375 Unrestricted SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Site Boundary
Monitoring Well/Soil Boring (Arcadis 2006-2007)
Soil Boring (TRC 2005)
Soil Boring (Arcadis 2006-2007)
Monitoring Well/Soil Boring (Core 2012)
Soil Boring (Core 2012)
Test Pit (TRC 2005)

Sample ID	
Date	Part 375 Restricted
Analyte	Residential Use SCOs**
SVOCs	mg/kg
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	59
Fluoranthene	100
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	100
Phenanthrene	100
Pyrene	100

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. ** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential
4. **Bold** and shaded value indicates concentration exceeds Restricted Residential SCOs
5. J = Estimated value
6. NA = Not analyzed
7. ND = Not detected
8. D = The compound was found at a dilution factor

SB-12					
Depth	**5-7'**	**7-9'**	**15-17'**	**25-27'**	**49-51'**
Date	**9/11/2004**	**9/11/2004**	**9/11/2004**	**9/12/2004**	**9/12/2004**
VOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.052 J	0.240 J	ND	ND	ND
Benzo(a)pyrene	0.052 J	0.220 J	ND	ND	ND
Benzo(b)fluoranthene	0.059 J	0.0240 J	ND	ND	ND
Benzo(k)fluoranthene	ND	0.093 J	ND	ND	ND
Chrysene	0.064 J	0.20 J	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND
Dibenzofuran	ND	0.070 J	ND	ND	ND
Fluoranthene	0.120 J	0.57	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	0.100 J	ND	ND	ND
Naphthalene	ND	0.048 J	ND	ND	ND
Phenanthrene	0.080J	0.56	ND	ND	ND
Pyrene	0.120J	0.43	ND	ND	ND

SB-209			
Depth	**9.4-10'**	**11-13'**	**19-20'**
Date	**1/20/2007**	**1/20/2007**	**1/20/2007**
SVOCs	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	ND	ND	0.12 J
Benzo(a)pyrene	ND	ND	0.14 J
Benzo(b)fluoranthene	ND	ND	0.14 J
Benzo(k)fluoranthene	ND	ND	0.15 J
Chrysene	ND	ND	0.12 J
Dibenzo(a,h)anthracene	ND	ND	0.12 J
Dibenzofuran	ND	ND	0.079 J
Fluoranthene	ND	ND	0.13 J
Indeno(1,2,3-cd)pyrene	ND	ND	0.13 J
Naphthalene	ND	ND	0.29 J
Phenanthrene	ND	ND	0.11 J
Pyrene	ND	ND	0.12 J

SB-208			
Depth	**2-3'**	**9.5-10'**	**19-20'**
Date	**2/10/2007**	**2/10/2007**	**2/10/2007**
SVOCs	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	**1.2**	0.13 J	ND
Benzo(a)pyrene	**1.3**	0.14 J	ND
Benzo(b)fluoranthene	**1.7**	0.17 J	ND
Benzo(k)fluoranthene	0.60	ND	ND
Chrysene	1.2	0.13 J	ND
Dibenzo(a,h)anthracene	0.19 J	ND	ND
Dibenzofuran	0.17 J	ND	ND
Fluoranthene	3.1	0.30 J	ND
Indeno(1,2,3-cd)pyrene	**0.88 J**	0.089 J	ND
Naphthalene	0.15 J	ND	ND
Phenanthrene	2.5	0.31 J	ND
Pyrene	2.5	0.23 J	ND

SB-210					
Depth	**7-9'**	**11-113'**	**21-23'**	**25-27'**	**36-37'**
Date	**12/16/2006**	**12/16/2006**	**12/16/2006**	**12/16/2006**	**12/16/2006**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.44	ND	ND	ND	ND
Benzo(a)pyrene	0.50 J	ND	ND	ND	ND
Benzo(b)fluoranthene	0.60	ND	ND	ND	ND
Benzo(k)fluoranthene	0.55 J	ND	ND	ND	ND
Chrysene	0.51	ND	ND	ND	ND
Dibenzo(a,h)anthracene	0.15 J	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND
Fluoranthene	0.72	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.27 J	ND	ND	ND	ND
Naphthalene	0.16 J	0.086 J	0.059 J	ND	ND
Phenanthrene	0.51	ND	ND	ND	ND
Pyrene	0.93 J	0.084 J	0.063 J	ND	ND

SB-9					
Depth	**4-5'**	**8-10'**	**20-22'**	**26-28'**	**32-34'**
Date	**9/12/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.190 J	0.29 J	**2.90**	0.039 J	ND
Benzo(a)pyrene	0.240 J	0.26 J	**2.0**	ND	ND
Benzo(b)fluoranthene	0.310 J	0.28 J	**2.2**	ND	ND
Benzo(k)fluoranthene	0.160 J	0.14 J	**1.30 J**	ND	ND
Chrysene	0.280 J	0.26 J	**2.5**	0.05 J	ND
Dibenzo(a,h)anthracene	ND	ND	0.095 J	ND	ND
Dibenzofuran	0.140 J	ND	2.6	ND	ND
Fluoranthene	0.740	0.53	5.7 D	0.1 J	ND
Indeno(1,2,3-cd)pyrene	0.100 J	0.13 J	0.044	ND	ND
Naphthalene	ND	0.044 J	94 D	0.78	0.075 J
Phenanthrene	0.700	0.25 J	8.5 D	0.14 J	ND
Pyrene	0.69	0.620	5.5 D	0.1 J	ND

SB-MTP-2				
Depth	**9-10'**	**18-19'**	**22-23'**	**24-25'**
Date	**2/10/2007**	**2/10/2007**	**2/10/2007**	**2/10/2007**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.18 J	**46 J**	ND	ND
Benzo(a)pyrene	0.19 J	**35 J**	ND	ND
Benzo(b)fluoranthene	0.21 J	**26 J**	ND	ND
Benzo(k)fluoranthene	0.15 J	**35 J**	ND	ND
Chrysene	0.25 J	**47 J**	ND	ND
Dibenzo(a,h)anthracene	0.11 J	ND	ND	ND
Dibenzofuran	ND	**93**	ND	ND
Fluoranthene	0.18 J	**160**	0.32 J	0.12 J
Indeno(1,2,3-cd)pyrene	0.14 J	**20 J**	ND	ND
Naphthalene	0.52	**22,000 D**	0.72	0.54
Phenanthrene	0.37 J	**300**	ND	0.074 J
Pyrene	0.27 J	**130**	0.34 J	0.36 J

TP-2N	
Depth	**10-11'**
Date	**9/12/2014**
SVOCs	mg/kg
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

MW/SB-213		
Depth	**8-9'**	**19-20'**
Date	**2/10/2007**	**2/10/2007**
SVOCs	mg/kg	mg/kg
Benzo(a)anthracene	**1.2 J**	ND
Benzo(a)pyrene	**1.1 J**	ND
Benzo(b)fluoranthene	**2.0**	ND
Benzo(k)fluoranthene	1.0 J	ND
Chrysene	1.8	ND
Dibenzo(a,h)anthracene	0.23 J	ND
Dibenzofuran	0.26 J	ND
Fluoranthene	2.5	ND
Indeno(1,2,3-cd)pyrene	**1.0 J**	ND
Naphthalene	4.6	ND
Phenanthrene	3.1	ND
Pyrene	2.4	ND

SB-214		
Depth	**11-13'**	**19-20'**
Date	**1/21/2007**	**1/21/2007**
SVOCs	mg/kg	mg/kg
Benzo(a)anthracene	0.76	0.071 J
Benzo(a)pyrene	0.16 J	ND
Benzo(b)fluoranthene	0.23 J	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	0.74	0.070 J
Dibenzo(a,h)anthracene	0.046 J	ND
Dibenzofuran	0.58	ND
Fluoranthene	1.1	0.075 J
Indeno(1,2,3-cd)pyrene	0.093 J	ND
Naphthalene	ND	ND
Phenanthrene	2.8	0.23 J
Pyrene	1.6	0.15 J

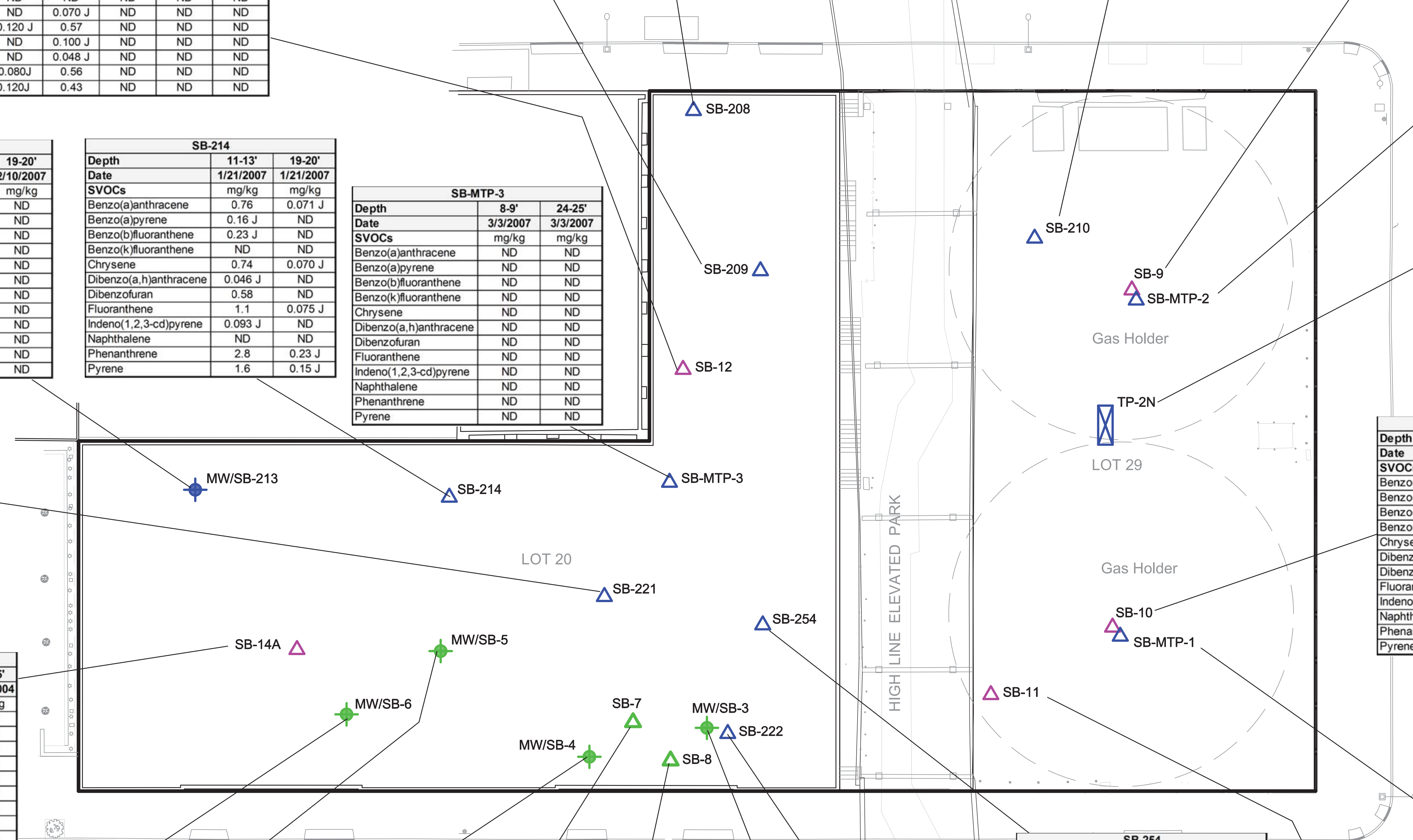
SB-MTP-3		
Depth	**8-9'**	**24-25'**
Date	**3/3/2007**	**3/3/2007**
SVOCs	mg/kg	mg/kg
Benzo(a)anthracene	ND	ND
Benzo(a)pyrene	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	ND	ND
Dibenzo(a,h)anthracene	ND	ND
Dibenzofuran	ND	ND
Fluoranthene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Naphthalene	ND	ND
Phenanthrene	ND	ND
Pyrene	ND	ND

SB-221				
Depth	**2-4'**	**6-8'**	**9.5-10'**	**24-25'**
Date	**1/20/2007**	**1/20/2007**	**1/20/2007**	**1/20/2007**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.18 J	ND	**6.0 D**	ND
Benzo(a)pyrene	0.12 J	ND	**8.4 D**	ND
Benzo(b)fluoranthene	0.13 J	ND	**8.7 D**	ND
Benzo(k)fluoranthene	0.12 J	ND	**4.2 D**	ND
Chrysene	0.20 J	ND	**5.8 D**	ND
Dibenzo(a,h)anthracene	ND	ND	**1.6**	ND
Dibenzofuran	ND	ND	0.20 J	1.6 J
Fluoranthene	0.38	ND	7.6 D	0.82 J
Indeno(1,2,3-cd)pyrene	0.12 J	ND	**5.7 JD**	ND
Naphthalene	ND	ND	0.19 J	ND
Phenanthrene	0.34 J	ND	3.2	12
Pyrene	0.41	ND	5.8 D	1.4 J

SB-10					
Depth	**5-6'**	**6-8'**	**8-10'**	**20-22'**	**48-50'**
Date	**9/11/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	**2.7**	**1.6**	ND	0.068 J	ND
Benzo(a)pyrene	**2.4**	**1.2**	ND	0.049 J	ND
Benzo(b)fluoranthene	**2.7**	**1.4**	0.5 J	0.056 J	ND
Benzo(k)fluoranthene	1.2 J	0.8 J	ND	ND	ND
Chrysene	2.3	1.2	ND	0.075 J	ND
Dibenzo(a,h)anthracene	0.12 J	ND	ND	ND	ND
Dibenzofuran	0.68 J	0.37 J	ND	0.089 J	ND
Fluoranthene	5.3	3.1	0.65 J	0.17 J	ND
Indeno(1,2,3-cd)pyrene	**0.75**	0.21 J	ND	ND	ND
Naphthalene	9.1 D	9.2 D	4	5.6 D	ND
Phenanthrene	5.3	3.2	0.59 J	0.29 J	ND
Pyrene	6.8 D	3.6	0.79 J	0.17 J	ND

SB-14A				
Depth	**4-5'**	**11-13'**	**17-19'**	**23-25'**
Date	**9/11/2004**	**10/3/2004**	**10/3/2004**	**10/3/2004**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	1	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(b)fluoranthene	1.4	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND
Chrysene	1.1	ND	ND	ND
Dibenzo(a,h)anthracene	0.120 J	ND	ND	ND
Dibenzofuran	0.41	ND	ND	ND
Fluoranthene	1.5	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.69	ND	ND	ND
Naphthalene	0.52	41 J	ND	ND
Phenanthrene	1.4	ND	ND	ND
Pyrene	1.6	ND	ND	ND

SB-MTP-1				
Depth	**3-4'**	**8-9'**	**19-20'**	**23-24'**
Date	**2/10/2007**	**2/10/2007**	**2/10/2007**	**2/10/2007**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	0.49	0.39	0.48	ND
Benzo(a)pyrene	0.53	0.28 J	0.36 J	ND
Benzo(b)fluoranthene	0.57	0.31 J	0.43 J	ND
Benzo(k)fluoranthene	0.30 J	0.14 J	0.19 J	ND
Chrysene	0.49	0.34 J	0.43 J	ND
Dibenzo(a,h)anthracene	0.075 J	ND	ND	ND
Dibenzofuran	0.099 J	0.11 J	0.65	ND
Fluoranthene	0.96	0.98	1.5	ND
Indeno(1,2,3-cd)pyrene	0.33 J	0.15 J	0.19 J	ND
Naphthalene	0.61	5.5	3.9	ND
Phenanthrene	0.76	1.1	2.1	ND
Pyrene	0.91	0.97	1.3	ND



SB-254		
Depth	**8-9'**	**19-20'**
Date	**3/3/2007**	**3/3/2007**
SVOCs	mg/kg	mg/kg
Benzo(a)anthracene	ND	ND
Benzo(a)pyrene	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Chrysene	ND	ND
Dibenzo(a,h)anthracene	ND	ND
Dibenzofuran	ND	ND
Fluoranthene	ND	0.11 J
Indeno(1,2,3-cd)pyrene	ND	ND
Naphthalene	ND	0.13 J
Phenanthrene	ND	0.20 J
Pyrene	ND	0.11 J

MW/SB-6	
Depth	**10-0.5'**
Date	**1/26/2012**
SVOCs	mg/kg
Benzo(a)anthracene	**2.33**
Benzo(a)pyrene	**2.66**
Benzo(b)fluoranthene	**1.49**
Benzo(k)fluoranthene	1.81
Chrysene	**1.75**
Dibenzo(a,h)anthracene	0.283
Dibenzofuran	ND
Fluoranthene	1.88
Indeno(1,2,3-cd)pyrene	0.459
Naphthalene	0.116 J
Phenanthrene	NA
Pyrene	2.17

MW/SB-5	
Depth	**9-9.5'**
Date	**1/26/2012**
SVOCs	mg/kg
Benzo(a)anthracene	0.172 J
Benzo(a)pyrene	0.138 J
Benzo(b)fluoranthene	0.137 J
Benzo(k)fluoranthene	0.114 J
Chrysene	0.277
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	0.672
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	0.652

MW/SB-4	
Depth	**7-8'**
Date	**1/27/2012**
SVOCs	mg/kg
Benzo(a)anthracene	0.0824 J
Benzo(a)pyrene	0.113 J
Benzo(b)fluoranthene	0.0854 J
Benzo(k)fluoranthene	0.0957 J
Chrysene	0.0907 J
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	0.114 J

SB-7	
Depth	**7-8'**
Date	**1/27/2012**
SVOCs	mg/kg
Benzo(a)anthracene	**6.36**
Benzo(a)pyrene	**6.63**
Benzo(b)fluoranthene	**5.26**
Benzo(k)fluoranthene	**5.15**
Chrysene	**5.69**
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	9.58
Indeno(1,2,3-cd)pyrene	**1.960 J**
Naphthalene	ND
Phenanthrene	NA
Pyrene	6.84

SB-8	
Depth	**8-9'**
Date	**1/27/2012**
SVOCs	mg/kg
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	ND
Phenanthrene	NA
Pyrene	ND

MW/SB-3	
Depth	**6-6.5'**
Date	**1/25/2012**
SVOCs	mg/kg
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Benzo(k)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Dibenzofuran	ND
Fluoranthene	ND
Indeno(1,2,3-cd)pyrene	ND
Naphthalene	8.48
Phenanthrene	NA
Pyrene	ND

SB-222				
Depth	**1-3'**	**7.5-8.5'**	**15-17'**	**19-20'**
Date	**1/21/2007**	**1/21/2007**	**1/21/2007**	**1/21/2007**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	ND	ND	0.59	ND
Benzo(a)pyrene	ND	ND	**1.4**	ND
Benzo(b)fluoranthene	ND	ND	**1.3**	ND
Benzo(k)fluoranthene	ND	ND	0.65	ND
Chrysene	ND	ND	0.73	ND
Dibenzo(a,h)anthracene	ND	ND	0.24 J	ND
Dibenzofuran	ND	ND	ND	ND
Fluoranthene	ND	ND	0.87	ND
Indeno(1,2,3-cd)pyrene	ND	ND	**1.3**	ND
Naphthalene	ND	ND	42 D	0.13 J
Phenanthrene	0.34 J	ND	3.8	ND
Pyrene	0.070 J	ND	1.3	ND

SB-11					
Depth	**5-6'**	**13-15'**	**27-29'**	**35-37'**	**37-39'**
Date	**9/11/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
SVOCs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzo(a)anthracene	**2**	ND	**16 D**	ND	ND
Benzo(a)pyrene	**1.7**	ND	**11 D**	ND	ND
Benzo(b)fluoranthene	**2.2**	ND	**12 D**	ND	ND
Benzo(k)fluoranthene	0.83 J	ND	**5.2**	ND	ND
Chrysene	1.8	ND	**13 D**	ND	ND
Dibenzo(a,h)anthracene	0.12 J	ND	**0.4 J**	ND	ND
Dibenzofuran	0.68	ND	15 D	ND	ND
Fluoranthene	4.3 D	0.064 J	40 JD	ND	ND
Indeno(1,2,3-cd)pyrene	**0.74**	ND	**1.9**	ND	ND
Naphthalene	2.4	ND	**1300 DJ**	0.28 J	ND
Phenanthrene	4.5 D	0.089 J	63 D	ND	ND
Pyrene	4.3 D	0.073 J	32 D	ND	ND

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5d.
SVOCs in Historic Soil Samples Exceeding Part 375 Restricted Residential SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

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Site Boundary

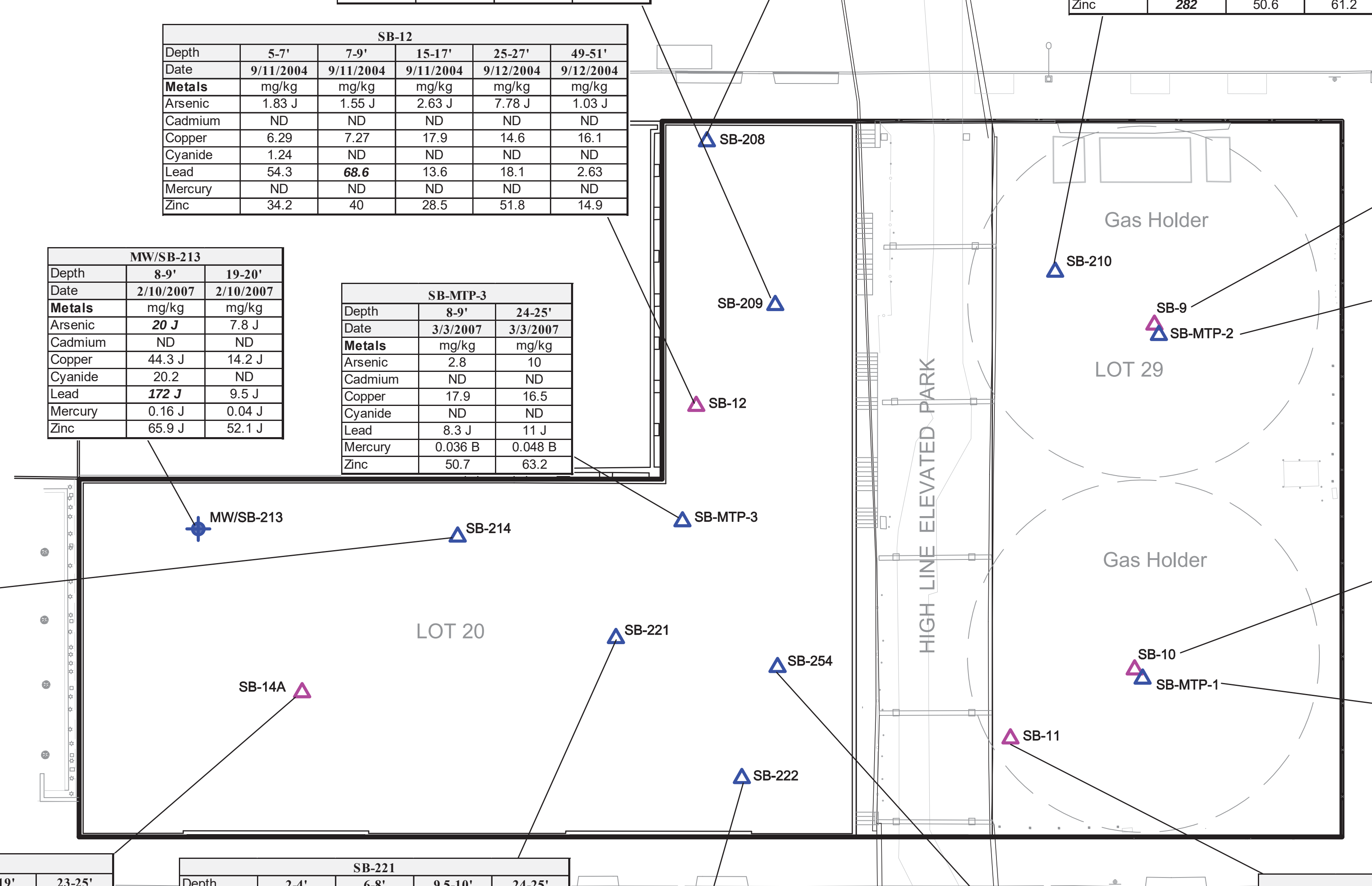
Monitoring Well/Soil Boring (Arcadis 2006-2007)

Soil Boring (TRC 2005)

Soil Boring (Arcadis 2006-2007)

Sample ID	
Date / Analyte	Part 375 Unrestricted Use SCOs*
Metals	mg/kg
Arsenic	13
Cadmium	2.5
Copper	50
Cyanide	27
Lead	63
Mercury	0.18
Zinc	109

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. * = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
4. **Bold** and *Italicized* value indicates concentration exceeds Unrestricted SCOs
5. B = Analyte is found in the associated analysis batch blank
6. J = Estimated value
7. R = Data rejected based on ARCADIS and TRC data validation
8. NA = Not analyzed
9. ND = Not detected
10. NS = No standard



SB-209

Depth	9.4-10'	11-13'	19-20'
Date	1/20/2007	1/20/2007	1/20/2007
Metals	mg/kg	mg/kg	mg/kg
Arsenic	1.7	2.2	9.1
Cadmium	ND	ND	ND
Copper	14.2	19.5	13.9
Cyanide	NA	ND	NA
Lead	5.9	7.6	9.1
Mercury	0.023 B	0.024 B	0.043 B
Zinc	23 J	30.7 J	57.9 J

SB-208

Depth	2-3'	9.5-10'	19-20'
Date	1/20/2007	1/20/2007	1/20/2007
Metals	mg/kg	mg/kg	mg/kg
Arsenic	4.8	2.7	9
Cadmium	0.41 B	ND	ND
Copper	41.8	20.5	15.7
Cyanide	1.0	ND	ND
Lead	***708***	31.9	10.1
Mercury	***0.55***	0.055	0.037 B
Zinc	***399 J***	43.6 J	58.5 J

SB-210

Depth	7-9'	11-13'	21-23'	25-27'	36-37'
Date	12/16/2006	12/16/2006	12/16/2006	12/16/2006	12/16/2006
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	9.3 J	5.0 J	2.5J	1.3 J	0.9 J
Cadmium	***3.5***	ND	0.0800B	ND	ND
Copper	***176***	17.5	24.6	5.6	10.9
Cyanide	2.5	2.3	3.5	1.9	0.49 B
Lead	***535***	15.1	***85.2***	6.6	6.4
Mercury	***0.23 J***	0.048 J	***0.36 J***	ND	ND
Zinc	***282***	50.6	61.2	15.6	22.6

SB-12

Depth	5-7'	7-9'	15-17'	25-27'	49-51'
Date	9/11/2004	9/11/2004	9/11/2004	9/12/2004	9/12/2004
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.83 J	1.55 J	2.63 J	7.78 J	1.03 J
Cadmium	ND	ND	ND	ND	ND
Copper	6.29	7.27	17.9	14.6	16.1
Cyanide	1.24	ND	ND	ND	ND
Lead	54.3	***68.6***	13.6	18.1	2.63
Mercury	ND	ND	ND	ND	ND
Zinc	34.2	40	28.5	51.8	14.9

SB-9

Depth	4-5'	8-10'	26-28'	32-34'
Date	9/12/2004	9/18/2004	9/18/2004	9/18/2004
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.94 J	1.79	1.7	1.53
Cadmium	ND	ND	ND	ND
Copper	16	18.1	16.1	9.37
Cyanide	ND	ND	ND	ND
Lead	21.9	14.5 J	***88.6 J***	4.31 J
Mercury	ND	0.11 J	0.01 J	ND
Zinc	32.1	39.1	30.9	11.6

MW/SB-213

Depth	8-9'	19-20'
Date	2/10/2007	2/10/2007
Metals	mg/kg	mg/kg
Arsenic	***20 J***	7.8 J
Cadmium	ND	ND
Copper	44.3 J	14.2 J
Cyanide	20.2	ND
Lead	***172 J***	9.5 J
Mercury	0.16 J	0.04 J
Zinc	65.9 J	52.1 J

SB-MTP-3

Depth	8-9'	24-25'
Date	3/3/2007	3/3/2007
Metals	mg/kg	mg/kg
Arsenic	2.8	10
Cadmium	ND	ND
Copper	17.9	16.5
Cyanide	ND	ND
Lead	8.3 J	11 J
Mercury	0.036 B	0.048 B
Zinc	50.7	63.2

SB-MTP-2

Depth	9-10'	18-19'	22-23'	24-25'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	5.0 J	9.4 J	0.55 J	0.63 J
Cadmium	0.36 B	ND	ND	ND
Copper	38.3 J	30.3 J	8.20 J	7.7 J
Cyanide	2.2	***179***	ND	ND
Lead	***76.7 J***	***1,430 J***	2.9 J	3.7 J
Mercury	0.14 J	***0.46 J***	0.021 J	0.02 J
Zinc	88.2 J	***197 J***	9.1 J	11.8 J

SB-10

Depth	5-6'	6-8'	8-10'	20-22'	48-50'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004	9/18/2004
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.7 J	2.42	4.02	2.47	2.01
Cadmium	ND	ND	ND	ND	ND
Copper	19.3	26.5	26.5	6.65	18.3
Cyanide	ND	ND	ND	2.08	ND
Lead	53.6	55.3 J	40.4 J	21.6 J	7.51 J
Mercury	ND	0.09 J	0.07 J	ND	0.01 J
Zinc	41.5	50.5	50	11.3	33.9

SB-214

Depth	5-7'	9.5-10'	11-13'	19-20'
Date	1/21/2007	1/21/2007	1/21/2007	1/21/2007
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.9	1.5	1.4	9.0
Cadmium	ND	ND	ND	ND
Copper	25.3	11.5	27.5	14.9
Cyanide	NA	ND	ND	NA
Lead	6.7	5.2	4.6	9.7
Mercury	0.019 B	ND	0.03 B	0.049
Zinc	22.6 J	14.5	19.4 J	59.6 J

SB-MTP-1

Depth	3-4'	8-9'	19-20'	23-24'
Date	2/10/2007	2/10/2007	2/10/2007	2/10/2007
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	2.2 J	1.2 J	4.8 J	3 J
Cadmium	ND	ND	ND	ND
Copper	18.8 J	14.7 J	18.1 J	26.1 J
Cyanide	ND	NA	NA	NA
Lead	***178 J***	11.5 J	12.4 J	14.1 J
Mercury	***0.25 J***	ND	0.039 J	ND
Zinc	***123 J***	28.6 J	68.1 J	41.1 J

SB-14A

Depth	4-5'	11-13'	17-19'	23-25'
Date	9/11/2004	10/3/2004	10/3/2004	10/3/2004
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	3.72 J	1.49	1.19	6.72
Cadmium	ND	ND	ND	ND
Copper	23.4	14.3	13.1	13.3
Cyanide	ND	0.58	0.57	0.73
Lead	***184***	8.21	5.34	8.72
Mercury	***0.23 J***	0.021 R	0.016 R	0.033 R
Zinc	35.5	20	18.8	52.8

SB-221

Depth	2-4'	6-8'	9.5-10'	24-25'
Date	1/20/2007	1/20/2007	1/20/2007	1/20/2007
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	4.2	2.9	2.6	10
Cadmium	ND	ND	ND	ND
Copper	29.9	17.5	16.3	16.8
Cyanide	ND	ND	NA	ND
Lead	***94.4***	52.5	9.5	10.3
Mercury	***0.28***	0.035 B	ND	0.035 B
Zinc	55.7 J	24.3 J	29.1 J	60.9 J

SB-222

Depth	1-3'	7.5-8.5'	15-17'	19-20'
Date	1/21/2007	1/21/2007	1/21/2007	1/21/2007
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	***15.8***	1.7	2.7	7.9
Cadmium	0.12 B	ND	ND	ND
Copper	***109***	18.3	15.1	14.4
Cyanide	0.32 B	ND	ND	NA
Lead	***459***	6.6	8.5	9.6
Mercury	***0.47***	ND	0.023 B	0.042 B
Zinc	88.3 J	20.4 J	24.7	59.9 J

SB-254

Depth	8-9'	19-20'
Date	3/3/2007	3/3/2007
Metals	mg/kg	mg/kg
Arsenic	0.43 B	9.9
Cadmium	ND	ND
Copper	10.1	14.2
Cyanide	0	ND
Lead	3.8	9.4
Mercury	0.02 B	0.054
Zinc	11.2	57

SB-11

Depth	5-6'	13-15'	27-29'	37-39'
Date	9/11/2004	9/18/2004	9/18/2004	9/18/2004
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	3.15 J	1.56	3.85	0.295 J
Cadmium	ND	ND	ND	ND
Copper	20.3 J	15.2	20.2	5.42
Cyanide	ND	ND	45 R	ND
Lead	***110 J***	15.8 J	***1740 J***	5.1 J
Mercury	***0.48 J***	0.03 J	0.02 J	0.01 J
Zinc	59.5	30.2	69.4	10.1

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5e.
Metals in Historic Soil Samples Exceeding Part 375 Unrestricted SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Site Boundary

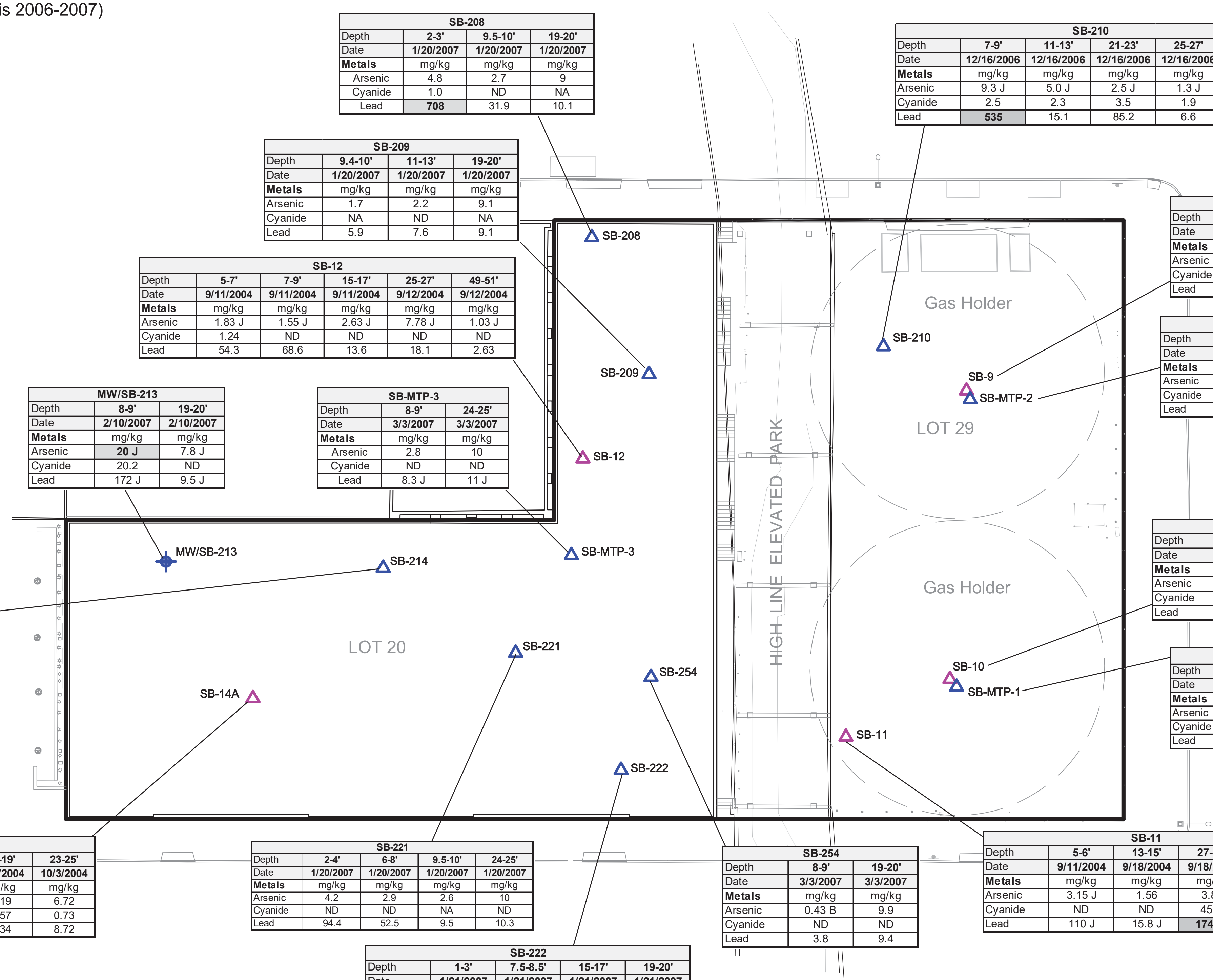
Monitoring Well/Soil Boring (Arcadis 2006-2007)

Soil Boring (TRC 2005)

Soil Boring (Arcadis 2006-2007)

Sample ID	
Date	Part 375 Restricted
Analyte	Residential Use SCOs**
Metals	mg/kg
Arsenic	16
Cyanide	27
Lead	400

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. ** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential
4. **Bold** and shaded value indicates concentration exceeds Restricted-Residential SCOs
5. B = Analyte is found in the associated analysis batch blank
6. J = Estimated value
7. R = Data rejected based on ARCADIS and TRC data validation
8. NA = Not analyzed
9. ND = Not detected
10. NS = No standard



SB-208			
Depth	**2-3'**	**9.5-10'**	**19-20'**
Date	**1/20/2007**	**1/20/2007**	**1/20/2007**
Metals	mg/kg	mg/kg	mg/kg
Arsenic	4.8	2.7	9
Cyanide	1.0	ND	NA
Lead	**708**	31.9	10.1

SB-209			
Depth	**9.4-10'**	**11-13'**	**19-20'**
Date	**1/20/2007**	**1/20/2007**	**1/20/2007**
Metals	mg/kg	mg/kg	mg/kg
Arsenic	1.7	2.2	9.1
Cyanide	NA	ND	NA
Lead	5.9	7.6	9.1

SB-12					
Depth	**5-7'**	**7-9'**	**15-17'**	**25-27'**	**49-51'**
Date	**9/11/2004**	**9/11/2004**	**9/11/2004**	**9/12/2004**	**9/12/2004**
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.83 J	1.55 J	2.63 J	7.78 J	1.03 J
Cyanide	1.24	ND	ND	ND	ND
Lead	54.3	68.6	13.6	18.1	2.63

SB-210					
Depth	**7-9'**	**11-13'**	**21-23'**	**25-27'**	**36-37'**
Date	**12/16/2006**	**12/16/2006**	**12/16/2006**	**12/16/2006**	**12/16/2006**
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	9.3 J	5.0 J	2.5 J	1.3 J	0.9 J
Cyanide	2.5	2.3	3.5	1.9	0.49 B
Lead	**535**	15.1	85.2	6.6	6.4

SB-9				
Depth	**4-5'**	**8-10'**	**26-28'**	**32-34'**
Date	**9/12/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.94 J	1.79	1.7	1.53
Cyanide	ND	ND	ND	ND
Lead	21.9	14.5 J	88.6 J	4.31 J

SB-MTP-2				
Depth	**9-10'**	**18-19'**	**22-23'**	**24-25'**
Date	**2/10/2007**	**2/10/2007**	**2/10/2007**	**2/10/2007**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	5.0 J	9.4 J	0.55 J	0.63 J
Cyanide	2.2	**179**	ND	ND
Lead	76.7 J	**1,430 J**	2.9 J	3.7 J

MW/SB-213		
Depth	**8-9'**	**19-20'**
Date	**2/10/2007**	**2/10/2007**
Metals	mg/kg	mg/kg
Arsenic	**20 J**	7.8 J
Cyanide	20.2	ND
Lead	172 J	9.5 J

SB-MTP-3		
Depth	**8-9'**	**24-25'**
Date	**3/3/2007**	**3/3/2007**
Metals	mg/kg	mg/kg
Arsenic	2.8	10
Cyanide	ND	ND
Lead	8.3 J	11 J

SB-10					
Depth	**5-6'**	**6-8'**	**8-10'**	**20-22'**	**48-50'**
Date	**9/11/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
Metals	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.7 J	2.42	4.02	2.47	2.01
Cyanide	ND	ND	ND	2.08	ND
Lead	53.6	55.3 J	40.4 J	21.6 J	7.51 J

SB-214				
Depth	**5-7'**	**9.5-10'**	**11-13'**	**19-20'**
Date	**1/21/2007**	**1/21/2007**	**1/21/2007**	**1/21/2007**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	1.9	1.5	1.4	9.0
Cyanide	NA	ND	ND	NA
Lead	6.7	5.2	4.6	9.7

SB-MTP-1				
Depth	**3-4'**	**8-9'**	**19-20'**	**23-24'**
Date	**2/10/2007**	**2/10/2007**	**2/10/2007**	**2/10/2007**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	2.2 J	1.2 J	4.8 J	3.0 J
Cyanide	ND	NA	NA	NA
Lead	178 J	11.5 J	12.4 J	14.1 J

SB-14A				
Depth	**4-5'**	**11-13'**	**17-19'**	**23-25'**
Date	**9/11/2004**	**10/3/2004**	**10/3/2004**	**10/3/2004**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	3.72 J	1.49	1.19	6.72
Cyanide	ND	0.58	0.57	0.73
Lead	184	8.21	5.34	8.72

SB-221				
Depth	**2-4'**	**6-8'**	**9.5-10'**	**24-25'**
Date	**1/20/2007**	**1/20/2007**	**1/20/2007**	**1/20/2007**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	4.2	2.9	2.6	10
Cyanide	ND	ND	NA	ND
Lead	94.4	52.5	9.5	10.3

SB-254		
Depth	**8-9'**	**19-20'**
Date	**3/3/2007**	**3/3/2007**
Metals	mg/kg	mg/kg
Arsenic	0.43 B	9.9
Cyanide	ND	ND
Lead	3.8	9.4

SB-11				
Depth	**5-6'**	**13-15'**	**27-29'**	**37-39'**
Date	**9/11/2004**	**9/18/2004**	**9/18/2004**	**9/18/2004**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	3.15 J	1.56	3.85	0.295 J
Cyanide	ND	ND	45 R	ND
Lead	110 J	15.8 J	**1740 J**	5.1 J

SB-222				
Depth	**1-3'**	**7.5-8.5'**	**15-17'**	**19-20'**
Date	**1/21/2007**	**1/21/2007**	**1/21/2007**	**1/21/2007**
Metals	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	15.8	1.7	2.7	7.9
Cyanide	0.32 B	ND	ND	NA
Lead	**459**	6.6	8.5	9.6

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5f.
Metals in Historic Soil Samples Exceeding Part 375 Restricted Residential SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

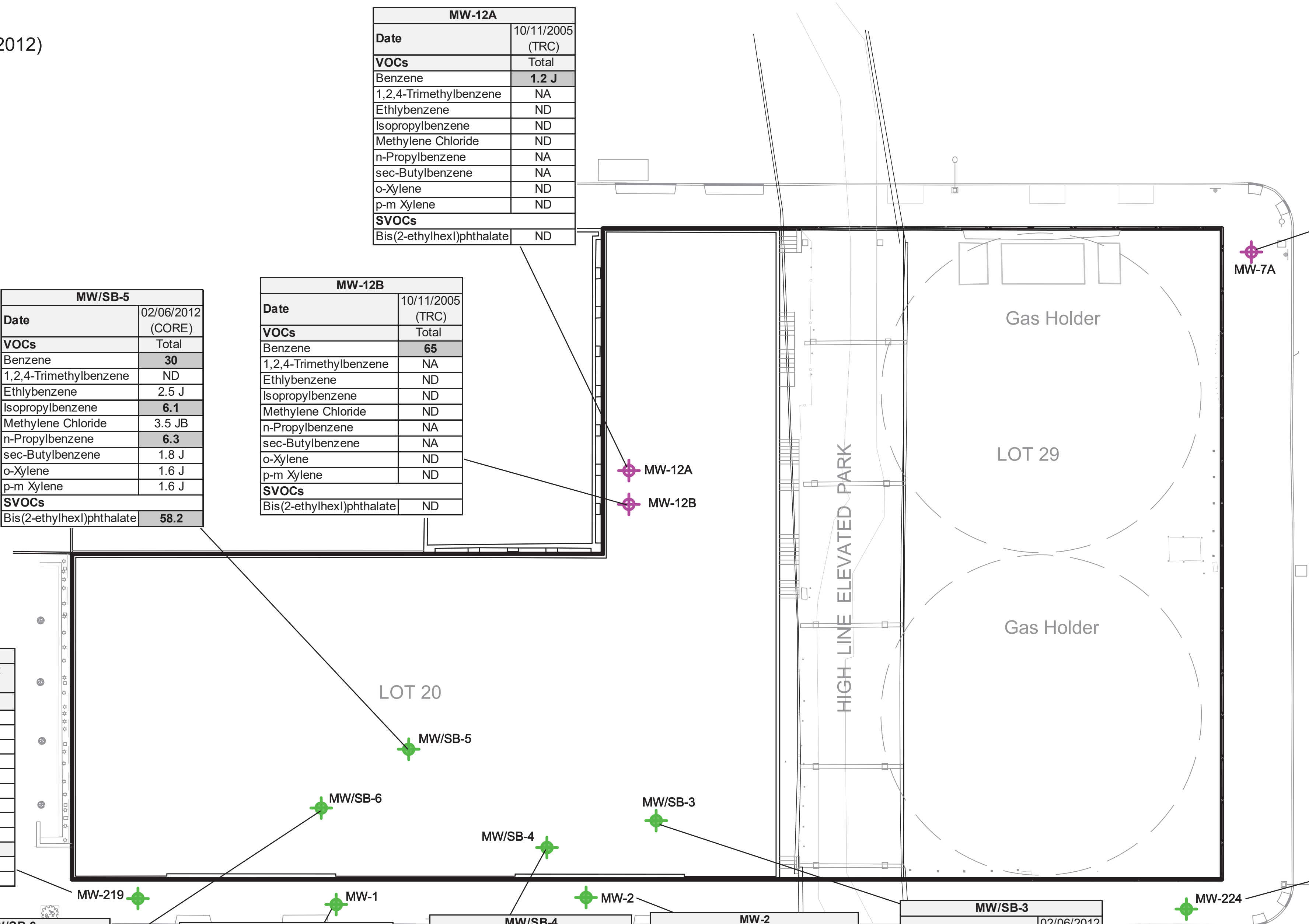
Site Boundary

Monitoring Well (TRC 2005)

Monitoring Well/Soil Boring (Core 2012)

Sample ID	
Date	TOGS Class
Analyte	GA Standards*
VOCs	µg/L
Benzene	1
1,2,4-Trimethylbenzene	5
Ethlybenzene	5
Isopropylbenzene	5
Methylene Chloride	5
n-Propylbenzene	5
sec-Butylbenzene	5
o-Xylene	5
p-m Xylene	5
SVOCs	
Bis(2-ethylhexl)phthalate	5

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. * = NYSDEC Division of water Technical and Operational Guidance Series (TOGS) 1.1.1. Class GA Ambient Water Quality Standards and Guidance Values
4. **Bold** and shaded value indicates concentration exceedance of Class GA Standards
5. All values in µg/L
6. J = Estimated value
7. NA = Not analyzed
8. ND = Not detected
9. NS = No standard



MW-12A	
Date	10/11/2005 (TRC)
VOCs	Total
Benzene	**1.2 J**
1,2,4-Trimethylbenzene	NA
Ethlybenzene	ND
Isopropylbenzene	ND
Methylene Chloride	ND
n-Propylbenzene	NA
sec-Butylbenzene	NA
o-Xylene	ND
p-m Xylene	ND
SVOCs	
Bis(2-ethylhexl)phthalate	ND

MW-12B	
Date	10/11/2005 (TRC)
VOCs	Total
Benzene	**65**
1,2,4-Trimethylbenzene	NA
Ethlybenzene	ND
Isopropylbenzene	ND
Methylene Chloride	ND
n-Propylbenzene	NA
sec-Butylbenzene	NA
o-Xylene	ND
p-m Xylene	ND
SVOCs	
Bis(2-ethylhexl)phthalate	ND

MW/SB-5	
Date	02/06/2012 (CORE)
VOCs	Total
Benzene	**30**
1,2,4-Trimethylbenzene	ND
Ethlybenzene	2.5 J
Isopropylbenzene	**6.1**
Methylene Chloride	3.5 JB
n-Propylbenzene	**6.3**
sec-Butylbenzene	1.8 J
o-Xylene	1.6 J
p-m Xylene	1.6 J
SVOCs	
Bis(2-ethylhexl)phthalate	**58.2**

MW-7A		
Date	10/11/2005 (TRC)	02/06/2012 (CORE)
VOCs	Total	Total
Benzene	**20**	**23**
1,2,4-Trimethylbenzene	NR	ND
Ethlybenzene	ND	ND
Isopropylbenzene	2.3 J	0.87 J
Methylene Chloride	ND	4.6 JB
n-Propylbenzene	NR	ND
sec-Butylbenzene	NR	ND
o-Xylene	ND	ND
p-m Xylene	ND	ND
SVOCs		
2-Methylnaphthalene	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND

MW-219	
Date	02/06/12 (CORE)
VOCs	Total
Benzene	ND
1,2,4-Trimethylbenzene	ND
Ethlybenzene	ND
Isopropylbenzene	ND
Methylene Chloride	ND
n-Propylbenzene	ND
sec-Butylbenzene	ND
o-Xylene	ND
p-m Xylene	ND
SVOCs	
2-Methylnaphthalene	ND
Bis(2-ethylhexyl)phthalate	ND

MW-224	
Date	02/06/12 (CORE)
VOCs	Total
Benzene	**32**
1,2,4-Trimethylbenzene	1.2 J
Ethlybenzene	ND
Isopropylbenzene	**21**
Methylene Chloride	2.3 JB
n-Propylbenzene	**39**
sec-Butylbenzene	**5.2**
o-Xylene	1.2 J
p-m Xylene	3.2 J
SVOCs	
2-Methylnaphthalene	**17.8**
Bis(2-ethylhexyl)phthalate	ND

MW/SB-6	
Date	02/06/2012 (CORE)
VOCs	Total
Benzene	**16**
1,2,4-Trimethylbenzene	1.1 J
Ethlybenzene	2.2 J
Isopropylbenzene	**11**
Methylene Chloride	3.4 JB
n-Propylbenzene	**10**
sec-Butylbenzene	3.4 JB
o-Xylene	1.4
p-m Xylene	1.9
SVOCs	
Bis(2-ethylhexl)phthalate	ND

MW-1	
Date	02/06/12 (CORE)
VOCs	Total
Benzene	**50**
1,2,4-Trimethylbenzene	ND
Ethlybenzene	ND
Isopropylbenzene	**24 J**
Methylene Chloride	**44 JB**
n-Propylbenzene	**22 J**
sec-Butylbenzene	ND
o-Xylene	ND
p-m Xylene	ND
SVOCs	
2-Methylnaphthalene	ND
Bis(2-ethylhexyl)phthalate	16

MW/SB-4	
Date	02/06/2012 (CORE)
VOCs	Total
Benzene	**83**
1,2,4-Trimethylbenzene	ND
Ethlybenzene	3.4 J
Isopropylbenzene	1.6
Methylene Chloride	4.3 JB
n-Propylbenzene	ND
sec-Butylbenzene	ND
o-Xylene	1.9 J
p-m Xylene	2.7 J
SVOCs	
Bis(2-ethylhexl)phthalate	ND

MW-2	
Date	02/06/12 (CORE)
VOCs	Total
Benzene	**350**
1,2,4-Trimethylbenzene	0.94 J
Ethlybenzene	1.6 J
Isopropylbenzene	**10**
Methylene Chloride	4.3 JB
n-Propylbenzene	**11**
sec-Butylbenzene	1.8 J
o-Xylene	1.2 J
p-m Xylene	4.1 J
SVOCs	
2-Methylnaphthalene	ND
Bis(2-ethylhexyl)phthalate	634

MW/SB-3	
Date	02/06/2012 (CORE)
VOCs	Total
Benzene	**120**
1,2,4-Trimethylbenzene	**8.2**
Ethlybenzene	8
Isopropylbenzene	2 J
Methylene Chloride	4 JB
n-Propylbenzene	1.9 J
sec-Butylbenzene	ND
o-Xylene	**7.9**
p-m Xylene	**17**
SVOCs	
Bis(2-ethylhexl)phthalate	ND

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 5g.
VOCs and SVOCs in Historic Groundwater Samples Exceeding TOGS AWQS
Remedial Action Work Plan
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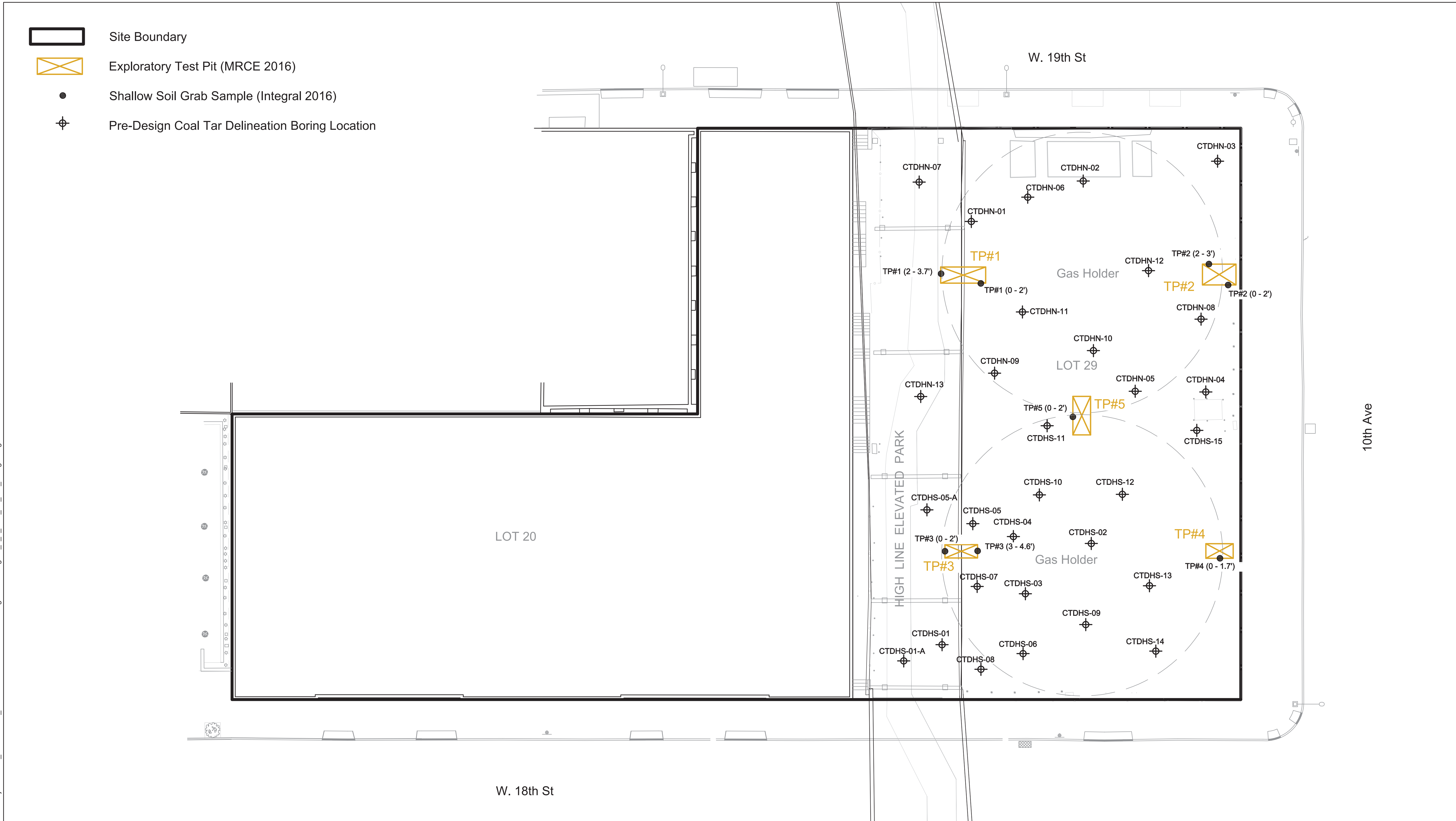
Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.

Figure 6.
Geotechnical and Visual Coal Tar Delineation Boring Location Map, MRCE and Integral 2015
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Note:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.

Figure 7.
Test Pit and Pre-Design Sample Location Map
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Site Boundary

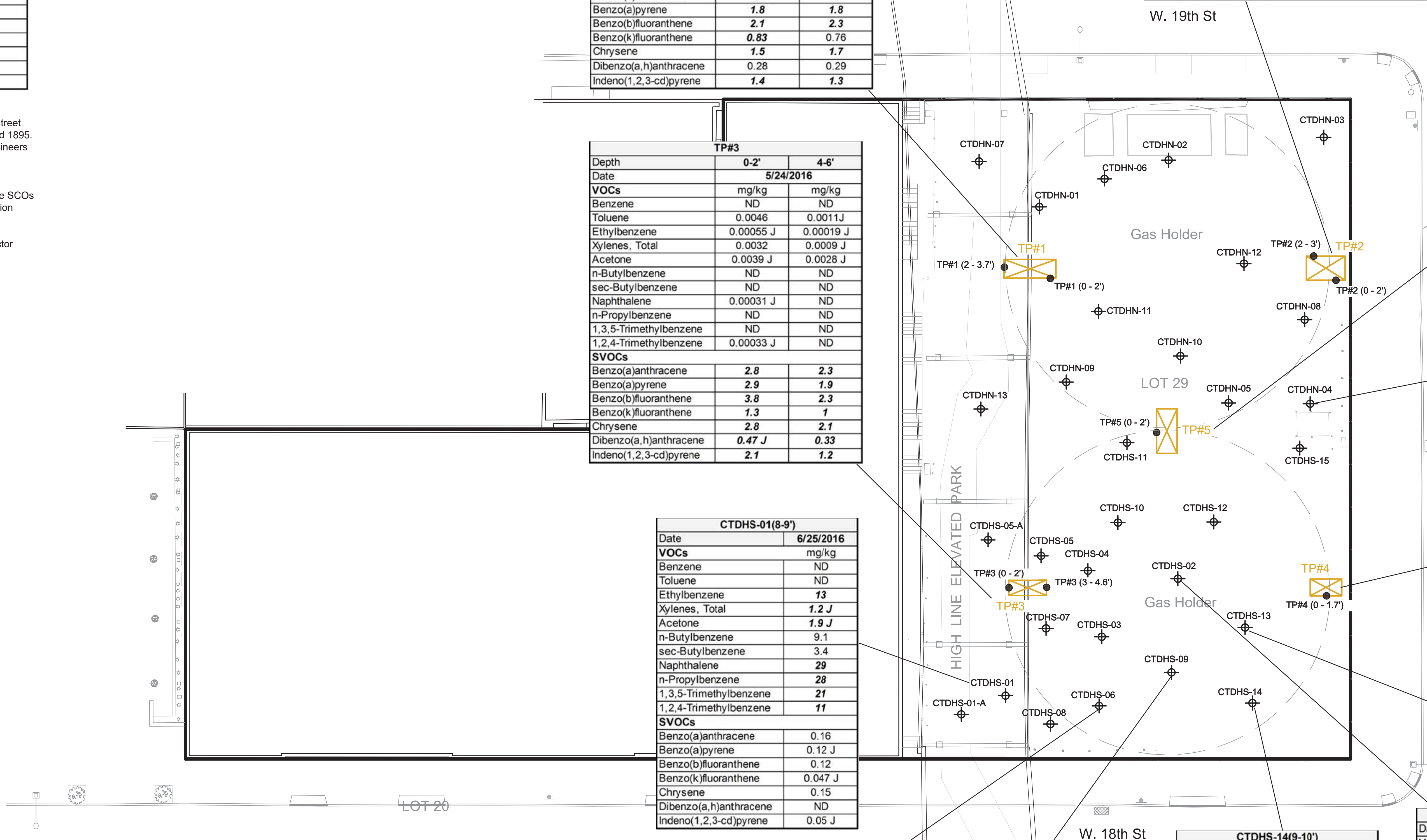
Exploratory Test Pit (MRCE 2016)

Shallow Soil Grab Sample (Integral 2016)

Pre-Design Coal Tar Delineation Boring Location

Sample ID	
Date	Unrestricted Use SCOs*
Analyte	
VOCs	mg/kg
Benzene	0.06
Toluene	0.7
Ethylbenzene	1
Xylenes, Total	0.26
Acetone	0.05
n-Butylbenzene	12
sec-Butylbenzene	11
Naphthalene	12
n-Propylbenzene	3.9
1,3,5-Trimethylbenzene	8.4
1,2,4-Trimethylbenzene	3.6
SVOCs	
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. * = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
4. **Bold** and *Italicized* value indicates concentration exceeds Unrestricted SCOs
5. J = Estimated value
6. D = The compound was found at a dilution factor
7. NA = Not analyzed
8. ND = Not detected



TP#1		
Depth	**0-2'**	**2-3.7'**
Date	**5/23/2016**	
VOCs	mg/kg	mg/kg
Benzene	ND	ND
Toluene	0.0011 J	0.001 J
Ethylbenzene	ND	ND
Xylenes, Total	ND	0.00039 J
Acetone	0.0042 J	0.0087 J
n-Butylbenzene	ND	ND
sec-Butylbenzene	ND	ND
Naphthalene	0.00051 J	0.00024 J
n-Propylbenzene	ND	ND
1,3,5-Trimethylbenzene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
SVOCs		
Benzo(a)anthracene	***1.5***	***1.8***
Benzo(a)pyrene	***1.8***	***1.8***
Benzo(b)fluoranthene	***2.1***	***2.3***
Benzo(k)fluoranthene	***0.83***	0.76
Chrysene	***1.5***	***1.7***
Dibenzo(a,h)anthracene	0.28	0.29
Indeno(1,2,3-cd)pyrene	***1.4***	***1.3***

TP#2		
Depth	**0-2'**	**2-3'**
Date	**5/23/2016**	
VOCs	mg/kg	mg/kg
Benzene	0.0012	0.00015 J
Toluene	0.0055	0.0044
Ethylbenzene	0.0007 J	ND
Xylenes, Total	0.005J	ND
Acetone	**0.057**	0.028
n-Butylbenzene	ND	ND
sec-Butylbenzene	0.00052 J	ND
Naphthalene	0.0017 J	0.00018 J
n-Propylbenzene	0.00042 J	ND
1,3,5-Trimethylbenzene	0.002 J	ND
1,2,4-Trimethylbenzene	0.0021 J	0.00018 J
SVOCs		
Benzo(a)anthracene	***2.9***	0.21
Benzo(a)pyrene	***3***	0.22
Benzo(b)fluoranthene	***3.8***	0.27
Benzo(k)fluoranthene	***1.3***	0.096 J
Chrysene	***2.7***	0.2
Dibenzo(a,h)anthracene	***0.45***	0.034 J
Indeno(1,2,3-cd)pyrene	***2***	0.16

TP#3		
Depth	**0-2'**	**4-6'**
Date	**5/24/2016**	
VOCs	mg/kg	mg/kg
Benzene	ND	ND
Toluene	0.0046	0.0011J
Ethylbenzene	0.00055 J	0.00019 J
Xylenes, Total	0.0032	0.0009 J
Acetone	0.0039 J	0.0028 J
n-Butylbenzene	ND	ND
sec-Butylbenzene	ND	ND
Naphthalene	0.00031 J	ND
n-Propylbenzene	ND	ND
1,3,5-Trimethylbenzene	ND	ND
1,2,4-Trimethylbenzene	0.00033 J	ND
SVOCs		
Benzo(a)anthracene	***2.8***	***2.3***
Benzo(a)pyrene	***2.9***	***1.9***
Benzo(b)fluoranthene	***3.8***	***2.3***
Benzo(k)fluoranthene	***1.3***	***1***
Chrysene	***2.8***	***2.1***
Dibenzo(a,h)anthracene	***0.47 J***	***0.33***
Indeno(1,2,3-cd)pyrene	***2.1***	***1.2***

TP#5 (0-2')	
Date	**5/24/2016**
VOCs	mg/kg
Benzene	ND
Toluene	0.0013 J
Ethylbenzene	0.00051 J
Xylenes, Total	0.0036 J
Acetone	0.015
n-Butylbenzene	ND
sec-Butylbenzene	ND
Naphthalene	ND
n-Propylbenzene	ND
1,3,5-Trimethylbenzene	ND
1,2,4-Trimethylbenzene	0.00042 J
SVOCs	
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.67
Benzo(b)fluoranthene	0.93
Benzo(k)fluoranthene	0.32
Chrysene	0.68
Dibenzo(a,h)anthracene	0.12 J
Indeno(1,2,3-cd)pyrene	***0.51***

CTDHN-04(8-10')	
Date	**6/28/2016**
VOCs	mg/kg
Benzene	***0.62***
Toluene	0.13 J
Ethylbenzene	***13***
Xylenes, Total	***2.5 J***
Acetone	***0.18 J***
n-Butylbenzene	5.4
sec-Butylbenzene	2.5
Naphthalene	***12***
n-Propylbenzene	***11***
1,3,5-Trimethylbenzene	3.5
1,2,4-Trimethylbenzene	***11***
SVOCs	
Benzo(a)anthracene	0.067
Benzo(a)pyrene	0.085
Benzo(b)fluoranthene	0.081
Benzo(k)fluoranthene	ND
Chrysene	0.075
Dibenzo(a,h)anthracene	0.11
Indeno(1,2,3-cd)pyrene	0.07

TP#4 (0-1.7')	
Date	**5/24/2016**
VOCs	mg/kg
Benzene	ND
Toluene	0.0012 J
Ethylbenzene	0.0002 J
Xylenes, Total	0.001 J
Acetone	0.0059 J
n-Butylbenzene	ND
sec-Butylbenzene	ND
Naphthalene	ND
n-Propylbenzene	ND
1,3,5-Trimethylbenzene	ND
1,2,4-Trimethylbenzene	0.00016 J
SVOCs	
Benzo(a)anthracene	0.21 J
Benzo(a)pyrene	0.25 J
Benzo(b)fluoranthene	0.33 J
Benzo(k)fluoranthene	ND
Chrysene	0.26 J
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	0.2 J

CTDHS-01(8-9')	
Date	**6/25/2016**
VOCs	mg/kg
Benzene	ND
Toluene	ND
Ethylbenzene	***13***
Xylenes, Total	***1.2 J***
Acetone	***1.9 J***
n-Butylbenzene	9.1
sec-Butylbenzene	3.4
Naphthalene	***29***
n-Propylbenzene	***28***
1,3,5-Trimethylbenzene	***21***
1,2,4-Trimethylbenzene	***11***
SVOCs	
Benzo(a)anthracene	0.16
Benzo(a)pyrene	0.12 J
Benzo(b)fluoranthene	0.12
Benzo(k)fluoranthene	0.047 J
Chrysene	0.15
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	0.05 J

CTDHS-13(7-8')	
Date	**6/27/2016**
VOCs	mg/kg
Benzene	***2.3 J***
Toluene	***34***
Ethylbenzene	***75***
Xylenes, Total	***440***
Acetone	ND
n-Butylbenzene	***15***
sec-Butylbenzene	4.7
Naphthalene	***34***
n-Propylbenzene	***45***
1,3,5-Trimethylbenzene	***90***
1,2,4-Trimethylbenzene	***290***
SVOCs	
Benzo(a)anthracene	***1.2***
Benzo(a)pyrene	0.85
Benzo(b)fluoranthene	***1***
Benzo(k)fluoranthene	0.24
Chrysene	0.94
Dibenzo(a,h)anthracene	0.12
Indeno(1,2,3-cd)pyrene	***0.5***

CTDHS-02(9-10')	
Date	**6/25/2016**
VOCs	mg/kg
Benzene	***2.5 J***
Toluene	***38***
Ethylbenzene	***85***
Xylenes, Total	***490***
Acetone	***4.7 J***
n-Butylbenzene	***18***
sec-Butylbenzene	***270***
Naphthalene	***48***
n-Propylbenzene	***52***
1,3,5-Trimethylbenzene	***100***
1,2,4-Trimethylbenzene	***340***
SVOCs	
Benzo(a)anthracene	***12***
Benzo(a)pyrene	***13***
Benzo(b)fluoranthene	***15***
Benzo(k)fluoranthene	***3.5***
Chrysene	***13***
Dibenzo(a,h)anthracene	***1.5***
Indeno(1,2,3-cd)pyrene	***7.6***

CTDHS-14(9-10')	
Date	**6/27/2016**
VOCs	mg/kg
Benzene	***0.96***
Toluene	0.13
Ethylbenzene	***5.6***
Xylenes, Total	***2***
Acetone	ND
n-Butylbenzene	4.8
sec-Butylbenzene	1.4
Naphthalene	***17***
n-Propylbenzene	***10***
1,3,5-Trimethylbenzene	1
1,2,4-Trimethylbenzene	1.4
SVOCs	
Benzo(a)anthracene	0.88
Benzo(a)pyrene	0.65
Benzo(b)fluoranthene	0.68
Benzo(k)fluoranthene	0.23
Chrysene	0.69
Dibenzo(a,h)anthracene	0.1
Indeno(1,2,3-cd)pyrene	0.39

CTDHS-09(9-10')	
Date	**6/26/2016**
VOCs	mg/kg
Benzene	***0.22 J***
Toluene	0.23 J
Ethylbenzene	***4.7***
Xylenes, Total	***31***
Acetone	ND
n-Butylbenzene	1.3
sec-Butylbenzene	0.38
Naphthalene	3.9
n-Propylbenzene	2.9
1,3,5-Trimethylbenzene	7.4
1,2,4-Trimethylbenzene	***24***
SVOCs	
Benzo(a)anthracene	0.22
Benzo(a)pyrene	0.21
Benzo(b)fluoranthene	0.24
Benzo(k)fluoranthene	0.09
Chrysene	0.23
Dibenzo(a,h)anthracene	0.03
Indeno(1,2,3-cd)pyrene	0.14

CTDHS-06(9-10')	
Date	**6/25/2016**
VOCs	mg/kg
Benzene	***0.8 J***
Toluene	***1.8***
Ethylbenzene	***32***
Xylenes, Total	***160***
Acetone	ND
n-Butylbenzene	8.9
sec-Butylbenzene	2.7
Naphthalene	***26***
n-Propylbenzene	***23***
1,3,5-Trimethylbenzene	***52***
1,2,4-Trimethylbenzene	***180***
SVOCs	
Benzo(a)anthracene	0.38
Benzo(a)pyrene	0.43
Benzo(b)fluoranthene	0.46
Benzo(k)fluoranthene	0.16
Chrysene	0.42
Dibenzo(a,h)anthracene	0.068 J
Indeno(1,2,3-cd)pyrene	0.31

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 8a.
VOCs and SVOCs for Test Pitting and Pre-Design Investigation Soil Samples Exceeding Part 375 Unrestricted SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Site Boundary

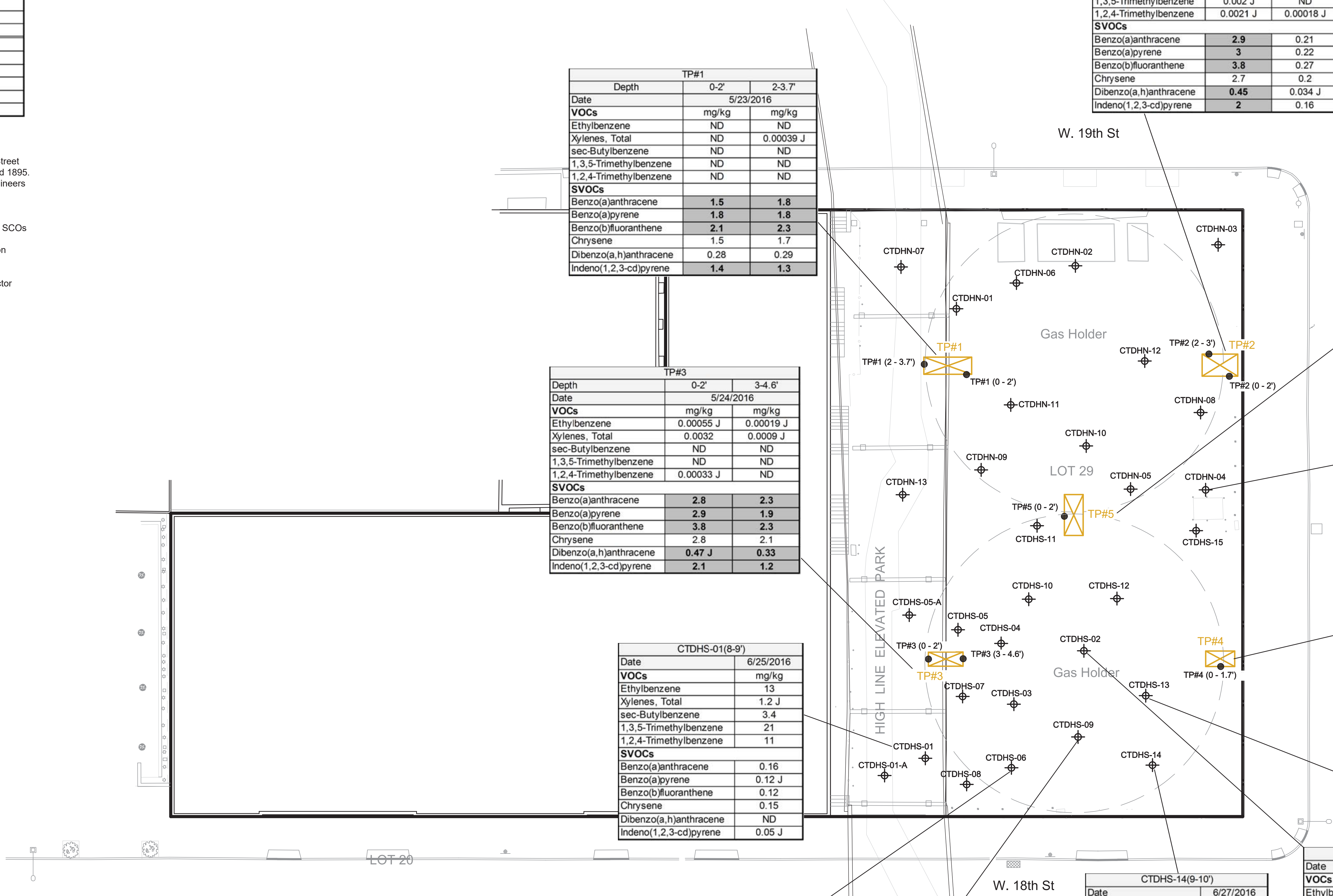
Exploratory Test Pit (MRCE 2016)

Shallow Soil Grab Sample (Integral 2016)

Pre-Design Coal Tar Delineation Boring Location

Sample ID	
Date	Restricted Residential Use
Analyte	SCOs**
VOCs	mg/kg
Ethylbenzene	41
Xylenes, Total	100
sec-Butylbenzene	100
1,3,5-Trimethylbenzene	52
1,2,4-Trimethylbenzene	52
SVOCs	
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Chrysene	3.9
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. ** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential
4. **Bold** and shaded value indicates concentration exceeds Restricted Residential SCOs
5. J = Estimated value
6. D = The compound was found at a dilution factor
7. NA = Not analyzed
8. ND = Not detected



TP#1		
Depth	0-2'	2-3.7'
Date	5/23/2016	
VOCs	mg/kg	mg/kg
Ethylbenzene	ND	ND
Xylenes, Total	ND	0.00039 J
sec-Butylbenzene	ND	ND
1,3,5-Trimethylbenzene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
SVOCs		
Benzo(a)anthracene	**1.5**	**1.8**
Benzo(a)pyrene	**1.8**	**1.8**
Benzo(b)fluoranthene	**2.1**	**2.3**
Chrysene	1.5	1.7
Dibenzo(a,h)anthracene	0.28	0.29
Indeno(1,2,3-cd)pyrene	**1.4**	**1.3**

TP#2		
Depth	0-2'	2-3'
Date	5/23/2016	
VOCs	mg/kg	mg/kg
Ethylbenzene	0.0007 J	ND
Xylenes, Total	0.005J	ND
sec-Butylbenzene	0.00052 J	ND
1,3,5-Trimethylbenzene	0.002 J	ND
1,2,4-Trimethylbenzene	0.0021 J	0.00018 J
SVOCs		
Benzo(a)anthracene	**2.9**	0.21
Benzo(a)pyrene	**3**	0.22
Benzo(b)fluoranthene	**3.8**	0.27
Chrysene	2.7	0.2
Dibenzo(a,h)anthracene	**0.45**	0.034 J
Indeno(1,2,3-cd)pyrene	**2**	0.16

TP#5 (0-2')	
Date	5/24/2016
VOCs	mg/kg
Ethylbenzene	0.00051 J
Xylenes, Total	0.0036 J
sec-Butylbenzene	ND
1,3,5-Trimethylbenzene	ND
1,2,4-Trimethylbenzene	0.00042 J
SVOCs	
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.67
Benzo(b)fluoranthene	0.93
Chrysene	0.68
Dibenzo(a,h)anthracene	0.12 J
Indeno(1,2,3-cd)pyrene	**0.51**

CTDHN-04(8-10')	
Date	6/28/2016
VOCs	mg/kg
Ethylbenzene	13
Xylenes, Total	2.5 J
sec-Butylbenzene	2.5
1,3,5-Trimethylbenzene	3.5
1,2,4-Trimethylbenzene	11
SVOCs	
Benzo(a)anthracene	0.067
Benzo(a)pyrene	0.085
Benzo(b)fluoranthene	0.081
Chrysene	0.075
Dibenzo(a,h)anthracene	0.11
Indeno(1,2,3-cd)pyrene	0.07

TP#3		
Depth	0-2'	3-4.6'
Date	5/24/2016	
VOCs	mg/kg	mg/kg
Ethylbenzene	0.00055 J	0.00019 J
Xylenes, Total	0.0032	0.0009 J
sec-Butylbenzene	ND	ND
1,3,5-Trimethylbenzene	ND	ND
1,2,4-Trimethylbenzene	0.00033 J	ND
SVOCs		
Benzo(a)anthracene	**2.8**	**2.3**
Benzo(a)pyrene	**2.9**	**1.9**
Benzo(b)fluoranthene	**3.8**	**2.3**
Chrysene	2.8	2.1
Dibenzo(a,h)anthracene	**0.47 J**	**0.33**
Indeno(1,2,3-cd)pyrene	**2.1**	**1.2**

TP#4 (0-1.7')	
Date	5/24/2016
VOCs	mg/kg
Ethylbenzene	0.0002 J
Xylenes, Total	0.001 J
sec-Butylbenzene	ND
1,3,5-Trimethylbenzene	ND
1,2,4-Trimethylbenzene	0.00016 J
SVOCs	
Benzo(a)anthracene	0.21 J
Benzo(a)pyrene	0.25 J
Benzo(b)fluoranthene	0.33 J
Chrysene	0.26 J
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	0.2 J

CTDHS-01(8-9')	
Date	6/25/2016
VOCs	mg/kg
Ethylbenzene	13
Xylenes, Total	1.2 J
sec-Butylbenzene	3.4
1,3,5-Trimethylbenzene	21
1,2,4-Trimethylbenzene	11
SVOCs	
Benzo(a)anthracene	0.16
Benzo(a)pyrene	0.12 J
Benzo(b)fluoranthene	0.12
Chrysene	0.15
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	0.05 J

CTDHS-13(7-8')	
Date	6/27/2016
VOCs	mg/kg
Ethylbenzene	**75**
Xylenes, Total	**440**
sec-Butylbenzene	4.7
1,3,5-Trimethylbenzene	**90**
1,2,4-Trimethylbenzene	**290**
SVOCs	
Benzo(a)anthracene	**1.2**
Benzo(a)pyrene	0.85
Benzo(b)fluoranthene	**1**
Chrysene	0.94
Dibenzo(a,h)anthracene	0.12
Indeno(1,2,3-cd)pyrene	**0.5**

CTDHS-06(9-10')	
Date	6/25/2016
VOCs	mg/kg
Ethylbenzene	32
Xylenes, Total	**160**
sec-Butylbenzene	2.7
1,3,5-Trimethylbenzene	**52**
1,2,4-Trimethylbenzene	**180**
SVOCs	
Benzo(a)anthracene	0.38
Benzo(a)pyrene	0.43
Benzo(b)fluoranthene	0.46
Chrysene	0.42
Dibenzo(a,h)anthracene	0.068 J
Indeno(1,2,3-cd)pyrene	0.31

CTDHS-09(9-10')	
Date	6/26/2016
VOCs	mg/kg
Ethylbenzene	4.7
Xylenes, Total	31
sec-Butylbenzene	0.38
1,3,5-Trimethylbenzene	7.4
1,2,4-Trimethylbenzene	24
SVOCs	
Benzo(a)anthracene	0.22
Benzo(a)pyrene	0.21
Benzo(b)fluoranthene	0.24
Chrysene	0.23
Dibenzo(a,h)anthracene	0.03
Indeno(1,2,3-cd)pyrene	0.14

CTDHS-14(9-10')	
Date	6/27/2016
VOCs	mg/kg
Ethylbenzene	5.6
Xylenes, Total	2
sec-Butylbenzene	1.4
1,3,5-Trimethylbenzene	1
1,2,4-Trimethylbenzene	1.4
SVOCs	
Benzo(a)anthracene	0.88
Benzo(a)pyrene	0.65
Benzo(b)fluoranthene	0.68
Chrysene	0.69
Dibenzo(a,h)anthracene	0.1
Indeno(1,2,3-cd)pyrene	0.39

CTDHS-02(9-10')	
Date	6/25/2016
VOCs	mg/kg
Ethylbenzene	**85**
Xylenes, Total	**490**
sec-Butylbenzene	**270**
1,3,5-Trimethylbenzene	**100**
1,2,4-Trimethylbenzene	**340**
SVOCs	
Benzo(a)anthracene	**12**
Benzo(a)pyrene	**13**
Benzo(b)fluoranthene	**15**
Chrysene	**13**
Dibenzo(a,h)anthracene	**1.5**
Indeno(1,2,3-cd)pyrene	**7.6**

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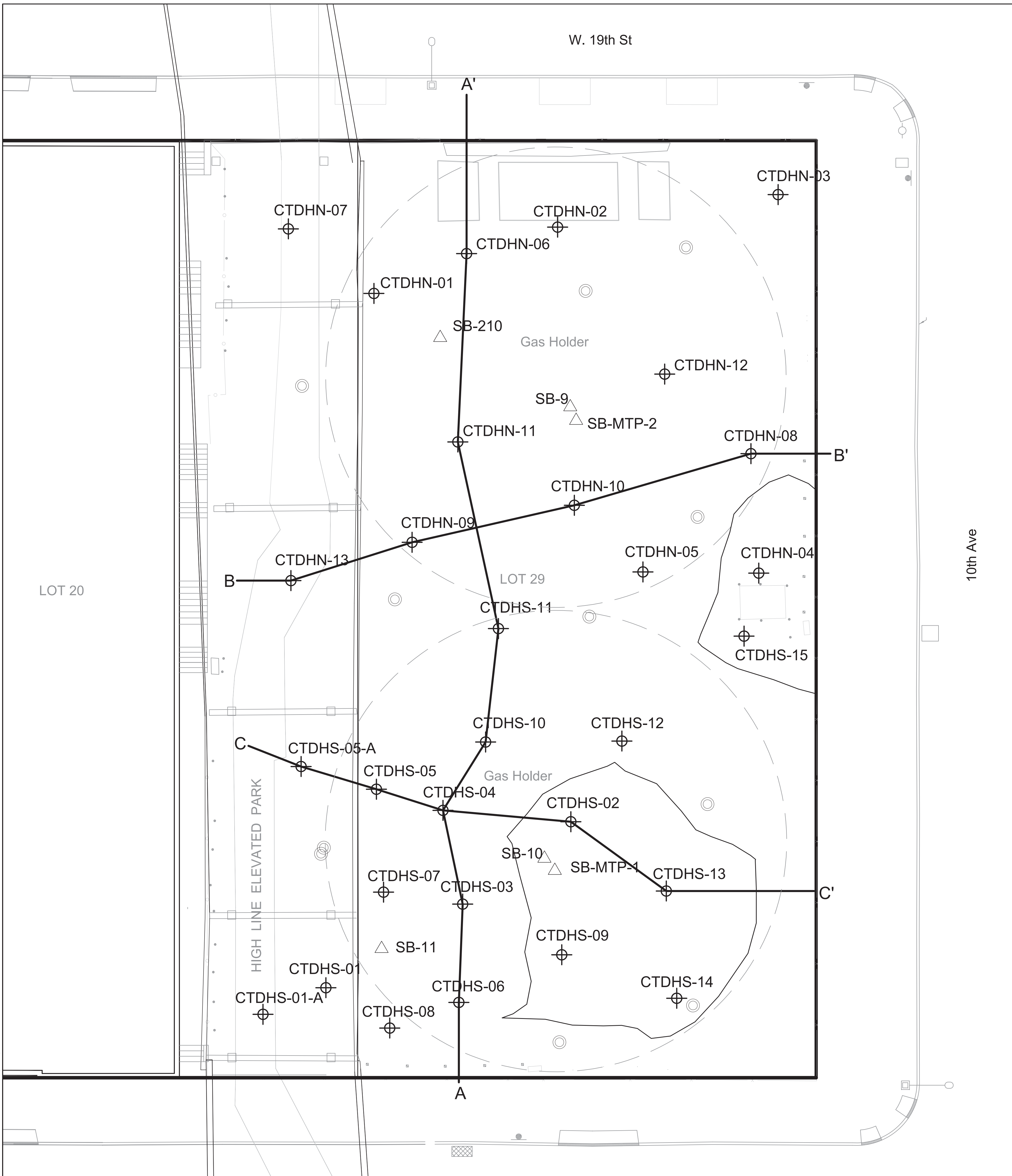
Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 8b.
VOCs and SVOCs for Test Pitting and Pre-Design Investigation Soil Samples Exceeding Part 375 Restricted Residential SCOs
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



Site Boundary

Coal Tar Delineation Boring Location

Historic Soil Sample Location, Installed by Others (2004 - 2007)

Geotechnical Boring with Visual Coal Tar Delineation (MRCE and Integral 2015)

Cross-Section Location

Note:

1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016
2. Sample locations are approximate.

Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

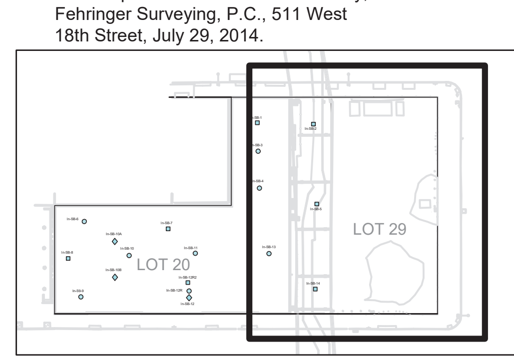


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Figure 9.
Pre-Design Soil Sample Locations and Cross-SectionTransects, Lot 29
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

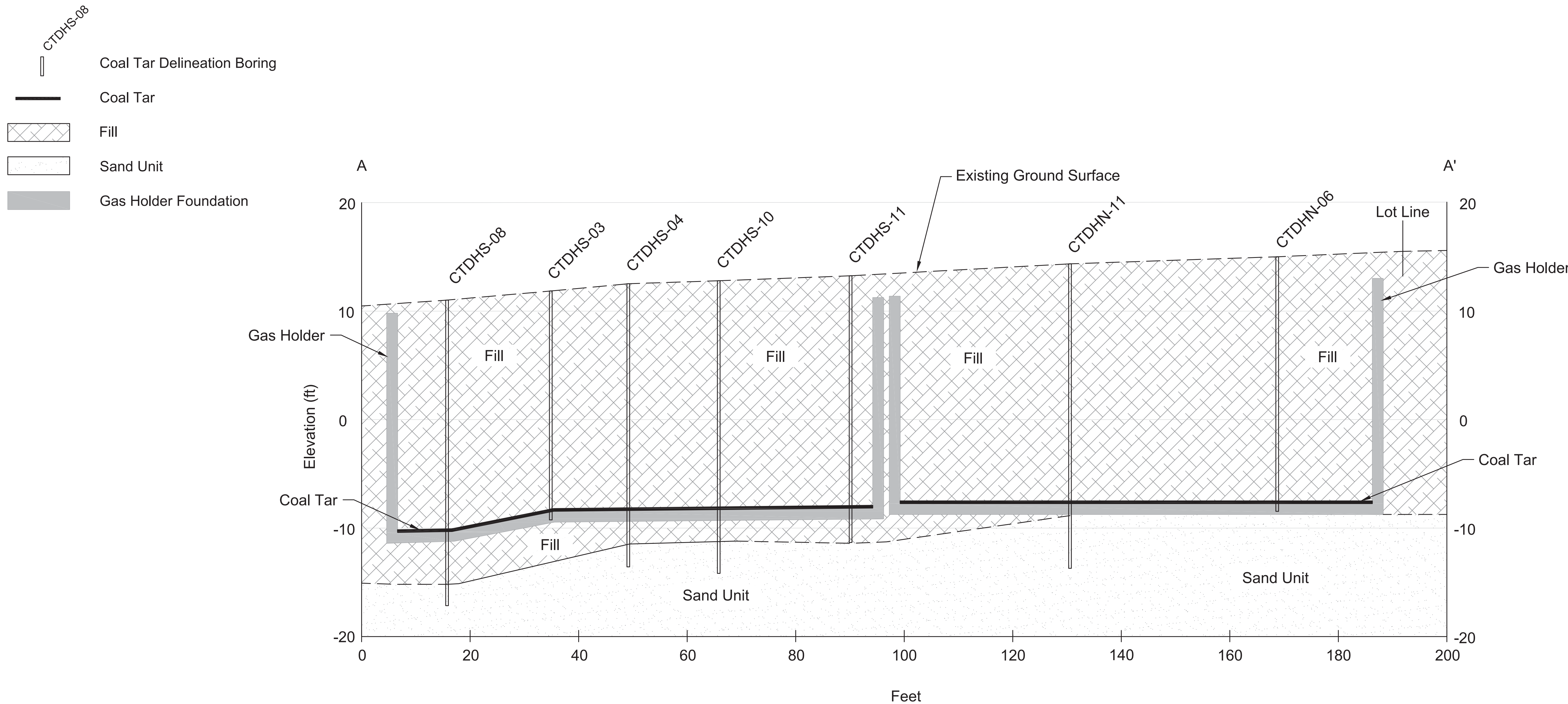

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Figure 10.
Cross-Section A-A'
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

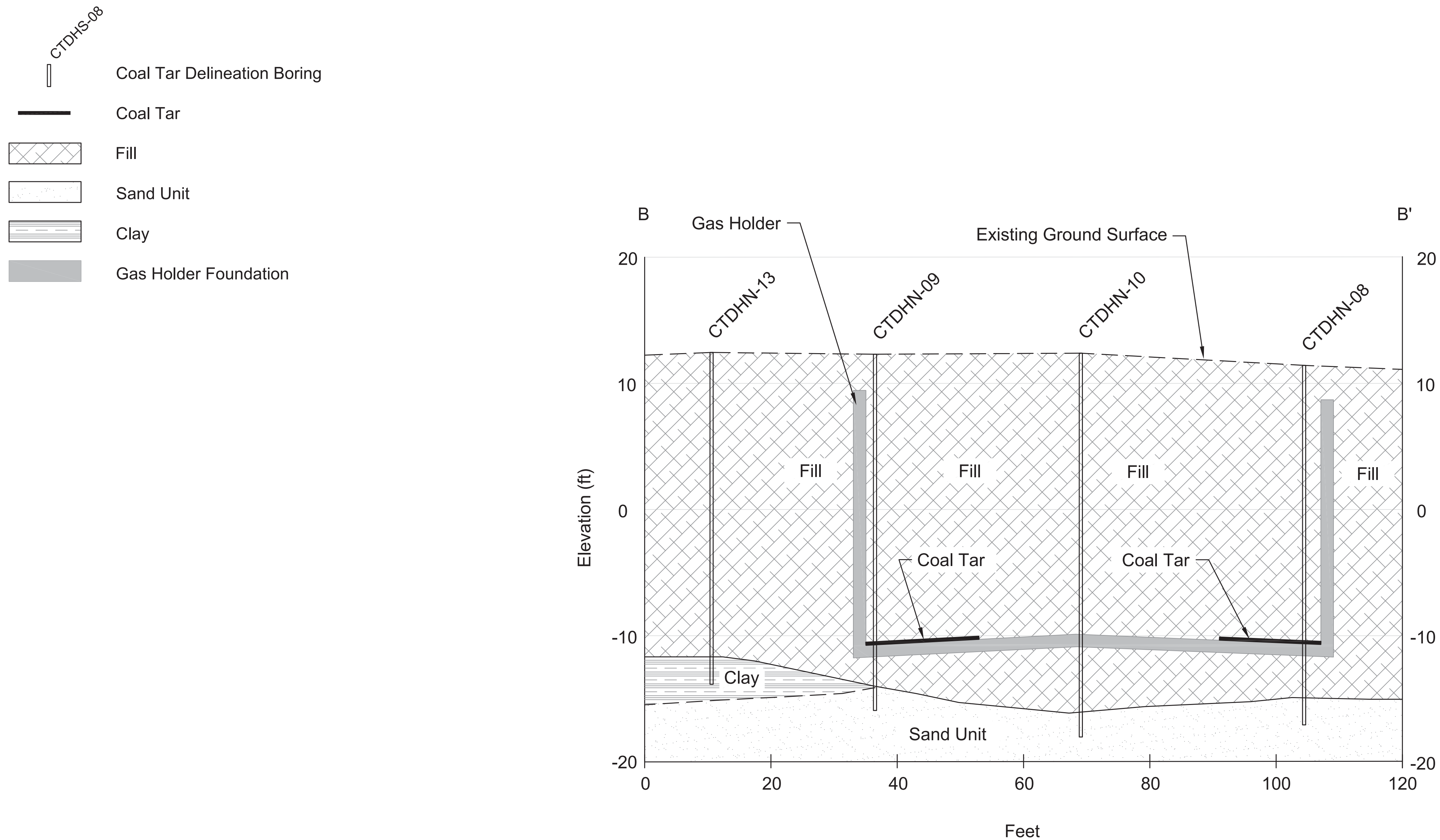

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Figure 11.
Cross-Section B-B'
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

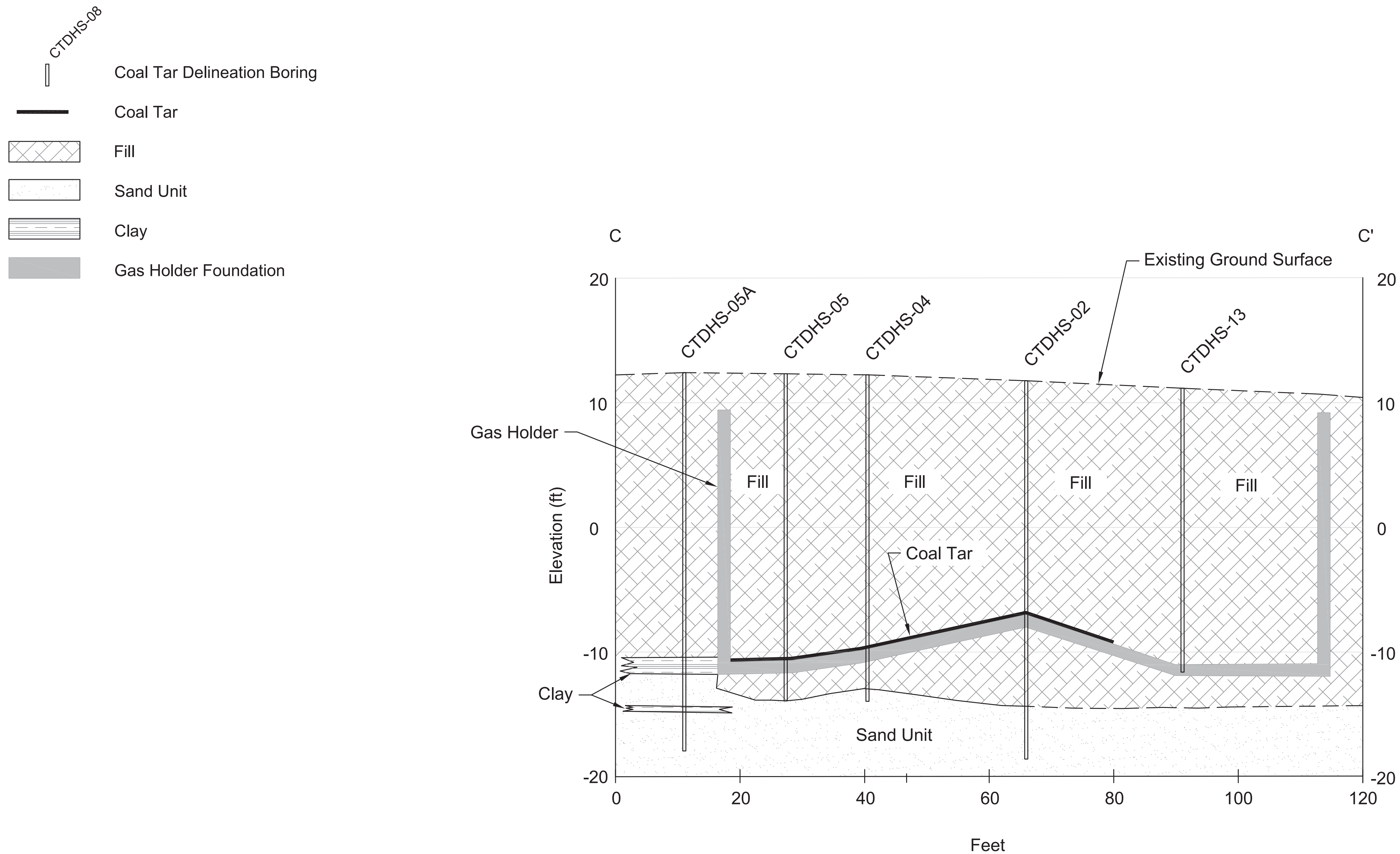

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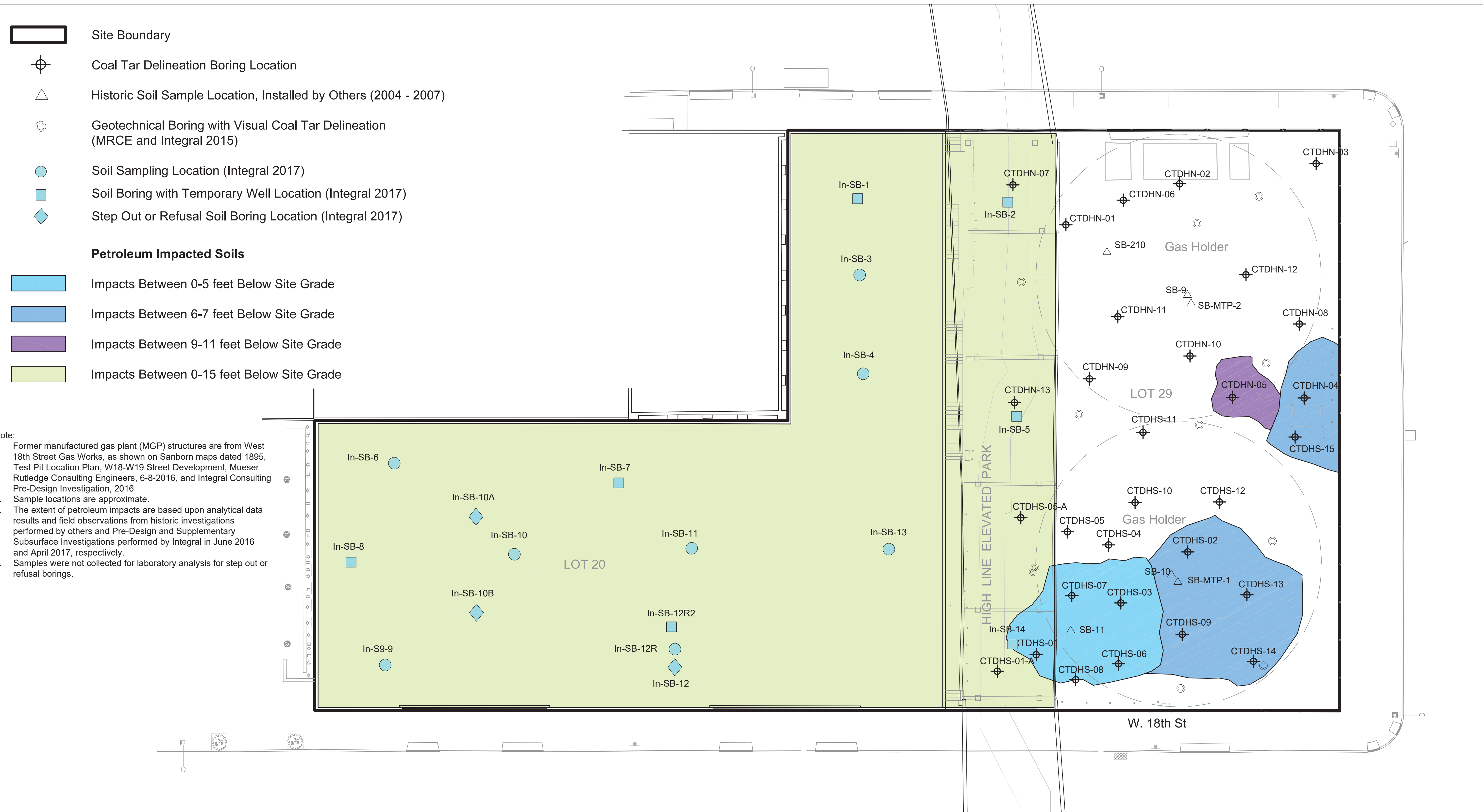
Figure 12.
Cross-Section C-C'
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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Note:
1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016
2. Sample locations are approximate.
3. The extent of petroleum impacts are based upon analytical data results and field observations from historic investigations performed by others and Pre-Design and Supplementary Subsurface Investigations performed by Integral in June 2016 and April 2017, respectively.
4. Samples were not collected for laboratory analysis for step out or refusal borings.

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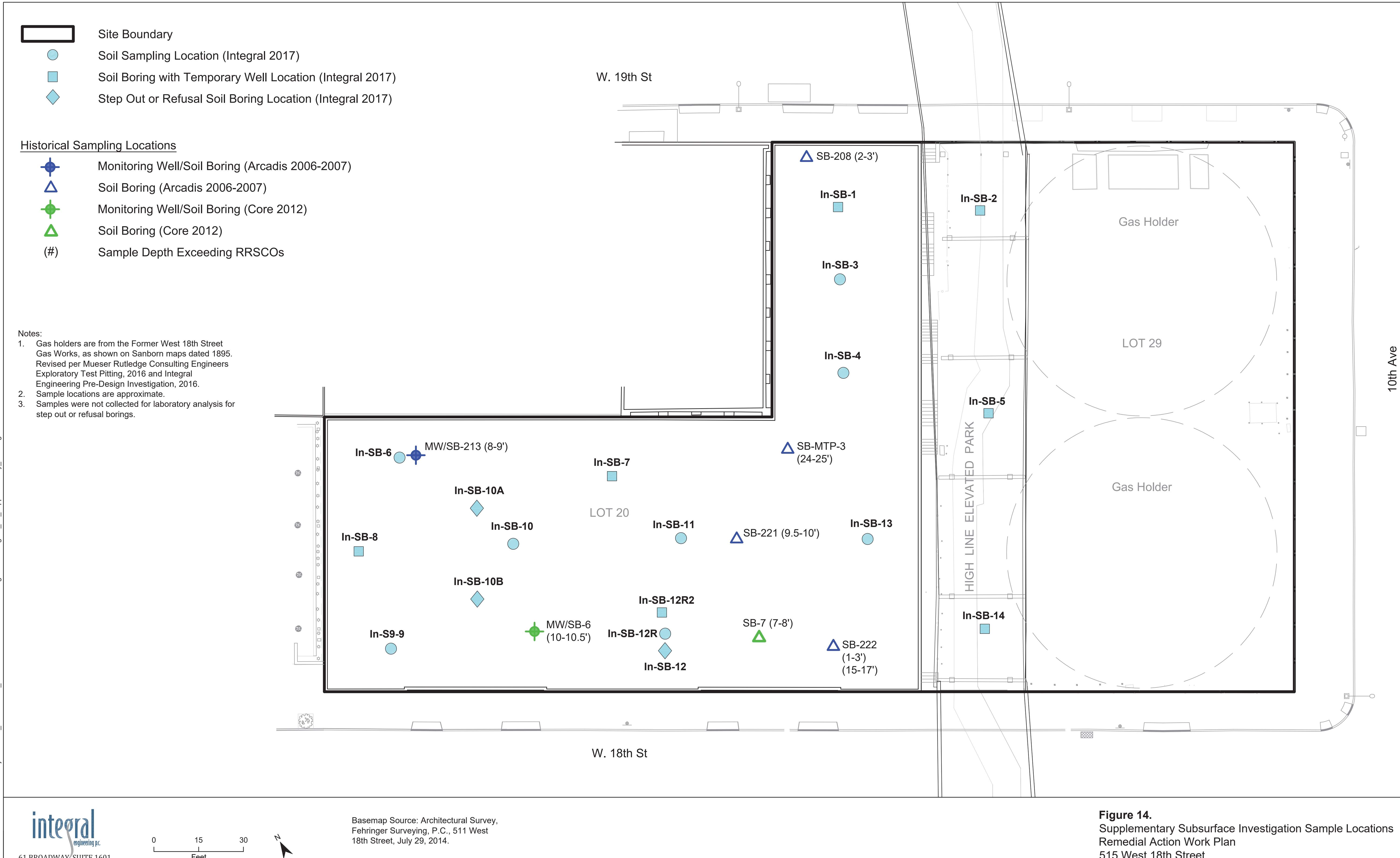
Figure 13.
Extent of Petroleum Impacts, Lot 29
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. Sample locations are approximate.
3. Samples were not collected for laboratory analysis for step out or refusal borings.

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 14.
Supplementary Subsurface Investigation Sample Locations
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011

Site Boundary

Soil Sampling Location (Integral 2017)

Soil Boring with Temporary Well Location (Integral 2017)

Sample ID		
Sampler	NY-RRSCO (mg/kg)	NY-UUSCO (mg/kg)
Date		
Analyte		
Volatile Organics Compounds (VOCs)		
Benzene	4.8	0.06
Toluene	100	0.7
Ethylbenzene	41	1
Xylenes, Total	100	0.26
Acetone	100	0.05
2-Butanone	100	0.12
Naphthalene	100	12
n-Propylbenzene	100	3.9
1,2,4-Trimethylbenzene	52	3.6

Notes:
1. UUSCO: Unrestricted Use Soil Cleanup Objectives, NYCRR Part 375
2. RRSCO: Restricted Residential Soil Cleanup Objectives, NYCRR Part 375
3. **Bold and *italicized*** value indicates concentration exceeds Unrestricted SCOs
4. **Bold and shaded** value indicates concentration exceeds Restricted-Residential SCOs
5. J = Estimated Value
6. ND = Not Detected
7. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
8. Sample locations are approximate.

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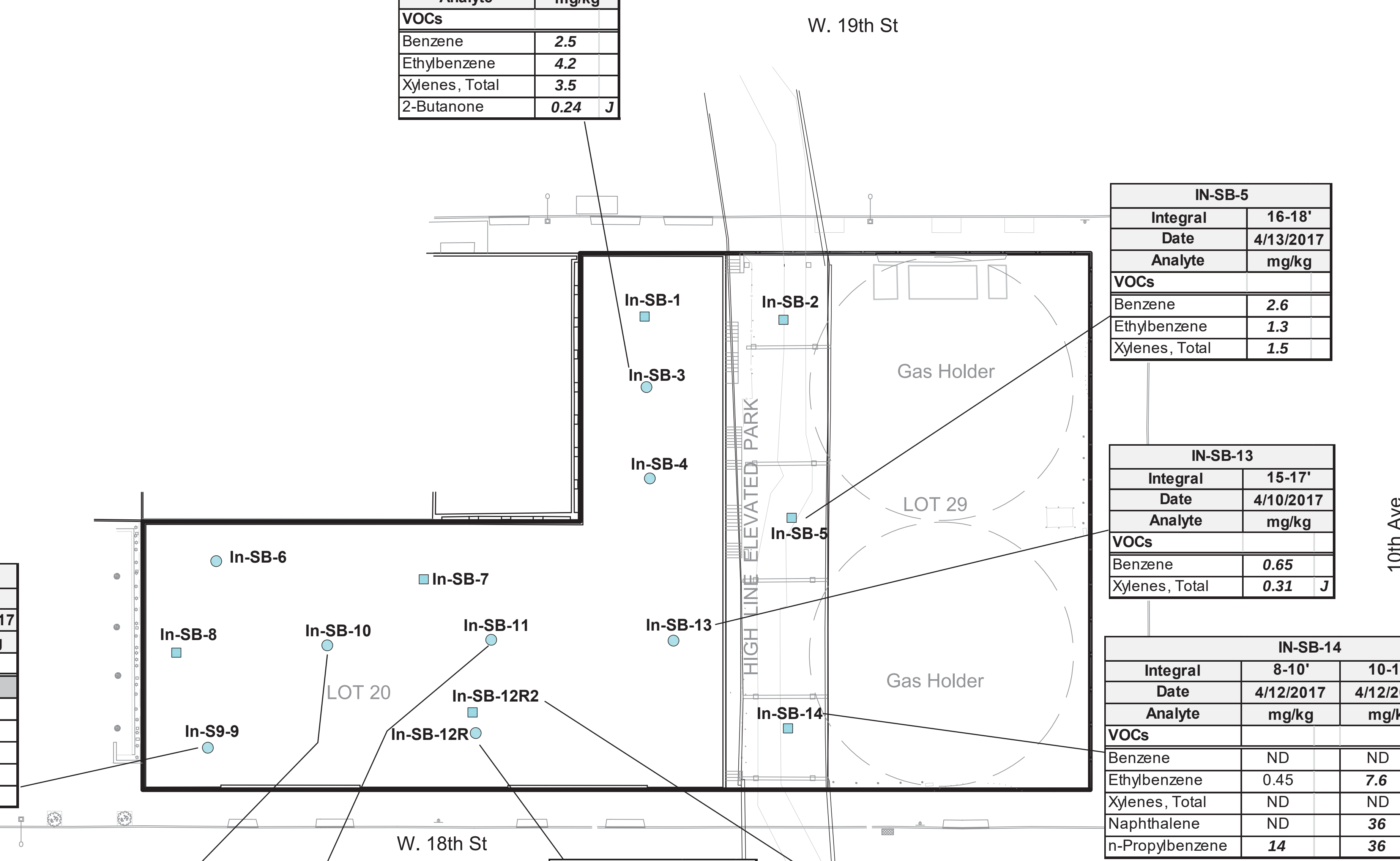

IN-SB-3	
Integral	15-17'
Date	4/12/2017
Analyte	mg/kg
VOCs	
Benzene	***2.5***
Ethylbenzene	***4.2***
Xylenes, Total	***3.5***
2-Butanone	***0.24*** J

IN-SB-5	
Integral	16-18'
Date	4/13/2017
Analyte	mg/kg
VOCs	
Benzene	***2.6***
Ethylbenzene	***1.3***
Xylenes, Total	***1.5***

IN-SB-13	
Integral	15-17'
Date	4/10/2017
Analyte	mg/kg
VOCs	
Benzene	***0.65***
Xylenes, Total	***0.31*** J

IN-SB-9	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
VOCs	
Benzene	**26**
Toluene	***20***
Ethylbenzene	***2.9***
Xylenes, Total	***21***
Naphthalene	***34***
1,2,4-Trimethylbenzene	***5.8***

IN-SB-14			
Integral	8-10'	10-12'	16-18'
Date	4/12/2017	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg	mg/kg
VOCs			
Benzene	ND	ND	***1.6***
Ethylbenzene	0.45	***7.6***	0.63
Xylenes, Total	ND	ND	***0.96***
Naphthalene	ND	***36***	1.4
n-Propylbenzene	***14***	***36***	0.12

IN-SB-10			
Integral	1-3'	8-10'	15-17'
Date	4/10/2017	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg	mg/kg
VOCs			
Benzene	***0.26***	ND	***0.075***
Xylenes, Total	***3.4***	ND	0.007 J
Acetone	ND	ND	***0.056***
n-Propylbenzene	1.1	***11***	ND
1,2,4-Trimethylbenzene	***4.1***	ND	ND

IN-SB-11	
Integral	11-14'
Date	4/10/2017
Analyte	mg/kg
VOCs	
Benzene	***0.17***
Xylenes, Total	***0.68*** J

IN-SB-12R	
Integral	4-6'
Date	4/11/2017
Analyte	mg/kg
VOCs	
Benzene	***0.086***

IN-SB-12R2		
Integral	1-3'	10-11'
Date	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg
VOCs		
Benzene	***0.17***	ND
Xylenes, Total	***1.7***	ND
n-Propylbenzene	0.25	***5***

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 15a.
Supplementary Subsurface Investigation
VOC Exceedences of Part 375 UUSCOs and RRSCOs in Soil
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011

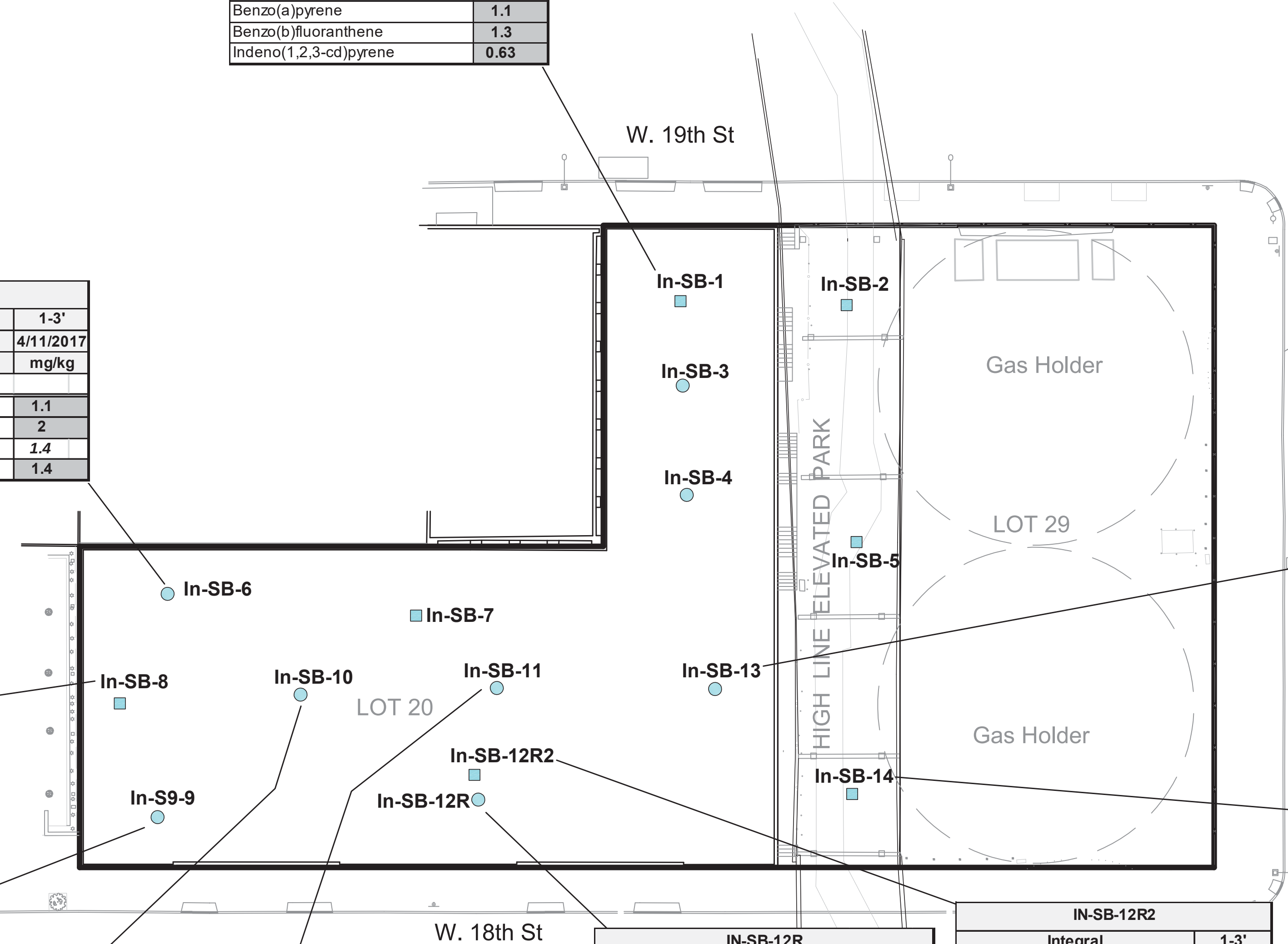
Site Boundary

Soil Sampling Location (Integral 2017)

Soil Boring with Temporary Well Location (Integral 2017)

Sample ID		
Sampler	NY-RRSCO	NY-UUSCO
Date	(mg/kg)	(mg/kg)
Analyte		
Semivolatile Organics Compounds (SVOCs)		
Acenaphthene	100	20
Fluoranthene	100	100
Benzo(a)anthracene	1	1
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1
Benzo(k)fluoranthene	3.9	0.8
Chrysene	3.9	1
Anthracene	100	100
Benzo(ghi)perylene	100	100
Fluorene	100	30
Phenanthrene	100	100
Dibenzo(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)pyrene	0.5	0.5
Dibenzofuran	59	7
3-Methylphenol/4-Methylphenol	100	0.33
Pyrene	100	100

Notes:
1. UUSCO: Unrestricted Use Soil Cleanup Objectives, NYCRR Part 375
2. RRSCO: Restricted Residential Soil Cleanup Objectives, NYCRR Part 375
3. **Bold and *italicized*** value indicates concentration exceeds Unrestricted SCOs
4. **Bold and shaded** value indicates concentration exceeds Restricted-Residential SCOs
5. J = Estimated Value
6. ND = Not Detected
7. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
8. Sample locations are approximate.



IN-SB-1	
Integral	1-3'
Date	4/12/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	1.1
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	1.3
Indeno(1,2,3-cd)pyrene	0.63

IN-SB-6	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	1.1
Benzo(b)fluoranthene	2
Chrysene	***1.4***
Indeno(1,2,3-cd)pyrene	1.4

IN-SB-13	
Integral	1-3'
Date	4/10/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	7.5
Benzo(a)pyrene	8.4
Benzo(b)fluoranthene	9.8
Benzo(k)fluoranthene	***3.5***
Chrysene	6.9
Dibenzo(a,h)anthracene	1.4
Indeno(1,2,3-cd)pyrene	5

IN-SB-8	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	2
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	5.2
Benzo(k)fluoranthene	***0.88***
Chrysene	***3.8***
Dibenzo(a,h)anthracene	0.56
Indeno(1,2,3-cd)pyrene	2.7

IN-SB-14		
Integral	1-3'	DUP03 (1-3')
Date	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg
SVOCs		
Benzo(b)fluoranthene	1.3	1.1
Indeno(1,2,3-cd)pyrene	0.68	0.56

IN-SB-12R2	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	6.8
Benzo(a)pyrene	15
Benzo(b)fluoranthene	15
Benzo(k)fluoranthene	5.2
Chrysene	6.5
Dibenzo(a,h)anthracene	3
Indeno(1,2,3-cd)pyrene	12

IN-SB-9	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	3.7
Benzo(a)pyrene	5.2
Benzo(b)fluoranthene	6.8
Benzo(k)fluoranthene	***1.3***
Chrysene	***3.4***
Dibenzo(a,h)anthracene	1.1
Indeno(1,2,3-cd)pyrene	5.2

IN-SB-10	
Integral	1-3'
Date	4/10/2017
Analyte	mg/kg
SVOCs	
Benzo(a)anthracene	5.4
Benzo(a)pyrene	4
Benzo(b)fluoranthene	6.8
Benzo(k)fluoranthene	***2.4***
Chrysene	5.4
Dibenzo(a,h)anthracene	0.83
Indeno(1,2,3-cd)pyrene	3.6

IN-SB-11		
Integral	2-4'	11-14'
Date	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg
SVOCs		
Benzo(a)anthracene	32	2.1
Benzo(a)pyrene	52	3.2
Benzo(b)fluoranthene	55	3.4
Benzo(k)fluoranthene	14	1.4
Chrysene	29	2
Dibenzo(a,h)anthracene	8.6	0.61
Indeno(1,2,3-cd)pyrene	40	2.1
3-Methylphenol/4-Methylphenol	***0.44*** J	0.034 J

IN-SB-12R	
Integral	4-6'
Date	4/11/2017
Analyte	mg/kg
SVOCs	
Acenaphthene	***32***
Fluoranthene	480
Benzo(a)anthracene	180
Benzo(a)pyrene	170
Benzo(b)fluoranthene	200
Benzo(k)fluoranthene	48
Chrysene	170
Anthracene	130
Benzo(ghi)perylene	130
Fluorene	***44***
Phenanthrene	370
Dibenzo(a,h)anthracene	26
Indeno(1,2,3-cd)pyrene	150
Dibenzofuran	***25***
Pyrene	430

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 15b.
Supplementary Subsurface Investigation
SVOC Exceedences of Part 375 UUSCOs and RRSCOs in Soil
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011

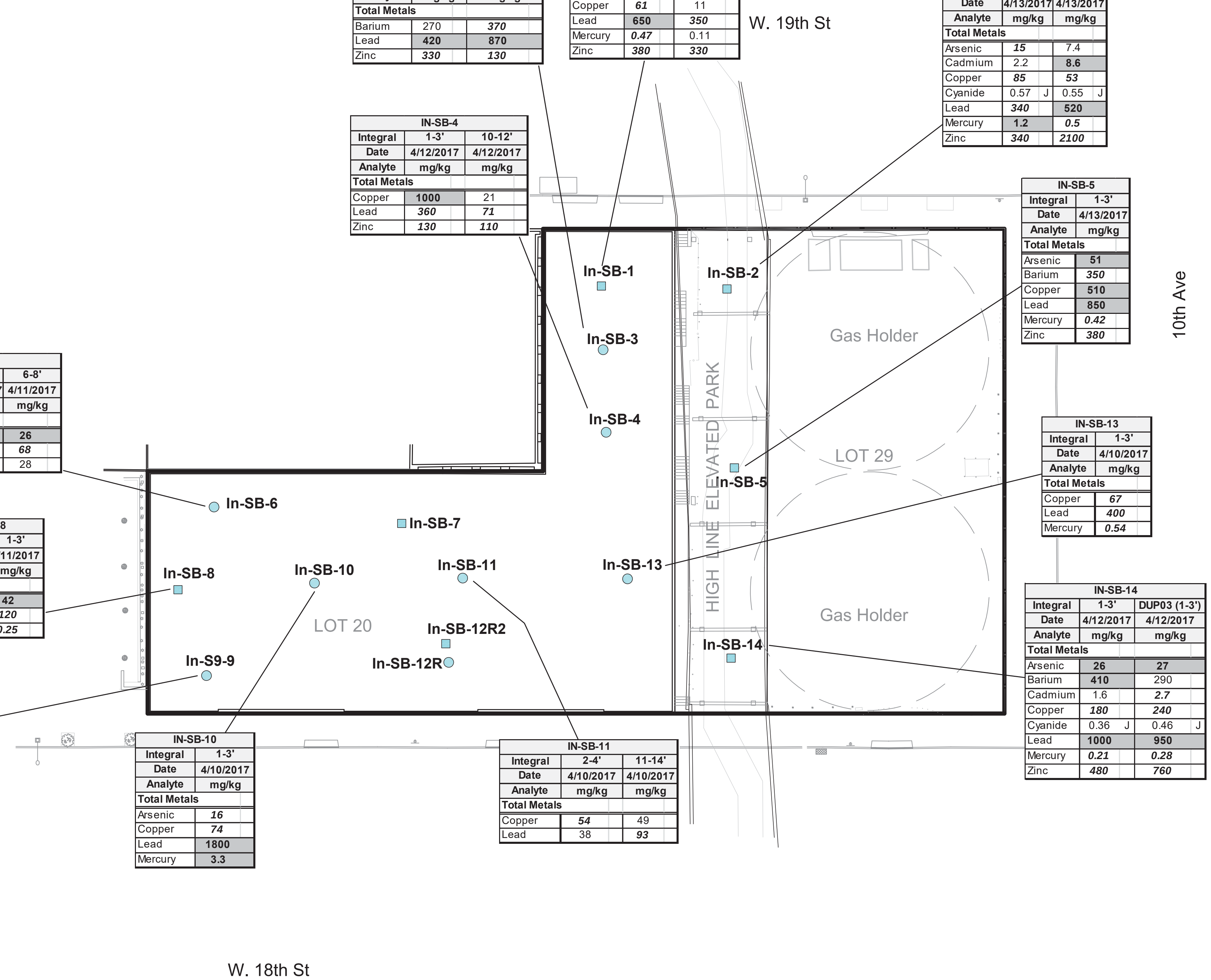
Site Boundary

Soil Sampling Location (Integral 2017)

Soil Boring with Temporary Well Location (Integral 2017)

Sample ID		
Sampler	NY-RRSCO	NY-UUSCO
Date		
Analyte	(mg/kg)	(mg/kg)
Total Metals		
Arsenic	16	13
Barium	400	350
Cadmium	4.3	2.5
Copper	270	50
Cyanide	27	27
Lead	400	63
Mercury	0.81	0.18
Zinc	10000	109

Notes:
1. UUSCO: Unrestricted Use Soil Cleanup Objectives, NYCRR Part 375
2. RRSCO: Restricted Residential Soil Cleanup Objectives, NYCRR Part 375
3. **Bold and *italicized*** yellow value indicates concentration exceeds Unrestricted SCOs
4. **Bold and shaded** value indicates concentration exceeds Restricted-Residential SCOs
5. J = Estimated Value
6. ND = Not Detected
7. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
8. Sample locations are approximate.



IN-SB-3		
Integral	1-3'	DUP02 (1-3')
Date	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg
Total Metals		
Barium	270	370
Lead	420	870
Zinc	330	130

IN-SB-1		
Integral	1-3'	6-8'
Date	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg
Total Metals		
Barium	500	24
Copper	61	11
Lead	650	350
Mercury	0.47	0.11
Zinc	380	330

IN-SB-2		
Integral	1-3'	5-7'
Date	4/13/2017	4/13/2017
Analyte	mg/kg	mg/kg
Total Metals		
Arsenic	15	7.4
Cadmium	2.2	8.6
Copper	85	53
Cyanide	0.57 J	0.55 J
Lead	340	520
Mercury	1.2	0.5
Zinc	340	2100

IN-SB-4		
Integral	1-3'	10-12'
Date	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg
Total Metals		
Copper	1000	21
Lead	360	71
Zinc	130	110

IN-SB-5	
Integral	1-3'
Date	4/13/2017
Analyte	mg/kg
Total Metals	
Arsenic	51
Barium	350
Copper	510
Lead	850
Mercury	0.42
Zinc	380

IN-SB-6		
Integral	1-3'	6-8'
Date	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg
Total Metals		
Arsenic	130	26
Copper	80	68
Lead	220	28

IN-SB-13	
Integral	1-3'
Date	4/10/2017
Analyte	mg/kg
Total Metals	
Copper	67
Lead	400
Mercury	0.54

IN-SB-8	
Integral	1-3'
Date	4/11/2017
Analyte	mg/kg
Total Metals	
Cyanide	42
Lead	120
Mercury	0.25

IN-SB-14		
Integral	1-3'	DUP03 (1-3')
Date	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg
Total Metals		
Arsenic	26	27
Barium	410	290
Cadmium	1.6	2.7
Copper	180	240
Cyanide	0.36 J	0.46 J
Lead	1000	950
Mercury	0.21	0.28
Zinc	480	760

IN-SB-9		
Integral	1-3'	7-9'
Date	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg
Total Metals		
Arsenic	44	3.7
Lead	510	5
Mercury	1.1	ND
Zinc	6.1	430

IN-SB-10	
Integral	1-3'
Date	4/10/2017
Analyte	mg/kg
Total Metals	
Arsenic	16
Copper	74
Lead	1800
Mercury	3.3

IN-SB-11		
Integral	2-4'	11-14'
Date	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg
Total Metals		
Copper	54	49
Lead	38	93

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 15c.
Supplementary Subsurface Investigation
Metals and Cyanide Exceedences of Part 375
UUSCOs and RRSCOs in Soil
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011

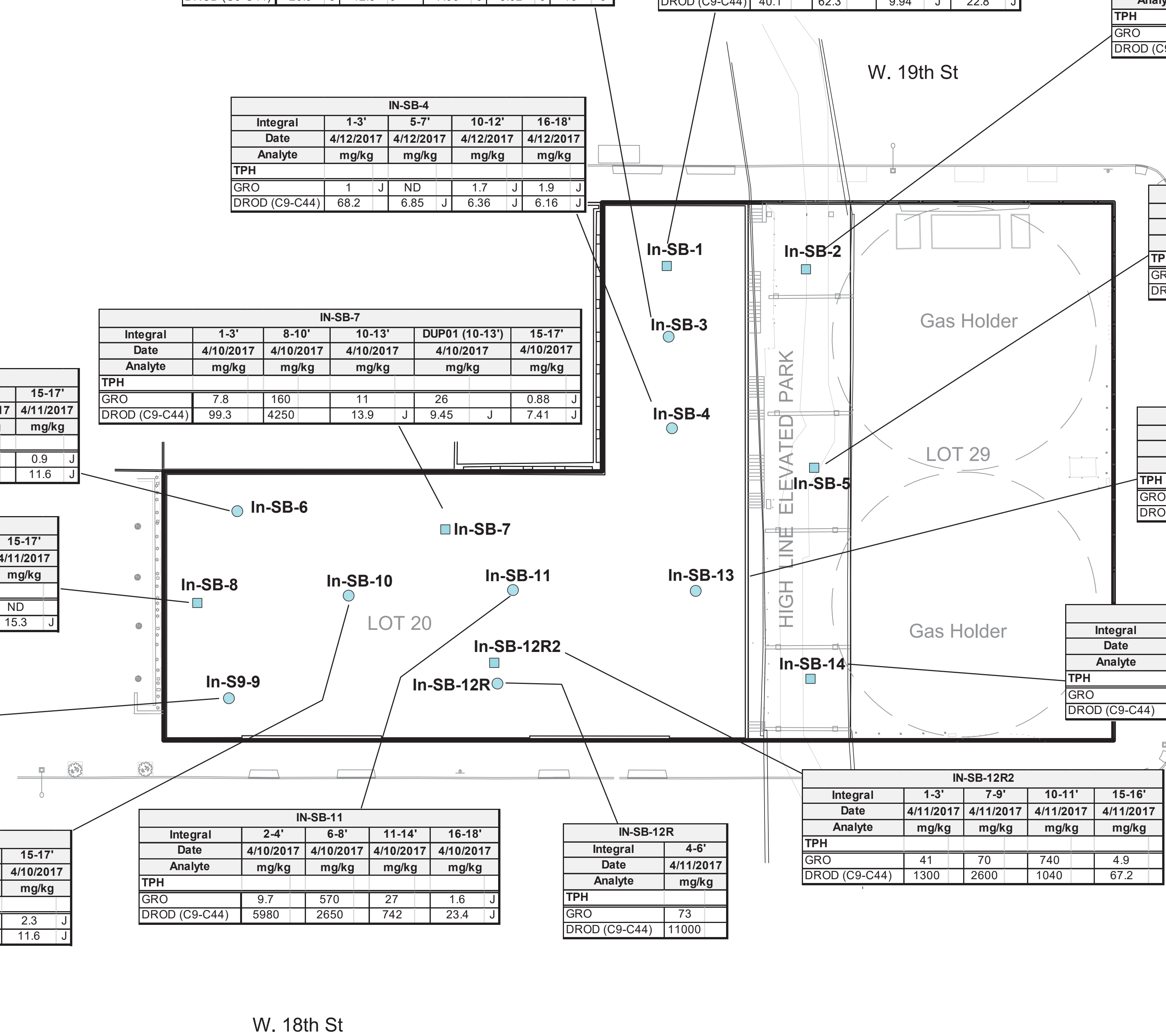
Site Boundary

Soil Sampling Location (Integral 2017)

Soil Boring with Temporary Well Location (Integral 2017)

Sample ID		
Sampler	NY-RRSCO (mg/kg)	NY-UUSCO (mg/kg)
Date		
Analyte		
Total Petroleum Hydrocarbons (TPH)		
Gasoline Range Organics (GRO)	NS	NS
DROD (C9-C44)	NS	NS

Notes:
1. UUSCO: Unrestricted Use Soil Cleanup Objectives, NYCRR Part 375
2. RRSCO: Restricted Residential Soil Cleanup Objectives, NYCRR Part 375
3. J = Estimated Value
4. ND = Not Detected
5. NS = No Standard
6. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
7. Sample locations are approximate.



IN-SB-3					
Integral	1-3'	DUP02 (1-3')	8-10'	12-14'	15-17'
Date	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH					
GRO	ND U	ND	ND	ND	11
DROD (C9-C44)	20.9 J	12.3 J	7.06 J	5.02 J	16 J

IN-SB-1				
Integral	1-3'	6-8'	10-12'	15-17'
Date	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	1.4 J	0.67 J	ND	ND
DROD (C9-C44)	40.1	62.3	9.94 J	22.8 J

IN-SB-2				
Integral	1-3'	5-7'	10-12'	15-17'
Date	4/13/2017	4/13/2017	4/13/2017	4/13/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	1.6 J	2.4 J	1.7 J	1 J
DROD (C9-C44)	163	114	70.1	31 J

IN-SB-4				
Integral	1-3'	5-7'	10-12'	16-18'
Date	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	1 J	ND	1.7 J	1.9 J
DROD (C9-C44)	68.2	6.85 J	6.36 J	6.16 J

IN-SB-5				
Integral	1-3'	5-7'	10-12'	16-18'
Date	4/13/2017	4/13/2017	4/13/2017	4/13/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	2.8 J	ND	ND	7
DROD (C9-C44)	2220	15.6 J	9.22 J	19.1 J

IN-SB-7					
Integral	1-3'	8-10'	10-13'	DUP01 (10-13')	15-17'
Date	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH					
GRO	7.8	160	11	26	0.88 J
DROD (C9-C44)	99.3	4250	13.9 J	9.45 J	7.41 J

IN-SB-6				
Integral	1-3'	6-8'	10-12'	15-17'
Date	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	5.9	0.67 J	ND	0.9 J
DROD (C9-C44)	664	14 J	43.6	11.6 J

IN-SB-13				
Integral	1-3'	5-8'	10-12'	15-17'
Date	4/10/2017	4/10/2017	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	ND	ND	0.7 J	4.9
DROD (C9-C44)	355	47.9	16 J	6.07 J

IN-SB-8				
Integral	1-3'	6-8'	10-12'	15-17'
Date	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	2.5 J	0.92 J	ND	ND
DROD (C9-C44)	653	242	56.3	15.3 J

IN-SB-14					
Integral	1-3'	DUP03 (1-3')	8-10'	10-12'	16-18'
Date	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH					
GRO	2.1 J	8.8	480	1500	9.4
DROD (C9-C44)	1440	1620	1090	823	63.1

IN-SB-9				
Integral	1-3'	7-9'	12-14'	15-17'
Date	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	170	0.54 J	ND	ND
DROD (C9-C44)	728	45.2	8.64 J	7.26 J

IN-SB-12R2				
Integral	1-3'	7-9'	10-11'	15-16'
Date	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	41	70	740	4.9
DROD (C9-C44)	1300	2600	1040	67.2

IN-SB-11				
Integral	2-4'	6-8'	11-14'	16-18'
Date	4/10/2017	4/10/2017	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	9.7	570	27	1.6 J
DROD (C9-C44)	5980	2650	742	23.4 J

IN-SB-12R	
Integral	4-6'
Date	4/11/2017
Analyte	mg/kg
TPH	
GRO	73
DROD (C9-C44)	11000

IN-SB-10				
Integral	1-3'	8-10'	10-12'	15-17'
Date	4/10/2017	4/10/2017	4/10/2017	4/10/2017
Analyte	mg/kg	mg/kg	mg/kg	mg/kg
TPH				
GRO	360	2500	25	2.3 J
DROD (C9-C44)	1210	126	10.9 J	11.6 J

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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

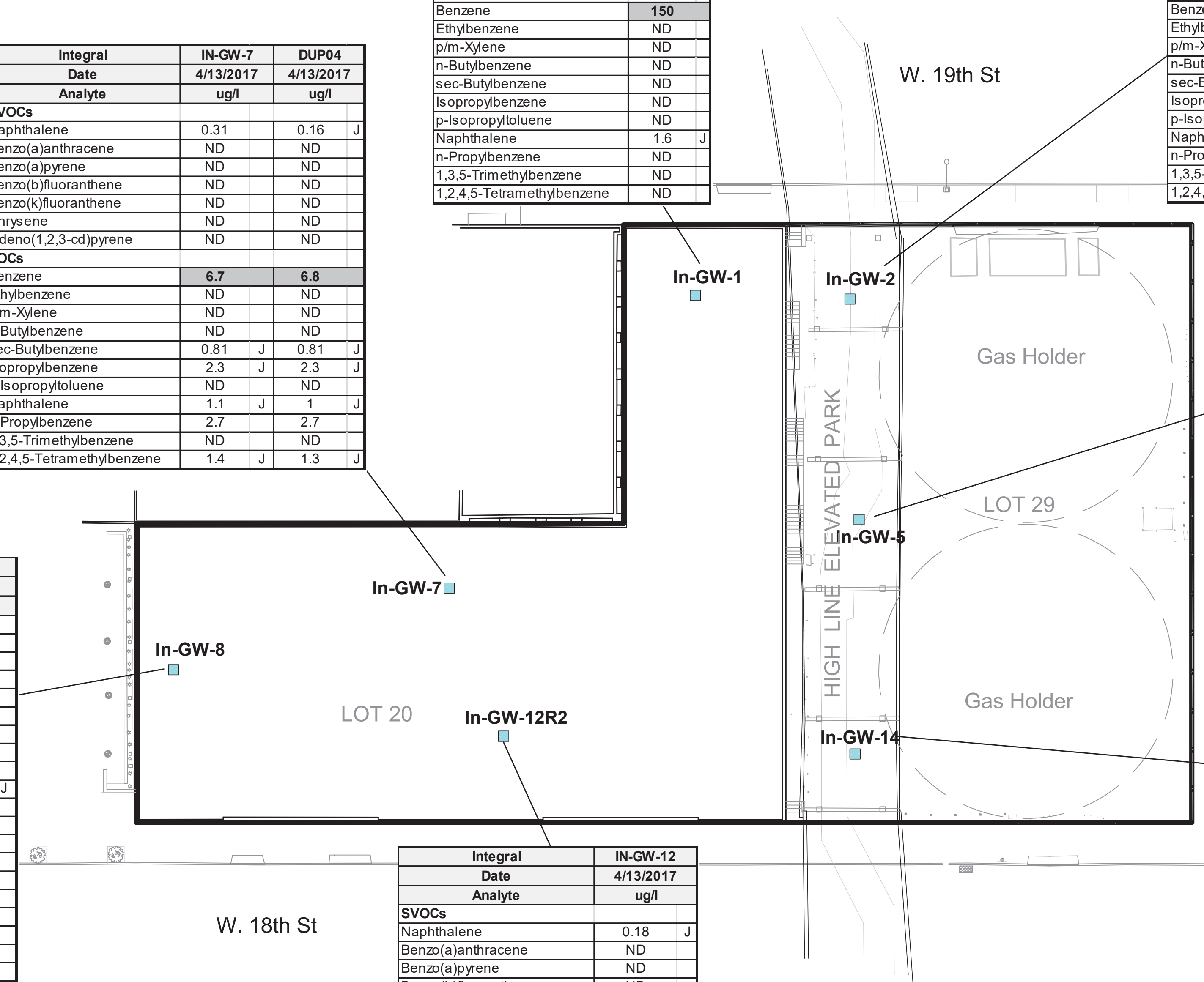
Figure 15d.
Supplementary Subsurface Investigation
Total Petroleum Hydrocarbons (TPH) in Soil
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011

Site Boundary

Soil Boring with Temporary Well Location (Integral, 2017)

Sampler	NY-AWQS
Date	
Analyte	(ug/L)
SVOCs	
Naphthalene	10
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-cd)pyrene	0.002
VOCs	
Benzene	1
Ethylbenzene	5
p/m-Xylene	5
n-Butylbenzene	5
sec-Butylbenzene	5
Isopropylbenzene	5
p-Isopropyltoluene	5
Naphthalene	10
n-Propylbenzene	5
1,3,5-Trimethylbenzene	5
1,2,4,5-Tetramethylbenzene	5

Notes:
1. Bold and shaded value indicates concentration exceeds TOGS AWQS
2. * = NYSDEC TOGS 1.1.1. Ambient Water Quality Standards (AWQS)J = Estimated Value
3. J = Estimated Value
4. ND = Not Detected
5. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
6. Sample locations are approximate.



Integral	IN-GW-1	
Date	4/13/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	0.96	
Benzo(a)anthracene	ND	
Benzo(a)pyrene	ND	
Benzo(b)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Indeno(1,2,3-cd)pyrene	ND	
VOCs		
Benzene	**150**	
Ethylbenzene	ND	
p/m-Xylene	ND	
n-Butylbenzene	ND	
sec-Butylbenzene	ND	
Isopropylbenzene	ND	
p-Isopropyltoluene	ND	
Naphthalene	1.6	J
n-Propylbenzene	ND	
1,3,5-Trimethylbenzene	ND	
1,2,4,5-Tetramethylbenzene	ND	

Integral	IN-GW-2	
Date	4/14/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	0.07	J
Benzo(a)anthracene	ND	
Benzo(a)pyrene	ND	
Benzo(b)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Indeno(1,2,3-cd)pyrene	ND	
VOCs		
Benzene	**73**	
Ethylbenzene	ND	
p/m-Xylene	ND	
n-Butylbenzene	ND	
sec-Butylbenzene	ND	
Isopropylbenzene	ND	
p-Isopropyltoluene	ND	
Naphthalene	ND	
n-Propylbenzene	ND	
1,3,5-Trimethylbenzene	ND	
1,2,4,5-Tetramethylbenzene	ND	

Integral	IN-GW-7		DUP04	
Date	4/13/2017		4/13/2017	
Analyte	ug/l		ug/l	
SVOCs				
Naphthalene	0.31		0.16	J
Benzo(a)anthracene	ND		ND	
Benzo(a)pyrene	ND		ND	
Benzo(b)fluoranthene	ND		ND	
Benzo(k)fluoranthene	ND		ND	
Chrysene	ND		ND	
Indeno(1,2,3-cd)pyrene	ND		ND	
VOCs				
Benzene	**6.7**		**6.8**	
Ethylbenzene	ND		ND	
p/m-Xylene	ND		ND	
n-Butylbenzene	ND		ND	
sec-Butylbenzene	0.81	J	0.81	J
Isopropylbenzene	2.3	J	2.3	J
p-Isopropyltoluene	ND		ND	
Naphthalene	1.1	J	1	J
n-Propylbenzene	2.7		2.7	
1,3,5-Trimethylbenzene	ND		ND	
1,2,4,5-Tetramethylbenzene	1.4	J	1.3	J

Integral	IN-GW-5	
Date	4/14/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	0.24	
Benzo(a)anthracene	ND	
Benzo(a)pyrene	ND	
Benzo(b)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Indeno(1,2,3-cd)pyrene	ND	
VOCs		
Benzene	**5.7**	
Ethylbenzene	1.4	J
p/m-Xylene	ND	
n-Butylbenzene	ND	
sec-Butylbenzene	ND	
Isopropylbenzene	3	
p-Isopropyltoluene	ND	
Naphthalene	ND	
n-Propylbenzene	1.8	J
1,3,5-Trimethylbenzene	ND	
1,2,4,5-Tetramethylbenzene	ND	

Integral	IN-GW-8	
Date	4/14/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	0.29	
Benzo(a)anthracene	ND	
Benzo(a)pyrene	ND	
Benzo(b)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Indeno(1,2,3-cd)pyrene	ND	
VOCs		
Benzene	0.24	J
Ethylbenzene	ND	
p/m-Xylene	ND	
n-Butylbenzene	ND	
sec-Butylbenzene	ND	
Isopropylbenzene	ND	
p-Isopropyltoluene	ND	
Naphthalene	ND	
n-Propylbenzene	ND	
1,3,5-Trimethylbenzene	ND	
1,2,4,5-Tetramethylbenzene	ND	

Integral	IN-GW-14	
Date	4/14/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	**330**	
Benzo(a)anthracene	**0.43**	
Benzo(a)pyrene	**0.34**	
Benzo(b)fluoranthene	**0.51**	
Benzo(k)fluoranthene	**0.18**	J
Chrysene	**0.44**	
Indeno(1,2,3-cd)pyrene	**0.22**	
VOCs		
Benzene	**370**	
Ethylbenzene	**720**	
p/m-Xylene	**19**	J
n-Butylbenzene	**57**	
sec-Butylbenzene	**23**	J
Isopropylbenzene	**300**	
p-Isopropyltoluene	**14**	J
Naphthalene	**740**	
n-Propylbenzene	**630**	
1,3,5-Trimethylbenzene	**110**	
1,2,4,5-Tetramethylbenzene	**120**	

Integral	IN-GW-12	
Date	4/13/2017	
Analyte	ug/l	
SVOCs		
Naphthalene	0.18	J
Benzo(a)anthracene	ND	
Benzo(a)pyrene	ND	
Benzo(b)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Indeno(1,2,3-cd)pyrene	ND	
VOCs		
Benzene	**7.1**	
Ethylbenzene	ND	
p/m-Xylene	0.73	J
n-Butylbenzene	1.7	J
sec-Butylbenzene	3.6	
Isopropylbenzene	**16**	
p-Isopropyltoluene	ND	
Naphthalene	1.4	J
n-Propylbenzene	**12**	
1,3,5-Trimethylbenzene	ND	
1,2,4,5-Tetramethylbenzene	3.5	

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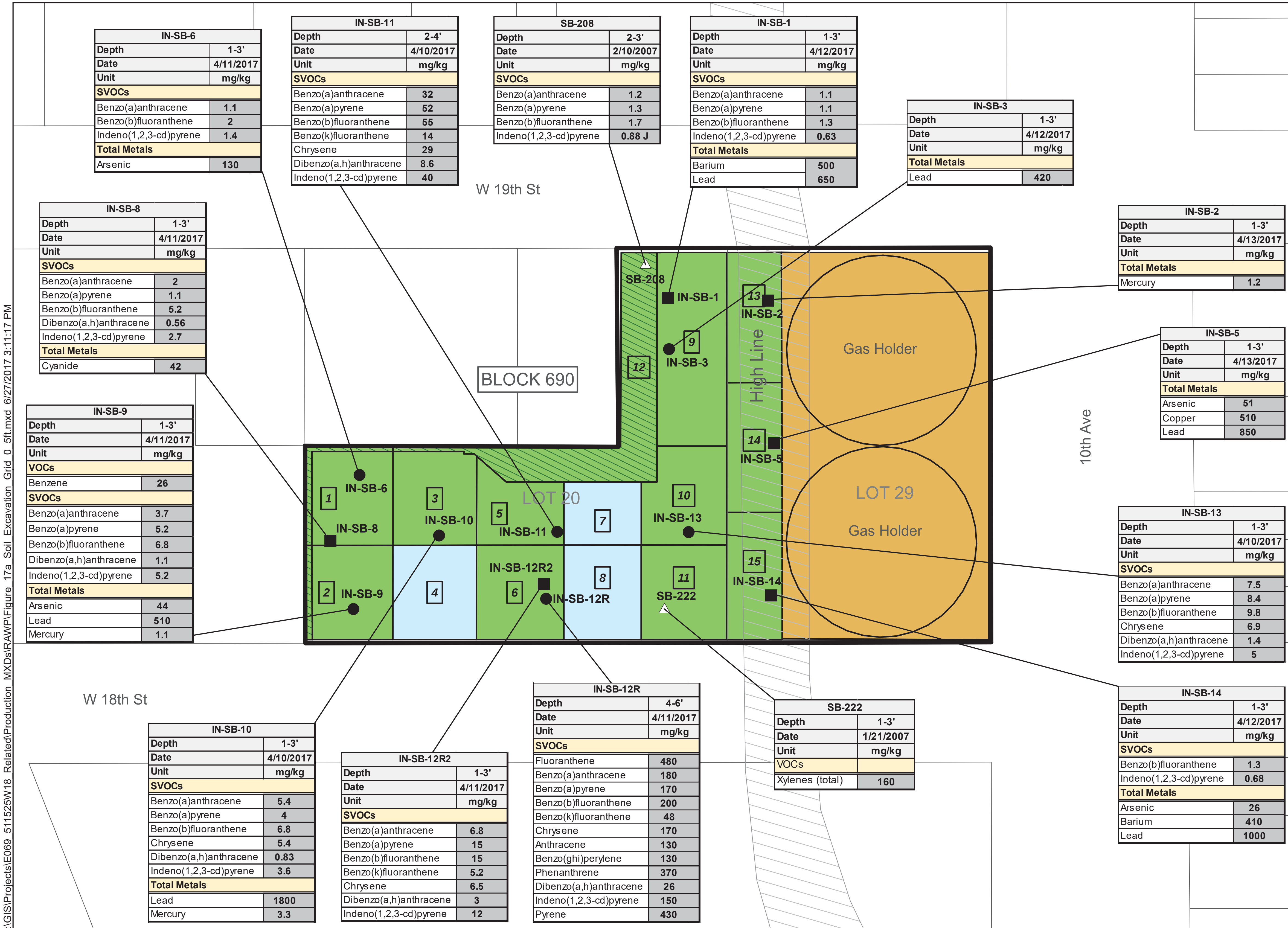
Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Figure 16.
Supplementary Subsurface Investigation
Groundwater Results for VOCs and SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY 10011



IN-SB-6	
Depth	1-3'
Date	4/11/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	1.1
Benzo(b)fluoranthene	2
Indeno(1,2,3-cd)pyrene	1.4
Total Metals	
Arsenic	130

IN-SB-11	
Depth	2-4'
Date	4/10/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	32
Benzo(a)pyrene	52
Benzo(b)fluoranthene	55
Benzo(k)fluoranthene	14
Chrysene	29
Dibenzo(a,h)anthracene	8.6
Indeno(1,2,3-cd)pyrene	40

SB-208	
Depth	2-3'
Date	2/10/2007
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	1.2
Benzo(a)pyrene	1.3
Benzo(b)fluoranthene	1.7
Indeno(1,2,3-cd)pyrene	0.88 J

IN-SB-1	
Depth	1-3'
Date	4/12/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	1.1
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	1.3
Indeno(1,2,3-cd)pyrene	0.63
Total Metals	
Barium	500
Lead	650

IN-SB-3	
Depth	1-3'
Date	4/12/2017
Unit	mg/kg
Total Metals	
Lead	420

IN-SB-8	
Depth	1-3'
Date	4/11/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	2
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	5.2
Dibenzo(a,h)anthracene	0.56
Indeno(1,2,3-cd)pyrene	2.7
Total Metals	
Cyanide	42

IN-SB-9	
Depth	1-3'
Date	4/11/2017
Unit	mg/kg
VOCs	
Benzene	26
SVOCs	
Benzo(a)anthracene	3.7
Benzo(a)pyrene	5.2
Benzo(b)fluoranthene	6.8
Dibenzo(a,h)anthracene	1.1
Indeno(1,2,3-cd)pyrene	5.2
Total Metals	
Arsenic	44
Lead	510
Mercury	1.1

IN-SB-2	
Depth	1-3'
Date	4/13/2017
Unit	mg/kg
Total Metals	
Mercury	1.2

IN-SB-5	
Depth	1-3'
Date	4/13/2017
Unit	mg/kg
Total Metals	
Arsenic	51
Copper	510
Lead	850

IN-SB-13	
Depth	1-3'
Date	4/10/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	7.5
Benzo(a)pyrene	8.4
Benzo(b)fluoranthene	9.8
Chrysene	6.9
Dibenzo(a,h)anthracene	1.4
Indeno(1,2,3-cd)pyrene	5

IN-SB-14	
Depth	1-3'
Date	4/12/2017
Unit	mg/kg
SVOCs	
Benzo(b)fluoranthene	1.3
Indeno(1,2,3-cd)pyrene	0.68
Total Metals	
Arsenic	26
Barium	410
Lead	1000

SB-222	
Depth	1-3'
Date	1/21/2007
Unit	mg/kg
VOCs	
Xylenes (total)	160

IN-SB-12R	
Depth	4-6'
Date	4/11/2017
Unit	mg/kg
SVOCs	
Fluoranthene	480
Benzo(a)anthracene	180
Benzo(a)pyrene	170
Benzo(b)fluoranthene	200
Benzo(k)fluoranthene	48
Chrysene	170
Anthracene	130
Benzo(ghi)perylene	130
Phenanthrene	370
Dibenzo(a,h)anthracene	26
Indeno(1,2,3-cd)pyrene	150
Pyrene	430

IN-SB-12R2	
Depth	1-3'
Date	4/11/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	6.8
Benzo(a)pyrene	15
Benzo(b)fluoranthene	15
Benzo(k)fluoranthene	5.2
Chrysene	6.5
Dibenzo(a,h)anthracene	3
Indeno(1,2,3-cd)pyrene	12

IN-SB-10	
Depth	1-3'
Date	4/10/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	5.4
Benzo(a)pyrene	4
Benzo(b)fluoranthene	6.8
Chrysene	5.4
Dibenzo(a,h)anthracene	0.83
Indeno(1,2,3-cd)pyrene	3.6
Total Metals	
Lead	1800
Mercury	3.3

- Soil Sampling Location (Integral 2017)
- Soil Boring with Temporary Well Location (Integral 2017)
- Soil Boring (Arcadis 2006-2007)
- Excavation for Remediation, Soil Grid Exceeds RRSCOs - Excavation from 0-2 feet below grade only
- Excavation for Remediation (0-5 feet below grade), Soil Grid Exceeds RRSCOs
- Excavation for Remediation (0-5 feet below grade), Excavation necessary to each deeper impacts in excess of RRSCOs
- Excavation for Remediation, Excavation necessary to remove source material - Excavation to bottom of holders (~20-22 ftbg) Total of approximately 22,754 tons
- Subject Property
- 1 Cell Number

Sample ID	
Depth	NY-RRSCO (mg/kg)
Date	
Unit	
Semivolatile Organics Compounds (SVOCs)	
Fluoranthene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Anthracene	100
Benzo(ghi)perylene	100
Phenanthrene	100
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Pyrene	100
Xylenes	100
Total Metals	
Arsenic	16
Barium	400
Cyanide	27
Copper	270
Lead	400
Mercury	0.81

Excavation Volume Calculations		
0-5 feet below grade		
Cells - Lot 20	Remediation Tons	Development Tons
1	560	0
2	560	0
3	560	0
4	560	0
5	560	0
6	560	0
7	560	0
8	560	0
9	560	0
10	560	0
11	560	0
12 (0-2 ft)	384	0
Cells - Lot 29		
13	429	0
14	429	0
15	429	0
Totals	7,831	0

N:\GIS\Projects\E069 511525W18 Related\Production MXDs\RAWP\Figure 17a Soil Excavation Grid 0 5ft.mxd 6/27/2017 3:11:17 PM

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Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2013

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Feet

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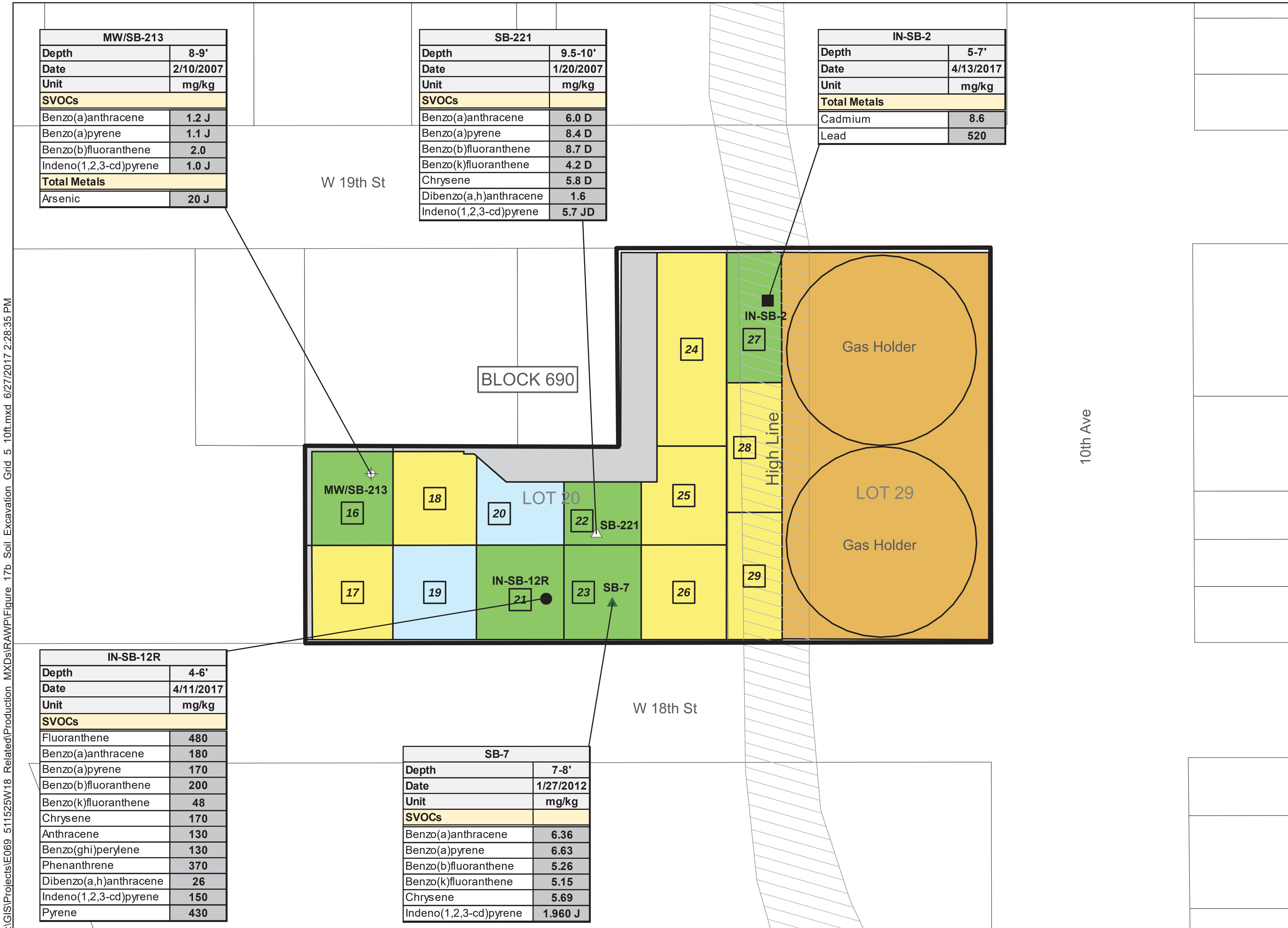
Notes:
1. Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
2. NY-RESRR: Restricted-Residential Criteria, New York Restricted
3. J = Estimated value
4. D = Diluted
5. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
6. Sample locations are approximate.
7. Non-hatched Cells on Lot 20 represent approximately 560 tons of material per 5 foot layer. Cells under the High line on Lot 29 represent approximately 429 tons of material per 5 foot layer

Figure 17a.
Soil Excavation Cells for Remedial Action and for Development (0-5 feet below grade)
Remedial Action Work Plan
515 West 18th Street
Manhattan, New York 10011



MW/SB-213	
Depth	8-9'
Date	2/10/2007
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	**1.2 J**
Benzo(a)pyrene	**1.1 J**
Benzo(b)fluoranthene	**2.0**
Indeno(1,2,3-cd)pyrene	**1.0 J**
Total Metals	
Arsenic	**20 J**

SB-221	
Depth	9.5-10'
Date	1/20/2007
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	**6.0 D**
Benzo(a)pyrene	**8.4 D**
Benzo(b)fluoranthene	**8.7 D**
Benzo(k)fluoranthene	**4.2 D**
Chrysene	**5.8 D**
Dibenzo(a,h)anthracene	**1.6**
Indeno(1,2,3-cd)pyrene	**5.7 JD**

IN-SB-2	
Depth	5-7'
Date	4/13/2017
Unit	mg/kg
Total Metals	
Cadmium	**8.6**
Lead	**520**

IN-SB-12R	
Depth	4-6'
Date	4/11/2017
Unit	mg/kg
SVOCs	
Fluoranthene	**480**
Benzo(a)anthracene	**180**
Benzo(a)pyrene	**170**
Benzo(b)fluoranthene	**200**
Benzo(k)fluoranthene	**48**
Chrysene	**170**
Anthracene	**130**
Benzo(ghi)perylene	**130**
Phenanthrene	**370**
Dibenzo(a,h)anthracene	**26**
Indeno(1,2,3-cd)pyrene	**150**
Pyrene	**430**

SB-7	
Depth	7-8'
Date	1/27/2012
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	**6.36**
Benzo(a)pyrene	**6.63**
Benzo(b)fluoranthene	**5.26**
Benzo(k)fluoranthene	**5.15**
Chrysene	**5.69**
Indeno(1,2,3-cd)pyrene	**1.960 J**

Soil Sampling Location (Integral 2017)
Soil Boring with Temporary Well Location (Integral 2017)
Soil Boring (Arcadis 2006-2007)
MW/Soil Boring (Arcadis 2006-2007)
Soil Boring (Core 2012)
Excavation for Development (5-10 feet below grade), Soil Grid Meets RRSCOs
Excavation for Remediation (5-10 feet below grade), Soil Grid Exceeds RRSCOs
Excavation for Remediation (5-10 feet below grade), Excavation necessary to reach deeper impacts in excess of RRSCOs
Excavation for Remediation, Excavation necessary to remove source material - Excavation to bottom of holders (~20-22 ftbg) Total of approximately 22,754 tons
No Excavation
Subject Property
16 Cell Number

Sample ID	
Depth	NY-RRSCO (mg/kg)
Date	
Unit	
Semivolatile Organics Compounds (SVOCs)	
Fluoranthene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Anthracene	100
Benzo(ghi)perylene	100
Phenanthrene	100
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Pyrene	100
Total Metals	
Arsenic	16
Cadmium	4.3
Lead	400

Excavation Volume Calculations 5-10 feet below grade		
Cells - Lot 20	Remediation Tons	Development Tons
16	560	0
17	0	560
18	0	560
19	560	0
20	560	0
21	560	0
22	560	0
23	560	0
24	0	560
25	0	560
26	0	560
Cells - Lot 29		
27	429	0
28	0	429
29	0	429
Totals	3,789	3,658

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Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2013

0 25 50
Feet
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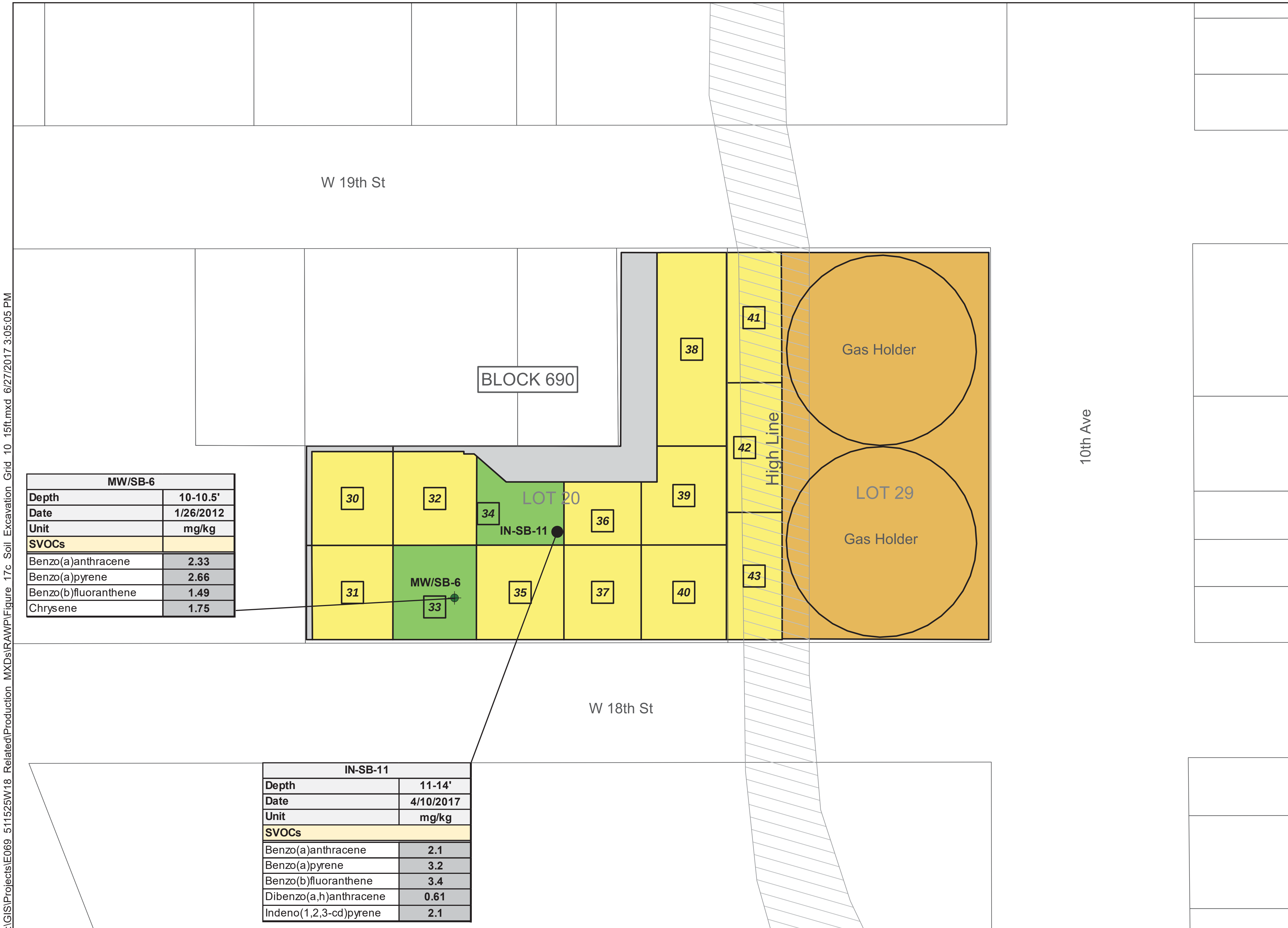
Notes:
1. Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
2. NY-RESRR: Restricted-Residential Criteria, New York Restricted
3. J = Estimated value
4. D = Diluted
5. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
6. Sample locations are approximate.
7. Non-hatched Cells on Lot 20 represent approximately 560 tons of material per 5 foot layer. Cells under the High line on Lot 29 represent approximately 429 tons of material per 5 foot layer

Figure 17b.
Soil Excavation Cells for Remedial Action and for Development (5-10 feet below grade)
Remedial Action Work Plan
515 West 18th Street
Manhattan, New York 10011



MW/SB-6	
Depth	10-10.5'
Date	1/26/2012
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	2.33
Benzo(a)pyrene	2.66
Benzo(b)fluoranthene	1.49
Chrysene	1.75

IN-SB-11	
Depth	11-14'
Date	4/10/2017
Unit	mg/kg
SVOCs	
Benzo(a)anthracene	2.1
Benzo(a)pyrene	3.2
Benzo(b)fluoranthene	3.4
Dibenzo(a,h)anthracene	0.61
Indeno(1,2,3-cd)pyrene	2.1

- Soil Sampling Location (Integral 2017)
- MW/Soil Boring (Core 2012)
- Excavation for Development (10-15 feet below grade), Soil Grid Meets RRSCOs
- Excavation for Remediation (10-15 feet below grade), Soil Grid Exceeds RRSCOs
- Excavation for Remediation, Excavation necessary to remove source material - Excavation to bottom of holders (~20-22 ftbg) Total of approximately 22,754 tons
- No Excavation
- Subject Property
- 30 Cell Number

Sample ID	
Depth	NY-RRSCO (mg/kg)
Date	
Unit	
Semivolatile Organics Compounds (SVOCs)	
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Chrysene	3.9
Benzo(k)fluoranthene	3.9
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5

Excavation Volume Calculations 10-15 feet below grade		
Cells - Lot 20	Remediation Tons	Development Tons
30	0	560
31	0	560
32	0	560
33	560	0
34	560	0
35	0	560
36	0	560
37	0	560
38	0	560
39	0	560
40	0	560
Cells - Lot 29		
41	0	429
42	0	429
43	0	429
Totals	1,120	6,327

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Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2013

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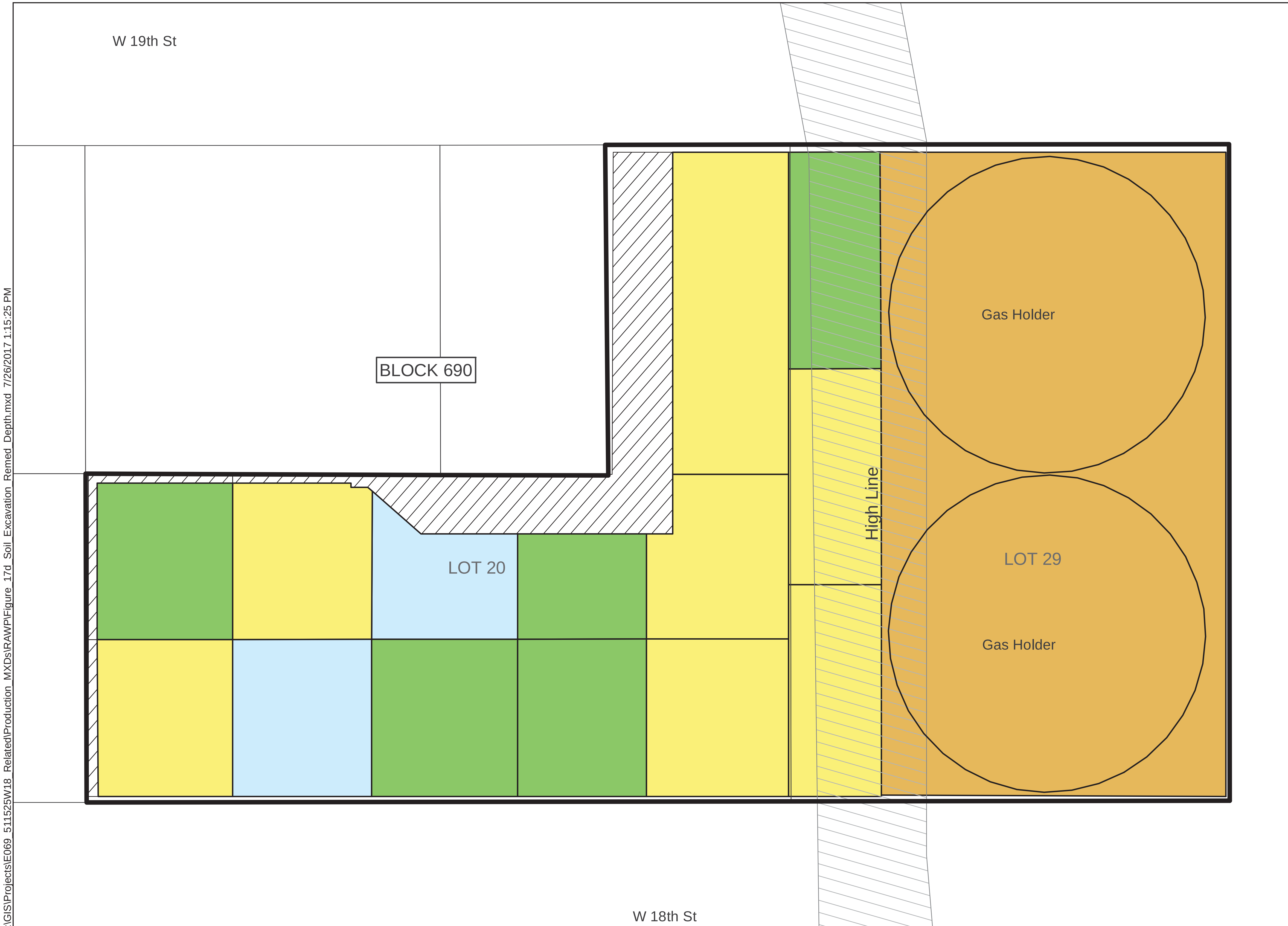
Notes:
1. Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
2. NY-RESRR: Restricted-Residential Criteria, New York Restricted
3. J = Estimated value
4. D = Diluted
5. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
6. Sample locations are approximate.
7. Non-hatched Cells on Lot 20 represent approximately 560 tons of material per 5 foot layer. Cells under the High line on Lot 29 represent approximately 429 tons of material per 5 foot layer

Figure 17c.
Soil Excavation Cells for Remedial Action and for Development (10-15 feet below grade)
Remedial Action Work Plan
515 West 18th Street
Manhattan, New York 10011



Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.

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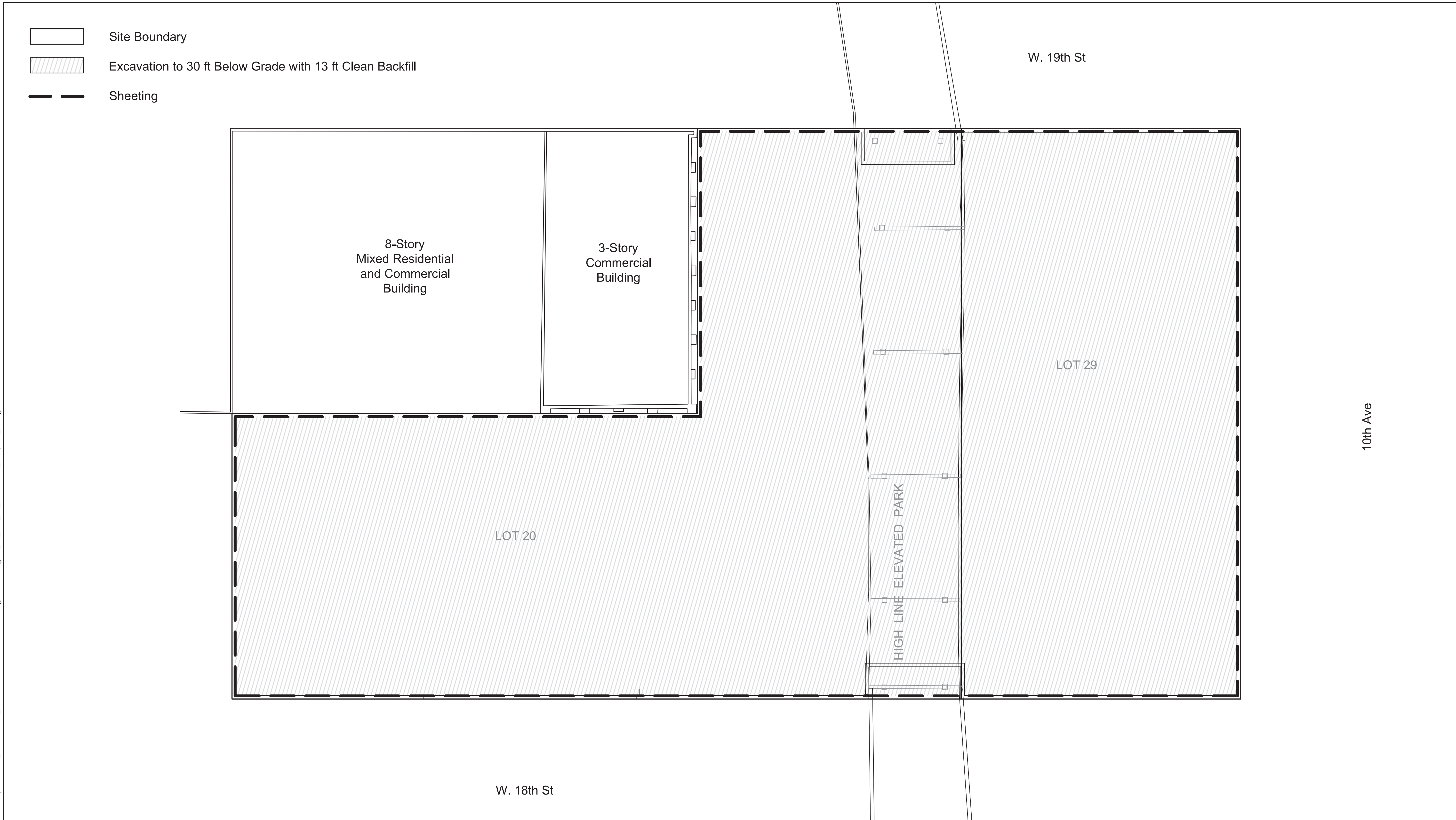
Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2013

Figure 17d.
Soil Excavation Depth for Remedial Action
Remedial Action Work Plan
515 West 18th Street
Manhattan, New York 10011



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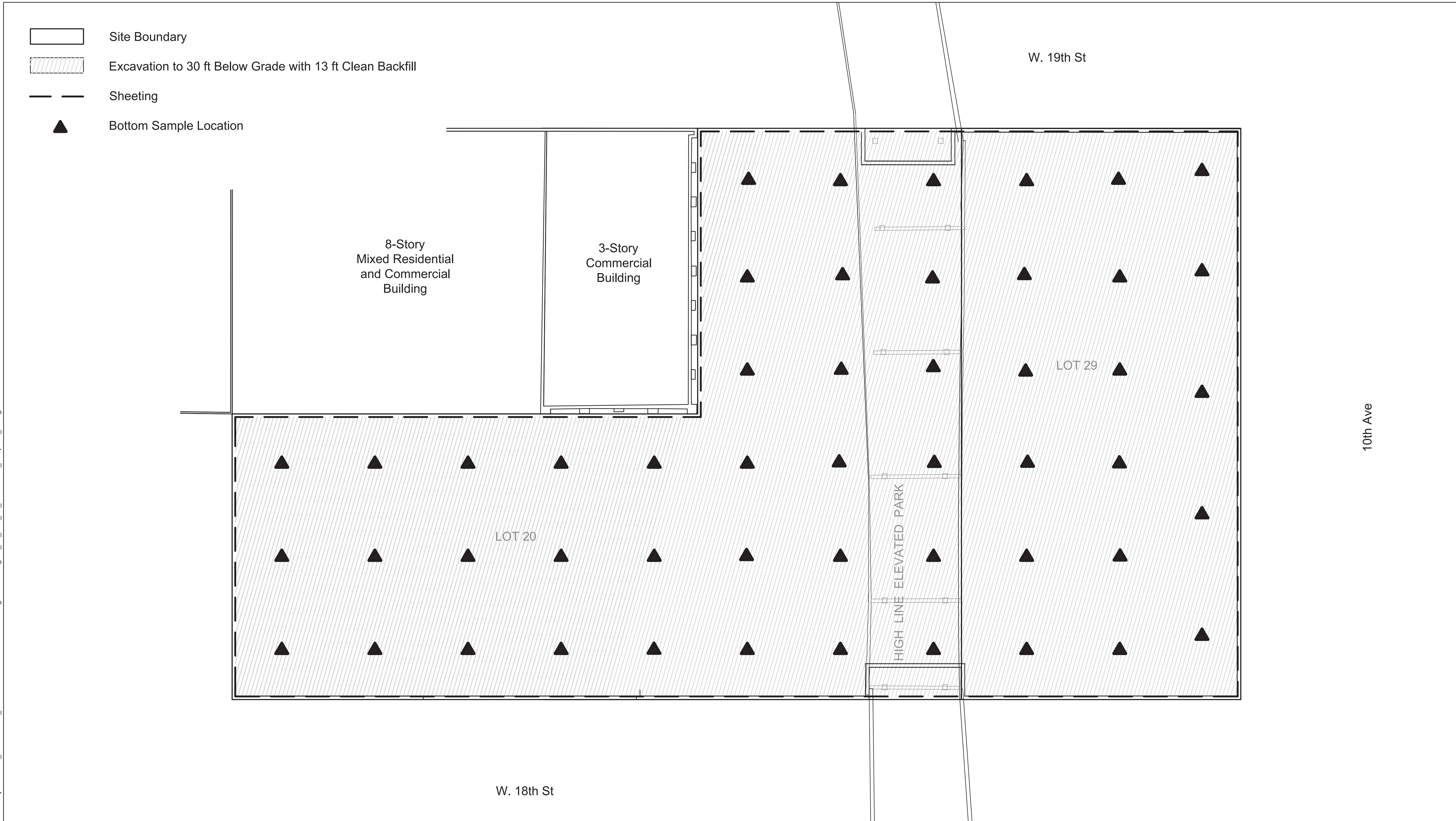
Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Notes:
1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016
2. Alternative I is not feasible due to structural integrity concerns associated with excavating near the High Line support columns and adjacent building foundations.

Figure 18.
Extent of Excavation for Alternative I
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Note:
1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016

Figure 19.
Endpoint Sample Location Map for Alternative I
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

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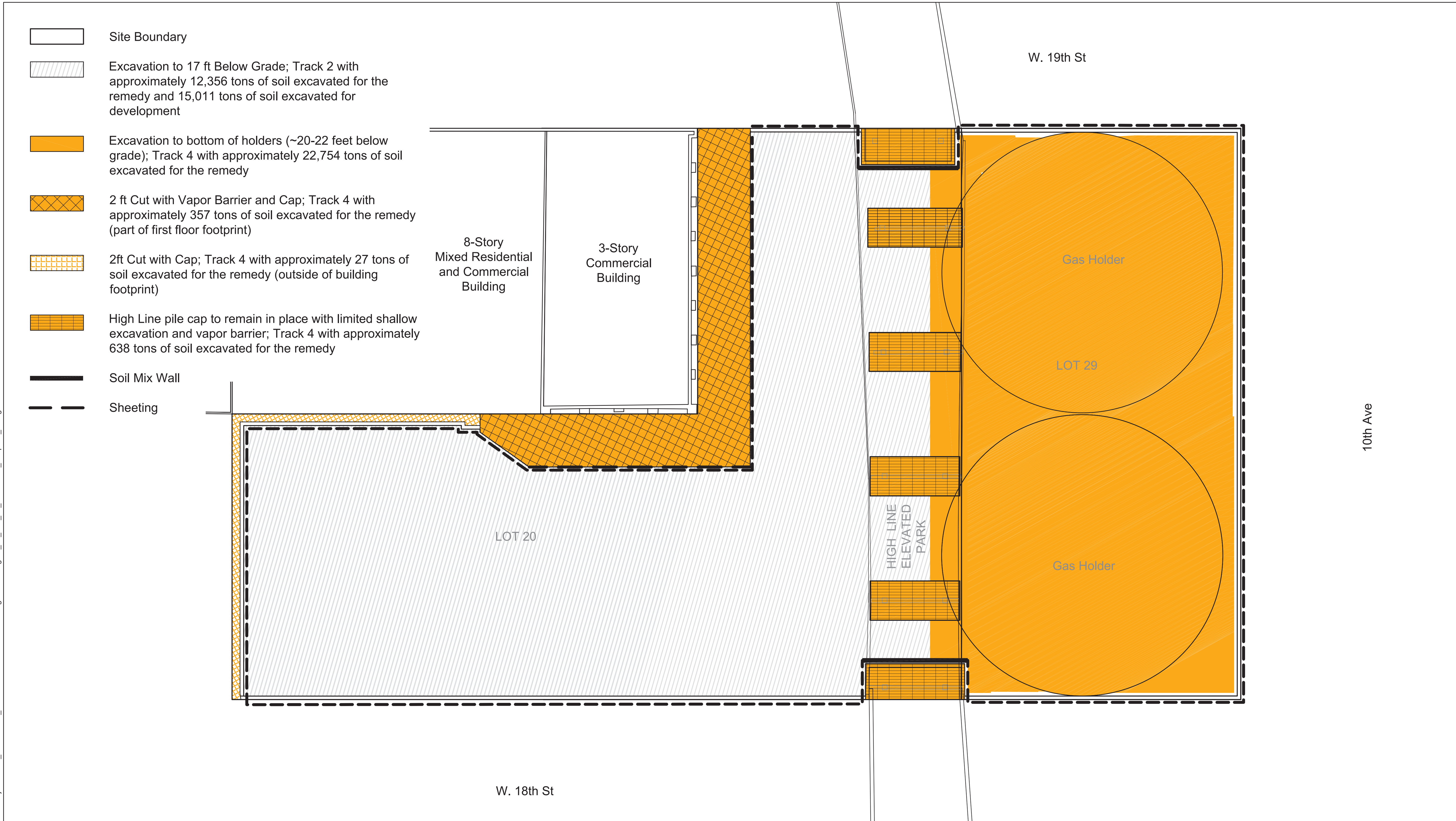

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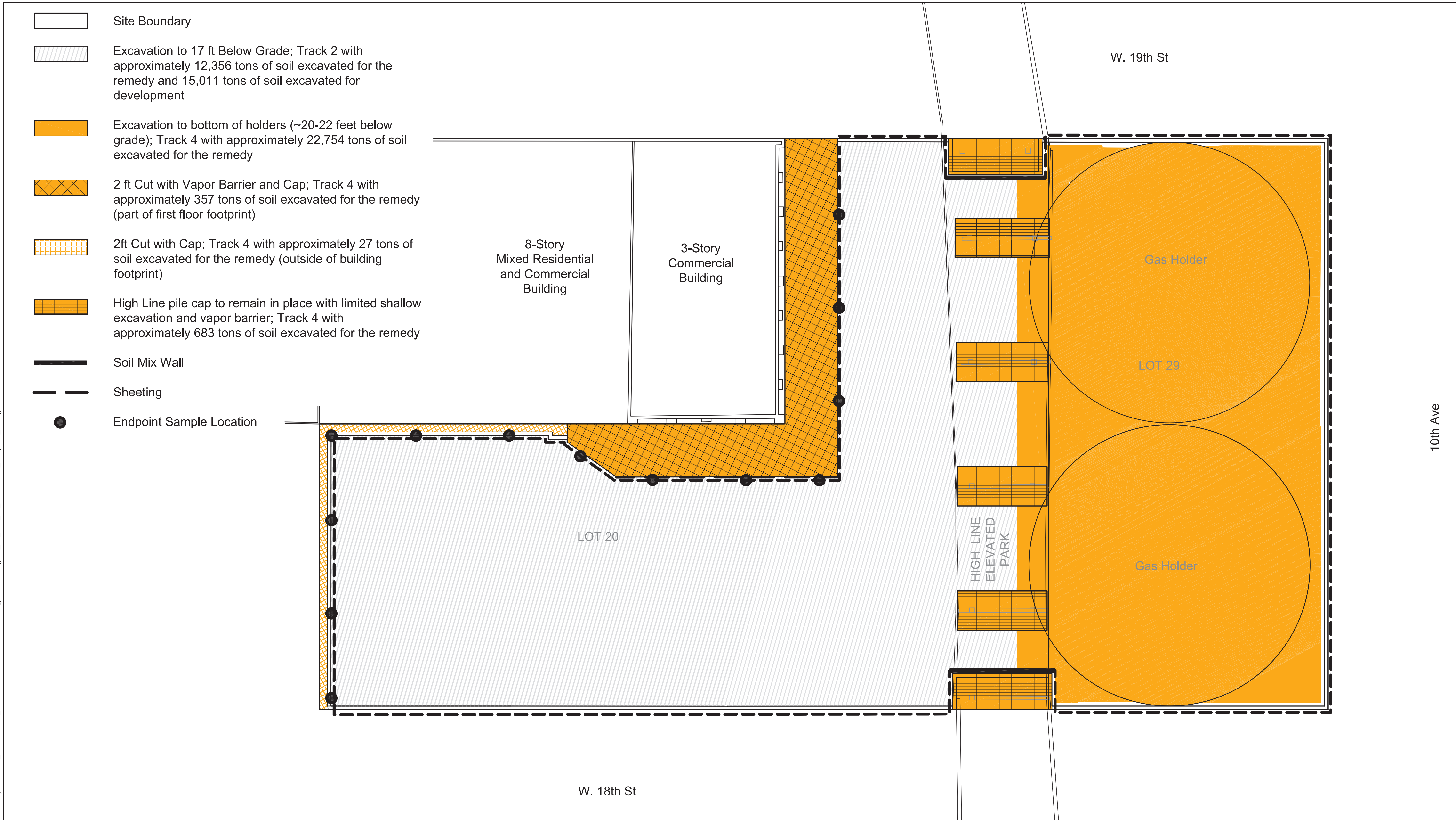
Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014, West Phase "B" Foundation Support of Excavation Layout Plan, Sheet SOE-202.00, DeSimone Consulting Engineers, September 6, 2016

Note:
1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016
2. Sheeting along West 18th Street (excluding HL pile cap), along 10th Avenue and along West 19th Street (excluding the HL pile cap) is +/- 4" outside of site boundary (not to scale).

Figure 20.
Extent of Excavation for Alternative II
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011



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Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014, West Phase "B" Foundation Support of Excavation Layout Plan, Sheet SOE-202.00, DeSimone Consulting Engineers, September 6, 2016

Note:
1. Former manufactured gas plant (MGP) structures are from West 18th Street Gas Works, as shown on Sanborn maps dated 1895, Test Pit Location Plan, W18-W19 Street Development, Mueser Rutledge Consulting Engineers, 6-8-2016, and Integral Consulting Pre-Design Investigation, 2016
2. Sheeting along West 18th Street (excluding HL pile cap), along 10th Avenue and along West 19th Street (excluding the HL pile cap) is +/- 4" outside of site boundary (not to scale).

Figure 21.
Endpoint Sample Location Map for Alternative II
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Tables

TABLE 1.

Historic Soil Sample Results - VOCs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: / Sample Depth(Feet): / Date Collected: / Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-MTP-1 3 - 4 02/10/07 ARCADIS	SB-MTP-1 8 - 9 02/10/07 ARCADIS	SB-MTP-1 19 - 20 02/10/07 ARCADIS	SB-MTP-1 23 - 24 02/10/07 ARCADIS	SB-MTP-2 9 - 10 02/10/07 ARCADIS	SB-MTP-2 18 - 19 02/10/07 ARCADIS	SB-MTP-2 22 - 23 02/10/07 ARCADIS	SB-MTP-2 24 - 25 02/10/07 ARCADIS	SB-MTP-3 8 - 9 03/03/07 ARCADIS	SB-MTP-3 24 - 25 03/03/07 ARCADIS	SB-208 2 - 3 01/20/07 ARCADIS	SB-208 9.5 - 10 01/20/07 ARCADIS	SB-208 19 - 20 01/20/07 ARCADIS	SB-209 9.4 - 10 01/20/07 ARCADIS	SB-209 11 - 13 01/20/07 ARCADIS	SB-209 19 - 20 01/20/07 ARCADIS	SB-210 7 - 9 12/16/06 ARCADIS	SB-210 11 - 13 12/16/06 ARCADIS	SB-210 21 - 23 12/16/06 ARCADIS	SB-210 25 - 27 12/16/06 ARCADIS	SB-210 36 - 37 12/16/06 ARCADIS	MW/SB-213 8 - 9 02/10/07 ARCADIS	MW/SB-213 19 - 20 02/10/07 ARCADIS	SB-214 11 - 13 01/21/07 ARCADIS	SB-214 19 - 20 01/21/07 ARCADIS	SB-221 2 - 4 01/20/07 ARCADIS	SB-221 6 - 8 01/20/07 ARCADIS	SB-221 9.5 - 10 01/20/07 ARCADIS	SB-221 24 - 25 01/20/07 ARCADIS	SB-222 1 - 3 01/21/07 ARCADIS	SB-222 7.5 - 8.5 01/21/07 ARCADIS	SB-222 15 - 17 01/21/07 ARCADIS	SB-222 19 - 20 01/21/07 ARCADIS	SB-254 8 - 9 03/03/07 ARCADIS	SB-254 19 - 20 03/03/07 ARCADIS	TP-2N 10-11 09/12/04 TRC
Volatile Organics																																						
1,1,1-Trichloroethane	0.68	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.27	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.02	3.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	0.12	100	***0.83 J***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	***0.46 J***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	***0.47 J***	ND	ND	ND	***1.4***	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	0.05	100	ND	ND	***0.11 J***	***0.15 J***	ND	ND	ND	0.032 J	ND	ND	0.025 J	ND	ND	***0.067***	***0.053***	ND	ND	ND	0.024 J	0.025 J	ND	ND	***0.074 J***	***0.056***	***0.061***	ND	ND	***0.067***	ND	ND	0.019	ND	ND	ND	ND	0.032 J
Benzene	0.06	4.8	***0.29***	***0.31 J***	0.015	0.0028 J	0.0007 J	**16**	0.0088	0.001 J	ND	**6.7**	0.0006 J	ND	***0.86***	0.0022 J	0.021	***2.1***	0.0011 J	0.0025 J	0.044	0.0079	0.0068	ND	0.021	0.0021 J	ND	ND	ND	0.0014 J	***0.71***	***0.39 J***	0.0021 J	***0.72***	***4.4***	ND	***0.16***	0.049
Carbon Disulfide	NS	NS	ND	ND	ND	ND	ND	ND	ND	0.0010 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0007 J	ND	ND	ND	ND	ND	ND	0.0070 J	ND	ND	ND	ND	ND	0.0007 J	ND	ND	ND	ND	ND
Chlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.25	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.56 J	0.015	ND	ND	ND	0.20	ND	ND	ND	0.0042 J
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	41	0.72	***20***	0.0012 J	0.002 J	ND	**85**	0.023	0.0052 J	ND	ND	ND	ND	ND	ND	ND	***2.4***	ND	ND	0.0051 J	ND	ND	0.0063	0.012	ND	ND	ND	ND	ND	0.69	***17***	0.0038 J	0.024 J	***1.5***	ND	0.17	ND
Isopropylbenzene	NS	NS	0.13 J	7.4	0.0029 J	ND	ND	7.4	0.0035 J	ND	ND	ND	ND	ND	ND	ND	0.0018 J	ND	ND	ND	ND	ND	ND	0.0014 J	ND	ND	ND	ND	3.0	0.031	ND	ND	0.0022 J	0.13	ND	ND	ND	0.0027 J
Methyl Acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	0.93	100	0.17 J	***0.95 J***	0.0063 J	0.0051 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0014 J	0.0008 J	ND	ND	0.0060 J	ND	ND	ND	ND	0.0010 J	ND	ND	ND	0.011 J	0.12 J	ND	0.048	0.069 J
Methylcyclohexane	NS	NS	0.39	4.5	ND	ND	ND	1.8 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.3	0.068	ND	17	0.0034 J	0.17	ND	ND	ND	0.0039 J
Methylene Chloride	0.05	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0021 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0017 J	ND	ND	ND	ND	ND	ND	***0.13 J***	ND	ND	ND
m-Xylene & p-Xylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0061
o-Xylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0031 J
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	100	ND	***3.9***	0.0032 J	0.0023 J	0.0008 J	***24***	0.013	0.0020 J	0.0007 J	0.27 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0018 J	0.011	ND	ND	ND	***2.5***	ND	0.14 J	***1.0 J***	ND	0.0064 J	0.57	0.0014 J	0.0052 J	0.0019 J
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	0.26	100	***3.8***	**110**	0.0075 J	0.0084 J	ND	**230**	0.076	0.014 J	ND	ND	ND	ND	ND	ND	ND	***2.0***	ND	ND	0.0058 J	ND	ND	0.019	0.051	ND	ND	ND	ND	ND	***0.68***	**160**	0.031	0.073 J	***1.3***	ND	0.14	0.0092
1,1-Dichloroethane	0.27	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,1,2-Trichlorotrifluoroethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,1,2,2-Tetrachloroethane	NS	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dibromoethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dichlorobenzene	1.1	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dibromo-3-Chloropropane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,3-Dichlorobenzene	2.4	17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Bromodichloromethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Bromoform	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Carbon Tetrachloride	0.76	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Chloroethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
cis-1,3-Dichloropropene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Dibromochloromethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
t-1,3-Dichloropropene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
trans-1,2-Dichloroethene	0.19	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Trichlorofluoromethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
cis-1,3 Dichloropropylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Napthalene (v)	NS	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	12	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	5.9	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
traNA-1,3 Dichloropropylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethylene	NS	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	0.02	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg
ND = Not Detected
NA = Not Analyzed
NS = No Standard
B = Analyte is found in the associated analysis batch blank
B-Dil = Detected in method blank(s) associated with sample analysis
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 1.

Historic Soil Sample Results - VOCs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-9 4-5 09/12/04 TRC	SB-9 8-10 09/18/04 TRC	SB-9 20-22 09/18/04 TRC	SB-9 26-28 09/18/04 TRC	SB-9 32-34 09/18/04 TRC	SB-10 5-6 09/11/04 TRC	SB-10 6-8 09/18/04 TRC	SB-10 8-10 09/18/04 TRC	SB-10 20-22 09/18/04 TRC	SB-10 48-50 09/18/04 TRC	SB-11 5-6 09/11/04 TRC	SB-11 13-15 09/18/04 TRC	SB-11 27-29 09/18/04 TRC	SB-11 35-37 09/18/04 TRC	SB-11 37-39 09/18/04 TRC	SB-12 5-7 09/11/04 TRC	SB-12 7-9 09/11/04 TRC	SB-12 15-17 09/11/04 TRC	SB-12 25-27 09/11/04 TRC	SB-12 49-51 09/11/04 TRC	SB-14A 4-5 09/11/04 TRC	SB-14A 11-13 10/03/04 TRC	SB-14A 17-19 10/03/04 TRC	SB-14A 23-25 10/03/04 TRC	SB-3 6-6.5 1/25/12 CORE	SB-4 7-8 1/27/12 CORE	SB-5 9-9.5 1/26/12 CORE	SB-6 10-10.5 1/26/12 CORE	SB-7 7-8 1/27/12 CORE	SB-8 8-9 1/27/12 CORE
Volatile Organics																																
1,1,1-Trichloroethane	0.68	100	ND	ND	0.0033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NS	NS	ND	ND	0.0062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.27	100	ND	ND	0.0027	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NS	ND	ND	0.0031	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	3.1	ND	ND	***0.038***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NS	NS	ND	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	13	ND	ND	0.0043	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	100	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
2-Hexanone	NS	NS	ND	ND	0.039	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	NS	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Acetone	0.05	100	0.030 J	***0.054 J***	***0.092***	0.014 J	0.010 J	ND	ND	ND	ND	ND	ND	***0.057 J***	***0.120 J***	0.024 J	0.013 J	0.0019 J	0.0013 J	0.0046 J	0.0025 J	ND	ND	ND	ND	***28 J***	NA	NA	NA	NA	NA	NA
Benzene	0.06	4.8	ND	0.009	***0.88***	0.006	ND	ND	***4.6 J***	**7.2**	***0.064***	ND	ND	0.0015 J	**26 D**	0.0073	ND	ND	ND	***0.018***	***0.11***	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NS	NS	ND	0.0018 J	0.0012	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.030 J	ND	ND	0.0017 J	0.0034 J	ND	ND	ND	1.3 J	ND	ND	3.4 J	NA	NA	NA	NA	NA	NA
Chlorobenzene	1.1	100	ND	ND	0.0043	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Chloroform	0.37	49	ND	ND	0.0029	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Chloromethane	NS	NS	ND	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	0.25	100	ND	ND	0.0043	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Cyclohexane	NS	NS	ND	0.0035 J	0.075	ND	ND	ND	17 J	13 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.8 J	ND	ND	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NS	ND	ND	0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	41	ND	ND	***9.1***	0.011	ND	***7.70***	**53**	***24***	0.049 J	ND	0.31	0.0019 J	***18 D***	ND	0.0015 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	***7.4***	ND	ND	0.011 J	ND	ND
Isopropylbenzene	NS	NS	ND	0.0014 J	1.4	0.0016 J	ND	2.20	13	6	ND	ND	0.14	0.0063	1.1 J	ND	ND	ND	ND	ND	ND	ND	ND	3.1 J	ND	ND	2.3	0.140 J	4.9	0.11	ND	ND
Methyl Acetate	NS	NS	ND	ND	0.0160	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	0.93	100	ND	ND	0.0028	0.0041 J	0.0013 J	ND	ND	ND	0.280	0.0022 J	ND	0.012	0.540 J	0.0029 J	0.0028 J	ND	ND	0.002 J	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NS	NS	ND	0.019	0.1800	ND	ND	0.460 J	24	21	ND	ND	ND	0.094	0.570 J	ND	ND	ND	ND	0.0014 J	0.0045 J	ND	ND	4.6 J	ND	ND	NA	NA	NA	NA	NA	NA
Methylene Chloride	0.05	100	ND	0.0012 J	0.0150	ND	0.0016 J	ND	ND	ND	ND	ND	ND	ND	0.014 J	0.0023 J	0.0017 J	ND	ND	ND	ND	0.0012 J	ND	ND	ND	ND	***1.20 JB***	***0.570 JB***	***3.0 JB***	0.0062 B-Dil JB	***0.062 JB***	0.015 JB
m-Xylene & p-Xylene	NS	NS	0.0031 J	ND	0.0063	ND	ND	38	250	92	0.190	ND	1.5	0.0057 J	ND	ND	ND	ND	0.0049 J	ND	0.0044J	ND	ND	ND	ND	ND	48	2 J	ND	0.128 J	0.01 J	ND
o-Xylene	NS	NS	0.0013 J	ND	1.4	0.0032 J	ND	18	100	35	0.086	ND	0.52	0.010	11 D	ND	0.0012 J	ND	0.0022 J	ND	0.0026 J	ND	4.4 J	ND	ND	ND	20	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	0.0039	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	ND	ND	0.0078	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	100	ND	0.0017 J	***0.7700***	ND	ND	***2.6***	***74***	***37***	0.033 J	ND	ND	ND	***15 D***	0.0031 J	ND	ND	0.0016 J	0.0081	ND	ND	ND	ND	ND	ND	***1.2 JB***	ND	ND	0.019 J	ND	ND
Trichloroethene	0.47	21	ND	ND	0.0040	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Xylenes (total)	0.26	100	0.0044	ND	***1.4063***	0.0032	ND	***56***	**350**	**127**	***0.276***	ND	***2.02***	0.0157	***11.0064***	ND	0.0012	ND	0.0071 J	ND	0.0070 J	ND	ND	ND	ND	ND	**68**	0.2 J	ND	0.028 J	ND	ND
1,1-Dichloroethane	0.27	19	ND	ND	0.0044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,1,2-Trichlorotrifluoroethane	NS	NS	ND	ND	0.0057	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NS	35	ND	ND	0.0065	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NS	ND	ND	0.0051	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	100	ND	ND	0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NS	NS	ND	ND	0.0084	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	17	ND	ND	0.0026	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	NS	ND	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Bromoform	NS	NS	ND	ND	0.0037	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	0.76	1.4	ND	ND	0.0037	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Chloroethane	NS	NS	ND	ND	0.0065	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NS	NS	ND	ND	0.0024	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NS	NS	ND	ND	0.0036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
t-1,3-Dichloropropene	NS	NS	ND	ND	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	0.19	100	ND	ND	0.0046	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	NS	NS	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3 Dichloropropylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Napthalene (v)	NS	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20	ND	ND	ND	0.011 J	ND
n-Butylbenzene	12	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.9	0.44 J	3.9	0.063	0.0095 J	ND
n-Propylbenzene	3.9	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	***5.5***	0.150 J	***7.1 J***	0.12	ND	ND
p-Isopropyltoluene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3 J	ND	ND	0.025 J	ND	ND
sec-Butylbenzene	11	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	0.360 J	3	0.069	ND	ND
tert-Butylbenzene	5.9	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
traNA-1,3 Dichloropropylene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Trichloroethylene	NS	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Vinyl Chloride	0.02	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg
ND = Not Detected
NA = Not Analyzed
NS = No Standard
B = Analyte is found in the associated analysis batch blank.
B-Dil = Detected in method blank(s) associated with sample analysis
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 2.

Historic Soil Sample Results - SVOCs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-MTP-1 3 - 4 02/10/07 ARCADIS	SB-MTP-1 8 - 9 02/10/07 ARCADIS	SB-MTP-1 19 - 20 02/10/07 ARCADIS	SB-MTP-1 23 - 24 02/10/07 ARCADIS	SB-MTP-2 9 - 10 02/10/07 ARCADIS	SB-MTP-2 18 - 19 02/10/07 ARCADIS	SB-MTP-2 22 - 23 02/10/07 ARCADIS	SB-MTP-2 24 - 25 02/10/07 ARCADIS	SB-MTP-3 8 - 9 03/03/07 ARCADIS	SB-MTP-3 24 - 25 03/03/07 ARCADIS	SB-208 2 - 3 01/20/07 ARCADIS	SB-208 9.5 - 10 01/20/07 ARCADIS	SB-208 19 - 20 01/20/07 ARCADIS	SB-209 9.4 - 10 01/20/07 ARCADIS	SB-209 11 - 13 01/20/07 ARCADIS	SB-209 19 - 20 01/20/07 ARCADIS
Semi Volatile Organics																		
1,1-Biphenyl	NS	NS	ND	0.14 J	ND	ND	0.10 J	37 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.090 J
2-Methylnaphthalene	NS	NS	0.20 J	4.4	0.62	ND	1.4	380	ND	ND	ND	ND	0.095 J	ND	ND	ND	ND	ND
2-Methylphenol	0.33	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NS	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.085 J
4-Methylphenol	0.33	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	100	0.085 J	0.17 J	1.2	ND	0.080 J	***74 J***	0.31 J	0.089 J	ND	ND	0.24 J	ND	ND	ND	ND	0.071 J
Acenaphthylene	100	100	0.062 J	ND	ND	ND	ND	29 J	0.090 J	0.073 J	ND	ND	0.068 J	ND	ND	ND	ND	ND
Anthracene	100	100	0.16 J	0.30 J	0.52	ND	0.11 J	81	0.15 J	0.082 J	ND	ND	0.44	0.071 J	ND	ND	ND	0.12 J
Benzaldehyde	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	0.49	0.39	0.48	ND	0.18 J	**46 J**	ND	ND	ND	ND	**1.2**	0.13 J	ND	ND	ND	0.12 J
Benzo(a)pyrene	1	1	0.53	0.28 J	0.36 J	ND	0.19 J	**35 J**	ND	ND	ND	ND	**1.3**	0.14 J	ND	ND	ND	0.14 J
Benzo(b)fluoranthene	1	1	0.57	0.31 J	0.43 J	ND	0.21 J	**26 J**	ND	ND	ND	ND	**1.7**	0.17 J	ND	ND	ND	0.14 J
Benzo(g,h,i)perylene	100	100	0.34 J	0.14 J	0.18 J	ND	0.15 J	18 J	ND	ND	ND	ND	0.86 J	0.081 J	ND	ND	ND	0.13 J
Benzo(k)fluoranthene	0.8	3.9	0.30 J	0.14 J	0.19 J	ND	0.15 J	**35 J**	ND	ND	ND	ND	0.60	ND	ND	ND	ND	0.15 J
bis(2-Ethylhexyl)phthalate	NS	NS	ND	ND	0.46 ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13 J	ND	ND	ND	0.14 J
Butylbenzylphthalate	NS	NS	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J
Caprolactam	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.095 J	0.14 J	1.1	ND	0.083 J	ND	0.15 J	ND	ND	ND	0.24 J	ND	ND	ND	ND	0.11 J
Chrysene	1	3.9	0.49	0.34 J	0.43 J	ND	0.25 J	**47 J**	ND	ND	ND	ND	***1.2***	0.13 J	ND	ND	ND	0.12 J
Dibenzo(a,h)anthracene	0.33	0.33	0.075 J	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND	0.19 J	ND	ND	ND	ND	0.12 J
Dibenzofuran	7	59	0.099 J	0.11 J	0.65	ND	ND	**93**	ND	ND	ND	ND	0.17 J	ND	ND	ND	ND	0.079 J
Diethylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14 J
Dimethylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10 J
Di-n-Butylphthalate	NS	NS	ND	ND	ND	ND	0.10 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14 J
Di-n-Octylphthalate	NS	NS	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14 J
Fluoranthene	100	100	0.96	0.98	1.5	ND	0.18 J	**160**	0.32 J	0.12 J	ND	ND	3.1	0.30 J	ND	ND	ND	0.13 J
Fluorene	30	100	0.17 J	0.22 J	0.84	ND	0.095 J	100	0.068 J	ND	ND	ND	0.25 J	ND	ND	ND	ND	0.096 J
Hexachlorobenzene	0.33	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.33 J	0.15 J	0.19 J	ND	0.14 J	**20 J**	ND	ND	ND	ND	**0.88 J**	0.089 J	ND	ND	ND	0.13 J
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	0.61	5.5	3.9	ND	0.52	**22,000 D**	0.72	0.54	ND	ND	0.15 J	ND	ND	ND	ND	0.29 J
N-Nitrosodiphenylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NYSDOH BAP TEQ(-NDs Excluded)	NS	NS	0.75	0.37	0.48	ND	0.36	45	ND	ND	ND	ND	1.9	0.18	ND	ND	ND	0.30
Pentachlorophenol	0.8	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.073 J
Phenanthrene	100	100	0.76	1.1	2.1	ND	0.37 J	**300**	ND	0.074 J	ND	ND	2.5	0.31 J	ND	ND	ND	0.11 J
Phenol	0.33	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	100	100	0.91	0.97	1.3	ND	0.27 J	**130**	0.34 J	0.36 J	ND	ND	2.5	0.23 J	ND	ND	ND	0.12 J
bis(2-Chloroethyl)ether	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-oxybis(1-Chloropropane)	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3+4-Methylphenols	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene (sv)	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2 Dichlorobenzene (sv)	1.1	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3 Dichlorobenzene (sv)	2.4	17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4 Dichlorobenzene (sv)	1.8	9.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	0.33	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nistrosodi-n-propylamine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	SB-210 7 - 9 12/16/06 ARCADIS	SB-210 11 - 13 12/16/06 ARCADIS	SB-210 21 - 23 12/16/06 ARCADIS	SB-210 25 - 27 12/16/06 ARCADIS	SB-210 36 - 37 12/16/06 ARCADIS	MW/SB-213 8 - 9 02/10/07 ARCADIS	MW/SB-213 19 - 20 02/10/07 ARCADIS	SB-214 11 - 13 01/21/07 ARCADIS	SB-214 19 - 20 01/21/07 ARCADIS	SB-221 2 - 4 01/20/07 ARCADIS	SB-221 6 - 8 01/20/07 ARCADIS	SB-221 9.5 - 10 01/20/07 ARCADIS	SB-221 24 - 25 01/20/07 ARCADIS	SB-222 1 - 3 01/21/07 ARCADIS	SB-222 7.5 - 8.5 01/21/07 ARCADIS	SB-222 15 - 17 01/21/07 ARCADIS
Semi Volatile Organics																
1,1-Biphenyl	ND	ND	ND	ND	ND	0.34 J	ND	ND	ND	NA	NA	ND	ND	ND	ND	2.0
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	0.14 J	ND	ND	ND	ND	3.7	ND	2.7	0.19 J	1.0	ND	ND	ND	0.21 J	ND	74 D
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	0.17 J	ND	ND	ND	0.48 J	ND	1.1	0.084 J	ND	ND	0.30 J	2.4 J	0.099 J	ND	1.1
Acenaphthylene	ND	0.088 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	ND
Anthracene	0.13 J	0.091 J	ND	ND	ND	0.52 J	ND	0.81	0.075 J	ND	ND	1.2	ND	ND	ND	0.21 J
Benzaldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	1.6 J	ND	ND	ND
Benzo(a)anthracene	0.44	ND	ND	ND	ND	**1.2 J**	ND	0.76	0.071 J	0.18 J	ND	**6.0 D**	ND	ND	ND	0.59
Benzo(a)pyrene	0.50 J	ND	ND	ND	ND	**1.1 J**	ND	0.16 J	ND	0.12 J	ND	**8.4 D**	ND	ND	ND	**1.4**
Benzo(b)fluoranthene	0.60	ND	ND	ND	ND	**2.0**	ND	0.23 J	ND	0.13 J	ND	**8.7 D**	ND	ND	ND	**1.3**
Benzo(g,h,i)perylene	0.30 J	ND	ND	ND	ND	0.87 J	ND	0.091 J	ND	0.087 J	ND	5.3 J	ND	ND	ND	1.1
Benzo(k)fluoranthene	0.55 J	ND	ND	ND	ND	***1.0 J***	ND	ND	ND	0.12 J	ND	**4.2 D**	ND	ND	ND	0.65
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.087 J	0.086 J	ND	ND	0.11 J	0.82
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Caprolactam	0.21 J	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND
Carbazole	ND	0.12 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	0.29 J
Chrysene	0.51	ND	ND	ND	ND	***1.8***	ND	0.74	0.070 J	0.20 J	ND	**5.8 D**	ND	ND	ND	0.73
Dibenzo(a,h)anthracene	0.15 J	ND	ND	ND	ND	0.23 J	ND	0.046 J	ND	ND	ND	**1.6**	ND	ND	ND	0.24 J
Dibenzofuran	ND	ND	ND	ND	ND	0.26 J	ND	0.58	ND	ND	ND	0.20 J	1.6 J	ND	ND	ND
Diethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Octylphthalate	ND	ND	ND	ND	ND	0.59 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.72	ND	ND	ND	ND	2.5	ND	1.1	0.075 J	0.38	ND	7.6 D	0.82 J	ND	ND	0.87
Fluorene	ND	ND	ND	ND	ND	0.69 J	ND	0.89	ND	0.076 J	ND	0.32 J	6.2	0.20 J	ND	2.0
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.27 J	ND	ND	ND	ND	**1.0 J**	ND	0.093 J	ND	0.12 J	ND	**5.7 JD**	ND	ND	ND	**1.3**
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	0.16 J	0.086 J	0.059 J	ND	ND	4.6	ND	ND	ND	ND	ND	0.19 J	ND	ND	ND	42 D
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2
NYSDOH BAP TEQ(-NDs Excluded)	0.79	ND	ND	ND	ND	1.8	ND	0.32	0.0078	0.17	ND	12	ND	ND	ND	2.0
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7 U	ND	ND	ND	ND	ND	ND
Phenanthrene	0.51	ND	ND	ND	ND	3.1	ND	2.8	0.23 J	0.34 J	ND	3.2	12	0.34 J	ND	3.8
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	0.93 J	0.084 J	0.063 J	ND	ND	2.4	ND	1.6	0.15 J	0.41	ND	5.8 D	1.4 J	0.070 J	ND	1.3
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-oxybis(1-Chloropropane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3+4-Methylphenols	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene (sv)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2 Dichlorobenzene (sv)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3 Dichlorobenzene (sv)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4 Dichlorobenzene (sv)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nistrosodi-n-propylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg
ND = Not Detected
NA = Not Analyzed
NS = No Standard
B = Analyte is found in the associated analysis batch blank.
B-Dil = Detected in method blank(s) associated with sample analysis
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs

** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 2.

Historic Soil Sample Results - SVOCs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-222 19 - 20 01/21/07 ARCADIS	SB-254 8 - 9 03/03/07 ARCADIS	SB-254 19 - 20 03/03/07 ARCADIS	TP-2N 10-11 09/12/04 TRC	SB-9 4-5 09/12/04 TRC	SB-9 8-10 09/18/04 TRC	SB-9 20-22 09/18/04 TRC	SB-9 26-28 09/18/04 TRC	SB-9 32-34 09/18/04 TRC	SB-10 5-6 09/11/04 TRC	SB-10 6-8 09/18/04 TRC	SB-10 8-10 09/18/04 TRC	SB-10 20-22 09/18/04 TRC	SB-10 48-50 09/18/04 TRC	SB-11 5-6 09/11/04 TRC	SB-11 13-15 09/18/04 TRC	SB-11 27-29 09/18/04 TRC	SB-11 35-37 09/18/04 TRC	SB-11 37-39 09/18/04 TRC	SB-12 5-7 09/11/04 TRC	SB-12 7-9 09/11/04 TRC	SB-12 15-17 09/11/04 TRC	SB-12 25-27 09/11/04 TRC	SB-12 49-51 09/11/04 TRC	SB-14A 4-5 09/11/04 TRC	SB-14A 11-13 10/03/04 TRC	SB-14A 17-19 10/03/04 TRC	SB-14A 23-25 10/03/04 TRC	SB-3 6-6.5 1/25/12 CORE	SB-4 7-8 1/27/12 CORE	SB-5 9-9.5 1/26/12 CORE	SB-6 10-10.5 1/26/12 CORE	SB-7 7-8 1/27/12 CORE	SB-8 8-9 1/27/12 CORE
Semi Volatile Organics																																				
1,1-Biphenyl	NS	NS	ND	ND	ND	ND	ND	ND	0.88	ND	ND	0.44 J	0.280 J	ND	ND	ND	ND	ND	7.7 D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	NS	NS	0.27 J	ND	0.055 J	ND	ND	ND	7 DJ	0.062 J	ND	9.3 D	7.1 DJ	2.4 J	0.22 J	ND	2.1	ND	63 DJ	ND	ND	ND	ND	ND	ND	ND	0.220 J	ND	ND	ND	15.1	ND	3.48	ND	ND	ND
2-Methylphenol	0.33	100	ND	ND	ND	ND	ND	ND	0.160 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NS	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	0.33	100	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	100	ND	ND	ND	ND	0.078 J	0.039 J	2.50	0.038 J	ND	0.99	0.47 J	ND	0.074 J	ND	0.4	ND	12 D	ND	ND	ND	0.049 J	ND	ND	ND	0.320 J	ND	ND	ND	ND	ND	0.439	ND	ND	ND
Acenaphthylene	100	100	ND	ND	ND	ND	0.044 J	ND	0.290 J	ND	ND	ND	ND	ND	ND	ND	0.2 J	ND	6.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	100	ND	ND	ND	ND	0.049 J	0.091 J	2.9 D	0.056 J	ND	1.8	1.1	ND	0.1 J	ND	1	ND	19 D	ND	ND	0.035 J	0.150 J	ND	ND	ND	0.340 J	ND	ND	ND	ND	ND	0.233	0.25	1.67 J	ND
Benzaldehyde	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	ND	ND	ND	ND	0.190 J	0.29 J	**2.90**	0.039 J	ND	**2.7**	**1.6**	ND	0.068 J	ND	**2**	ND	**16 D**	ND	ND	0.052 J	0.240 J	ND	ND	ND	1	ND	ND	ND	ND	0.0824 J	0.172 J	**2.33**	**6.36**	ND
Benzo(a)pyrene	1	1	ND	ND	ND	ND	0.240 J	0.26 J	**2.0**	ND	ND	**2.4**	**1.2**	ND	0.049 J	ND	**1.7**	ND	**11 D**	ND	ND	0.052 J	0.220 J	ND	ND	ND	ND	ND	ND	ND	ND	0.113 J	0.138 J	**2.66**	**6.63**	ND
Benzo(b)fluoranthene	1	1	ND	ND	ND	ND	0.310 J	0.28 J	**2.2**	ND	ND	**2.7**	**1.4**	0.5 J	0.056 J	ND	**2.2**	ND	**12 D**	ND	ND	0.059 J	0.240 J	ND	ND	ND	1.4	ND	ND	ND	ND	0.0854 J	0.137 J	**1.49**	**5.26**	ND
Benzo(g,h,i)perylene	100	100	ND	ND	ND	ND	0.110 J	0.16 J	0.490	ND	ND	1	0.37 J	ND	ND	ND	0.8	ND	2.3 J	ND	ND	0.042 J	0.120 J	ND	ND	ND	0.75	ND	ND	ND	ND	0.0629 J	ND	0.316	1.42	ND
Benzo(k)fluoranthene	0.8	3.9	ND	ND	ND	ND	0.160 J	0.14 J	**1.30 J**	ND	ND	***1.2 J***	***0.8 J***	ND	ND	ND	***0.83 J***	ND	**5.2**	ND	ND	ND	0.093 J	ND	ND	ND	ND	ND	ND	ND	ND	0.0957 J	0.114 J	***1.81***	**5.15**	ND
bis(2-Ethylhexyl)phthalate	NS	NS	ND	ND	ND	0.066 J	ND	ND	ND	0.043 J	0.074 J	ND	0.17 J	ND	0.054 J	0.069 J	ND	0.078 J	ND	0.088 J	ND	0.39	0.38	0.063 J	0.057 J	0.042 J	ND	0.12	ND	ND	ND	0.896	0.0952	ND	0.19	0.150 J
Butylbenzylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.034 J	0.045 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.389	ND	ND
Caprolactam	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Carbazole	NS	NS	ND	ND	ND	ND	ND	ND	1.1	ND	ND	.64 J	0.28 J	ND	0.1 J	ND	0.41	ND	6.3 D	ND	ND	ND	0.060 J	ND	ND	ND	0.120 J	ND	ND	ND	NA	NA	NA	NA	NA	NA
Chrysene	1	3.9	ND	ND	ND	ND	0.280 J	0.26 J	**2.5**	0.05 J	ND	***2.3***	***1.2***	ND	0.075 J	ND	***1.8***	ND	**13 D**	ND	ND	0.064 J	0.200 J	ND	ND	ND	1.1	ND	ND	ND	ND	0.0907 J	0.277	**1.75**	**5.69**	ND
Dibenzo(a,h)anthracene	0.33	0.33	ND	ND	ND	ND	ND	ND	0.095 J	ND	ND	0.12 J	ND	ND	ND	ND	0.12 J	ND	**0.4 J**	ND	ND	ND	ND	ND	ND	ND	0.120 J	ND	ND	ND	ND	ND	ND	0.283	ND	ND
Dibenzofuran	7	59	ND	ND	ND	ND	0.140 J	ND	2.6	ND	ND	0.68 J	0.37 J	ND	0.089 J	ND	0.68	ND	15 D	ND	ND	ND	0.070 J	ND	ND	ND	0.41	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.140 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	ND	ND	0.11 J	ND	0.740	0.53	5.7 D	0.1 J	ND	5.3	3.1	0.65 J	0.17 J	ND	4.3 D	0.064 J	40 JD	ND	ND	0.120 J	0.57	ND	ND	0.042 J	1.5	ND	ND	ND	ND	ND	0.672	1.88	9.58	ND
Fluorene	30	100	ND	ND	ND	ND	0.690	0.62	5.5 D	0.1 J	ND	6.8 D	3.6	0.79 J	0.17 J	ND	4.3 D	0.073 J	32 D	ND	ND	ND	0.110 J	ND	ND	ND	0.5	ND	ND	ND	ND	ND	ND	0.0715 J	ND	ND
Hexachlorobenzene	0.33	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	ND	ND	ND	ND	0.100 J	0.13 J	0.044	ND	ND	**0.75**	0.21 J	ND	ND	ND	**0.74**	ND	**1.9**	ND	ND	ND	0.100 J	ND	ND	ND	0.69	ND	ND	ND	ND	ND	ND	0.459	**1.960 J**	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	0.13 J	ND	0.13 J	ND	ND	0.044 J	***94 D***	0.78	0.075 J	9.1 D	9.2 D	4	5.6 D	ND	2.4	ND	**1300 DJ**	0.28 J	ND	ND	0.048 J	ND	ND	ND	0.52	***41 J***	ND	ND	8.48	ND	ND	0.116 J	ND	ND
N-Nitrosodiphenylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NYSDOH BAP TEQ(-NDs Excluded)	NS	NS	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.8	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	ND	ND	0.20 J	ND	0.700	0.25 J	8.5 D	0.14 J	ND	5.3	3.2	0.59 J	0.29 J	ND	4.5 D	0.089 J	63 D	ND	ND	0.080 J	0.56	ND	ND	ND	1.4	ND	ND	ND	NA	NA	NA	NA	NA	NA
Phenol	0.33	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	100	100	ND	ND	0.11 J	ND	0.69	0.620	5.5 D	0.1 J	ND	6.8 D	3.6	0.79 J	0.17 J	ND	4.3 D	0.073 J	32 D	ND	ND	0.120 J	0.43	ND	ND	ND	1.6	ND	ND	ND	ND	0.114 J	0.652	2.17	6.84	ND
bis(2-Chloroethyl)ether	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-oxybis(1-Chloropropane)	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3+4-Methylphenols	NS	NS	NA	NA	NA	ND	ND	ND	0.130 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.033 R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Atrazine	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	NS	NS	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene (sv)	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 Dichlorobenzene (sv)	1.1	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3 Dichlorobenzene (sv)	2.4	17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4 Dichlorobenzene (sv)	1.8	9.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol	0.33	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aniline	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nistrosodi-n-propylamine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	1.820 J	ND	1.7	0.754	5.24	ND
Pyridine	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg
ND = Not Detected
NA = Not Analyzed
NS = No Standard
B = Analyte is found in the associated analysis batch blank.
B-Dil = Detected in method blank(s) associated with sample analysis
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs

** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 3.

Historic Soil Sample Results - Metals
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-MTP-1 3 - 4 02/10/07 ARCADIS	SB-MTP-1 8 - 9 02/10/07 ARCADIS	SB-MTP-1 19 - 20 02/10/07 ARCADIS	SB-MTP-1 23 - 24 02/10/07 ARCADIS	SB-MTP-2 9 - 10 02/10/07 ARCADIS	SB-MTP-2 18 - 19 02/10/07 ARCADIS	SB-MTP-2 22 - 23 02/10/07 ARCADIS	SB-MTP-2 24 - 25 02/10/07 ARCADIS	SB-MTP-3 8 - 9 03/03/07 ARCADIS	SB-MTP-3 24 - 25 03/03/07 ARCADIS	SB-208 2 - 3 01/20/07 ARCADIS
Metals													
Amenable Cyanide	NS	NS	ND	ND	ND	ND	ND	ND	ND	0.370 B	NA	NA	0.0700
Antimony	NS	NS	0.460 J	0.200 J	ND	0.440 J	0.350 J	1.30 J	ND	ND	0.600 J	0.570 J	0.820 J
Arsenic	13	16	2.20 J	1.20 J	4.80 J	3.00 J	5.00 J	9.40 J	0.550 J	0.630 J	2.80	10.0	4.80
Beryllium	7.2	72	0.320 B	0.330 B	0.550 B	0.610	0.310 B	0.300 B	0.250 B	0.270 B	0.600 B	0.760	0.350 B
Cadmium	2.5	4.3	ND	ND	ND	ND	0.360 B	ND	ND	ND	ND	ND	0.410 B
Chromium	NS	NS	11.7	11.8	18.1	23.2	11.5	9.70	10.3	11.5	17.0	27.6	20.4
Copper	50	270	18.8 J	14.7 J	18.1 J	26.1 J	38.3 J	30.3 J	8.20 J	7.70 J	17.9	16.5	41.8
Cyanide	27	27	ND	NA	NA	NA	2.20	**179**	ND	ND	ND	ND	1.00
Lead	63	400	***178 J***	11.5 J	12.4 J	14.1 J	***76.7 J***	**1,430 J**	2.90 J	3.70 J	8.30 J	11.0 J	**708**
Mercury	0.18	0.81	***0.250 J***	ND	0.0390 J	ND	0.140 J	***0.460 J***	0.0210 J	0.0200 J	0.0360 B	0.0480 B	***0.550***
Nickel	30	310	13.0	12.5	17.2	22.1	12.7	13.6	8.60	12.7	22.2	24.3	18.8
Selenium	3.90	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	2	180	0.150 B	ND	ND	ND	ND	0.140 B	ND	ND	ND	ND	0.130 B
Thallium	NS	NS	ND	ND	ND	ND	ND	ND	ND	1.00	0.690 B	1.00 B	ND
Zinc	109	10,000	***123 J***	28.6 J	68.1 J	41.1 J	88.2 J	***197 J***	9.10 J	11.8 J	50.7	63.2	***399 J***

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	SB-208 9.5 - 10 01/20/07 ARCADIS	SB-208 19 - 20 01/20/07 ARCADIS	SB-209 9.4 - 10 01/20/07 ARCADIS	SB-209 11 - 13 01/20/07 ARCADIS	SB-209 19 - 20 01/20/07 ARCADIS	SB-210 7 - 9 12/16/06 ARCADIS	SB-210 11 - 13 12/16/06 ARCADIS	SB-210 21 - 23 12/16/06 ARCADIS	SB-210 25 - 27 12/16/06 ARCADIS	SB-210 36 - 37 12/16/06 ARCADIS	MW/SB-213 8 - 9 02/10/07 ARCADIS	MW/SB-213 19 - 20 02/10/07 ARCADIS	SB-214 5 - 7 01/21/07 ARCADIS	SB-214 9.5 - 10 01/21/07 ARCADIS	SB-214 11 - 13 01/21/07 ARCADIS	SB-214 19 - 20 01/21/07 ARCADIS
Metals																
Amenable Cyanide	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND
Antimony	0.540 J	0.820 J	0.270 J	0.450 J	0.700 J	1.80 J	ND	ND	ND	ND	0.780 J	0.570 J	0.420 J	0.250 J	0.250 J	0.660 J
Arsenic	2.70	9.00	1.70	2.20	9.10	9.30 J	5.00 J	2.50 J	1.30 J	0.900 J	**20.0 J**	7.80 J	1.90	1.50	1.40	9.00
Beryllium	0.580 B	0.790	0.380 B	0.490 B	0.750	0.320 B	0.530 B	0.440 B	0.360 B	0.350 B	0.400 B	0.610 B	0.470 B	0.330 B	0.350 B	0.800
Cadmium	ND	ND	ND	ND	ND	***3.50***	ND	0.0800 B	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	18.3	26.3	12.4	15.8	24.4	33.4 J	18.6 J	15.5 J	12.0 J	12.5 J	19.3	22.0	15.9	12.6	9.20	26.9
Copper	20.5	15.7	14.2	19.5	13.9	***176***	17.5	24.6	5.60	10.9	44.3 J	14.2 J	25.3	11.5	27.5	14.9
Cyanide	ND	NA	NA	ND	NA	2.50	2.30	3.50	1.90	0.490 B	20.2	ND	NA	ND	ND	NA
Lead	31.9	10.1	5.90	7.60	9.10	**535**	15.1	***85.2***	6.60	6.40	***172 J***	9.50 J	6.70	5.20	4.60	9.70
Mercury	0.0550	0.0370 B	0.0230 B	0.0240 B	0.0430 B	***0.230 J***	0.0480 J	***0.360 J***	ND	ND	0.160 J	0.0400 J	0.0190 B	ND	0.0300 B	0.0490
Nickel	16.5	23.1	12.5	16.3	21.9	20.7	17.7	16.7	12.7	14.1	14.6	21.1	17.7	9.90	7.00	23.2
Selenium	ND	ND	ND	ND	ND	R	R	R	R	R	ND	ND	ND	R	ND	ND
Silver	ND	ND	ND	ND	ND	0.450 B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	0.860 B	2.00	0.480 B	0.560 B	1.80	2.00	1.40	0.940 B	ND	0.670 B	ND	ND	0.480 B	ND	0.520 B	1.40 B
Zinc	43.6 J	58.5 J	23.0 J	30.7 J	57.9 J	***282***	50.6	61.2	15.6	22.6	65.9 J	52.1 J	22.6 J	14.5	19.4 J	59.6 J

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg

ND = Not Detected

NA = Not Analyzed

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B-Dil = Detected in method blank(s) associated with sample analysis

J = Detected below the reporting limit but greater than or equa to the Method Detection Limit (MDL), therefore the result is an estimated concentration

* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs

** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 3.

Historic Soil Sample Results - Metals
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-221	SB-221	SB-221	SB-221	SB-222	SB-222	SB-222	SB-222	SB-254	SB-254	SB-9	SB-9	SB-9	SB-9
Sample Depth(Feet):			2 - 4	6 - 8	9.5 - 10	24 - 25	1 - 3	7.5 - 8.5	15 - 17	19 - 20	8 - 9	19 - 20	4 - 5	8 - 10	26 - 28	32 - 34
Date Collected:			01/20/07	01/20/07	01/20/07	01/20/07	01/21/07	01/21/07	01/21/07	01/21/07	03/03/07	03/03/07	09/12/04	09/18/04	09/18/04	09/18/04
Sampled By:			ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	TRC	TRC	TRC	TRC
Metals																
Amenable Cyanide	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND
Antimony	NS	NS	0.540 J	0.330 J	0.400 J	0.910 J	0.980 J	0.350 J	0.290 J	0.830 J	0.350 J	0.740 J	ND	ND	ND	ND
Arsenic	13	16	4.20	2.90	2.60	10.0	***15.8***	1.70	2.70	7.90	0.430 B	9.90	1.94 J	1.79	1.7	1.53
Beryllium	7.2	72	0.470 B	0.390 B	0.600	0.820	0.470 B	0.530 B	0.510 B	0.770	ND	ND	0.322 J	0.391 J	0.475 J	0.251 J
Cadmium	2.5	4.3	ND	ND	ND	ND	0.120 B	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	NS	NS	16.2	14.4	19.3	27.5	14.7	17.9	15.5	25.2	7.90	23.0	12.6	14.7	15.7	16.1
Copper	50	270	29.9	17.5	16.3	16.8	***109***	18.3	15.1	14.4	10.1	14.2	16	18.1	16.1	9.37
Cyanide	27	27	ND	ND	NA	ND	0.320 B	ND	ND	NA	ND	ND	ND	ND	ND	ND
Lead	63	400	***94.4***	52.5	9.50	10.3	**459**	6.60	8.50	9.60	3.80	9.40	21.9	14.5 J	***88.6 J***	4.31 J
Mercury	0.18	0.81	***0.280***	0.0350 B	ND	0.0350 B	***0.470***	ND	0.0230 B	0.0420 B	0.0200 B	0.0540	ND	0.11 J	0.01 J	ND
Nickel	30	310	16.0	16.6	16.1	24.1	18.0	14.2	14.3	22.7	8.90	22.0	12.3	16.5	16.5	7.86
Selenium	3.90	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.606 J	0.525 J	0.527 J	ND
Silver	2	180	ND	ND	ND	ND	0.0900 B	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	NS	NS	0.430 B	0.730 B	0.660 B	1.80	ND	0.400 B	1.00 B	1.80	ND	1.20 B	ND	ND	ND	ND
Zinc	109	10,000	55.7 J	24.3 J	29.1 J	60.9 J	88.3 J	20.4 J	24.7 J	59.9 J	11.2	57.0	32.1	39.1	30.9	11.6

Location ID:	SB-10	SB-10	SB-10	SB-10	SB-10	SB-11	SB-11	SB-11	SB-11	SB-12	SB-12	SB-12	SB-12	SB-12	SB-14A	SB-14A	SB-14A	SB-14A
Sample Depth(Feet):	5 - 6	6 - 8	8 - 10	20 - 22	48 - 50	5 - 6	13 - 15	27 - 29	37 - 39	5 - 7	7 - 9	15 - 17	25 - 27	49 - 51	4 - 5	11 - 13	17 - 19	23 - 25
Date Collected:	09/11/04	09/18/04	09/18/04	09/18/04	09/18/04	09/11/04	09/18/04	09/18/04	09/18/04	09/11/04	09/11/04	09/11/04	09/12/04	09/12/04	09/11/04	10/03/04	10/03/04	10/03/04
Sampled By:	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC
Metals																		
Amenable Cyanide	ND	ND	ND	ND	ND	ND	ND	7.9 R	ND	ND	ND	ND	ND	ND	ND	0.58	0.57	0.73
Antimony	ND	ND	ND	ND	ND	ND	1.02 J	1.79 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	1.7 J	2.42	4.02	2.47	2.01	3.15 J	1.56	3.85	0.295 J	1.83 J	1.55 J	2.63 J	7.78 J	1.03 J	3.72 J	1.49	1.19	6.72
Beryllium	0.281 J	0.255 J	0.25 J	0.21 J	0.457 J	0.374 J	0.302 J	0.32 J	0.214 J	0.185 J	0.149 J	0.341 J	0.496 J	0.171 J	0.309 J	0.328 J	0.324 J	0.589 J
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	12.4	11.3	10.4	11.6	20.6	14.8	13	12	7.26	10.7	12	16.2	20.4	14.7	10.5	10.4	10.5	20.9
Copper	19.3	26.5	26.5	6.65	18.3	20.3 J	15.2	20.2	5.42	6.29	7.27	17.9	14.6	16.1	23.4	14.3	13.1	13.3
Cyanide	ND	ND	ND	2.08	ND	ND	ND	45 R	ND	1.24	ND	ND	ND	ND	ND	0.58	0.57	0.73
Lead	53.6	55.3 J	40.4 J	21.6 J	7.51 J	***110 J***	15.8 J	**1740 J**	5.1 J	54.3	***68.6***	13.6	18.1	2.63	***184***	8.21	5.34	8.72
Mercury	ND	0.09 J	0.07 J	ND	0.01 J	***0.48 J***	0.03 J	0.02 J	0.01 J	ND	ND	ND	ND	ND	***0.23 J***	0.021 R	0.016 R	0.033 R
Nickel	13.5	11.6	11.5	5.82	26.8	15.3	13.3	12.2	8.47	5.75	4.31	13.6	18.6	11.4	13.8	9.22	9.07	19.90
Selenium	0.838 J	ND	0.653 J	ND	ND	0.878 J	0.387 J	ND	ND	0.675 J	0.415 J	0.713 J	1.72	ND	0.896 J	1.02 J	0.659 J	1.36 J
Silver	ND	ND	ND	ND	ND	ND	1.46	ND	ND	ND	ND	0.654 J	ND	ND	ND	ND	0.286 J	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.914 J	0.983 J	1.05 J
Zinc	41.5	50.5	50	11.3	33.9	59.5	30.2	69.4	10.1	34.2	40	28.5	51.8	14.9	35.5	20	18.8	52.8

Notes:

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg

ND = Not Detected

NA = Not Analyzed

NS = No Standard

B = Analyte is found in the associated analysis batch blank

B-Dil = Detected in method blank(s) associated with sample analysis

J = Detected below the reporting limit but greater than or equa to the Method Detection Limit (MDL), therefore the result is an estimated concentration

* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs

** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 4.

Historic Soil Sample Results - PCBs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Sample Depth(Feet): Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	SB-9 4 - 5 09/12/04 TRC	SB-9 8 - 10 09/18/04 TRC	SB-9 20 - 22 09/18/04 TRC	SB-9 26 - 28 09/18/04 TRC	SB-9 32 - 34 09/18/04 TRC	SB-10 5 - 6 09/11/04 TRC	SB-10 6 - 8 09/18/04 TRC	SB-10 8 - 10 09/18/04 TRC	SB-10 20 - 22 09/18/04 TRC	SB-10 48 - 50 09/18/04 TRC	SB-11 5 - 6 09/11/04 TRC	SB-11 13 - 15 09/18/04 TRC	SB-11 27 - 29 09/18/04 TRC	SB-11 35 - 37 09/18/04 TRC
PCBs																
Aroclor-1016	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1221	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1232	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1242	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1248	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1254	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	0.1	1	ND	ND	ND	ND	0.016 J	ND	ND	0.021 PJ	ND	ND	ND	ND	ND	ND

Notes:
Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
All values are in mg/kg.
ND = Not Detected
NS = No Standard
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 5.

Historic Soil Sample Results - Pesticides and Herbicides
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID:	Part 375	Part 375 Restricted	SB-9	SB-9	SB-9	SB-9	SB-9	SB-10	SB-10	SB-10	SB-10	SB-10	SB-11	SB-11	SB-11	SB-11
Sample Depth(Feet):	Unrestricted	Residential	4 - 5	8 - 10	20 - 22	26 - 28	32 - 34	5 - 6	6 - 8	8 - 10	20 - 22	48 - 50	5 - 6	13 - 15	27 - 29	35 - 37
Date Collected:	Use SCOs*	SCOs**	09/12/04	09/18/04	09/18/04	09/18/04	09/18/04	09/11/04	09/18/04	09/18/04	09/18/04	09/18/04	09/11/04	09/18/04	09/18/04	09/18/04
Sampled By:			TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC	TRC
Pesticides																
alpha-BHC	0.02	0.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	0.036	0.36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	0.04	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	0.042	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	0.005	0.097	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	2.4	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	0.005	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4-DDE	0.0033	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	0.014	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	2.4	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4-DDD	0.0033	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	2.4	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4-DDT	0.0033	7.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Herbicides																
DICAMBA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DICHLORPROP	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-D	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-TP (SILVEX)	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-T	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0077	ND	ND	ND	0.0068 PJ
2,4-DB	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DINOSEB	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs

All values are in mg/kg.
ND = Not Detected
NS = No Standard
B = Analyte is found in the associated analysis batch blank.
J = Detected below the reporting limit but greater than or equal to the Method Detection Limit (MDL), therefore the result is an estimated concentration
P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%
R = Data rejected based on TRC data validation
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b) Restricted Use SCOs Restricted-Residential

TABLE 6.

DRAFT
August 4, 2016

Summary of Historic Groundwater Exceedances
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: / Date Collected: / Sampled By:	TOGS Class GA Standards*	MW-1 2/6/2012 Core	MW-2 2/6/2012 Core	MW-3 2/6/2012 Core	MW-4 2/6/2012 Core	MW-5 2/6/2012 Core	MW-6 2/6/2012 Core	MW-7A 10/11/2012 TRC	MW-7A 2/6/2012 Core	MW-12A 10/11/2012 TRC	MW-12B 10/11/2012 TRC	MW-219 2/6/2012 Core	MW-224 2/6/2012 Core
Volatile Organic Compounds (VOCs)													
Benzene	1	**50**	**350**	**120**	**83**	**30**	**16**	**20**	**23**	**1.2 J**	**65**	ND	**32**
1,2,4-Trimethylbenzene	5	ND	.94 J	**8.2**	ND	ND	1.1 J	NA	ND	NA	NA	ND	1.2 J
Ethlybenzene	5	ND	1.6 J	**8**	3.4 J	2.5 J	2.2 J	ND	ND	ND	ND	ND	ND
Isopropylbenzene	5	**24 J**	**10**	2 J	1.6	**6.1**	**11**	2.3 J	.87 J	ND	ND	ND	**21**
Methylene Chloride	5	**44 JB**	4.3 JB	4 JB	4.3 JB	3.5 JB	3.4 JB	ND	4.6 JB	ND	ND	ND	2.3 JB
n-Propylbenzene	5	**22 J**	**11**	1.9 J	ND	**6.3**	**10**	NA	ND	NA	NA	ND	**39**
sec-Butylbenzene	5	ND	1.8 J	ND	ND	1.8 J	3.4 JB	NA	ND	NA	NA	ND	**5.2**
o-Xylene	5	ND	1.2 J	**7.9**	1.9 J	1.6 J	1.4	ND	ND	ND	ND	ND	1.2 J
p-m Xylene	5	ND	4.1 J	**17**	2.7 J	1.6 J	1.9	ND	ND	ND	ND	ND	3.2 J
Semivolatile Organic Compounds (SVOCs)													
Bis(2-ethylhexl)phthalate	5	**16**	**634**	ND	ND	**58.2**	ND	ND	ND	ND	ND	ND	ND

Bold and shaded value indicates concentration exceedance of Class GA Standards
All values in µg/L
J = Estimated Value
ND = Not Detected
NS = No Standard
NA= Not Analyzed
* = NYSDEC Division of water Technical and Operational Guidance Series (TOGS) 1.1.1. Class GA Ambient Water Quality Standards and Guidance Values

TABLE 7.

Shallow Soil Sample Results-Test Pitting - VOCs, SVOCs, Total, Pesticides, PCBS
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: Date Collected: Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	W18-TP#1 (0-2') 5/23/2016 Integral	W18-TP#1 (2-3.7') 5/23/2016 Integral	W18-TP#2 (0-2') 5/23/2016 Integral	W18-TP#2 (2-3') 5/23/2016 Integral	W18-TP#3 (0-2') 5/24/2016 Integral	W18-TP#3 (3-4.6') 5/24/2016 Integral	W18-TP#4 (0-1.7') 5/24/2016 Integral	W18-TP#5 (0-2') 5/24/2016 Integral
Volatile Organics Compounds (VOCs)										
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	0.0037	0.0097	ND	ND	0.0054	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	ND	ND	0.0012	0.00015 J	ND	ND	ND	ND
Toluene	100	0.7	0.0011 J	0.001 J	0.0055	0.0044	0.0046	0.0011J	0.0012 J	0.0013 J
Ethylbenzene	41	1	ND	ND	0.0007 J	ND	0.00055 J	0.00019 J	0.0002 J	0.00051 J
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	ND	ND	ND	ND	ND
p/m-Xylene	NS	NS	ND	0.00039 J	0.0028	ND	0.0024 J	0.00066 J	0.00077 J	0.0024 J
o-Xylene	NS	NS	ND	ND	0.0022 J	ND	0.0008 J	0.00024 J	0.00026 J	0.0012 J
Xylenes, Total	100	0.26	ND	0.00039 J	0.005J	ND	0.0032	0.0009 J	0.001 J	0.0036 J
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	0.0042 J	0.0087 J	***0.057***	0.028	0.0039 J	0.0028 J	0.0059 J	0.015
Carbon disulfide	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	0.009 J	0.00073 J	ND	ND	ND	ND
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	100	11	ND	ND	0.00052 J	ND	ND	ND	ND	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	ND	0.0005 J	ND	ND	ND	ND	ND
p-Isopropyltoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.00051 J	0.00024 J	0.0017 J	0.00018 J	0.00031 J	ND	ND	ND
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	ND	0.00042 J	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	ND	ND	0.002 J	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	52	3.6	ND	ND	0.0021 J	0.00018 J	0.00033 J	ND	0.00016 J	0.00042 J
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	ND	0.003 J	0.00025 J	ND	ND	ND	ND
p-Ethyltoluene	NS	NS	ND	ND	0.0014 J	ND	0.00042 J	0.00016 J	ND	0.0005 J
1,2,4,5-Tetramethylbenzene	NS	NS	ND	ND	0.004 J	0.00059 J	ND	ND	ND	ND
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organics Compounds (SVOCs)										
Acenaphthene	100	20	0.11 J	0.24 J	0.046 J	ND	0.23 J	0.42	ND	0.044 J
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	2.8	3.4	4.6	0.34	6.8	4.4	0.5 J	1.2
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.15 J	0.18 J	0.11J	0.04 J	ND	0.14 J	ND	0.13 J
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	0.91 J	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	0.86 J	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	**1.5**	**1.8**	**2.9**	0.21	**2.8**	**2.3**	0.21 J	0.63
Benzo(a)pyrene	1	1	**1.8**	**1.8**	**3**	0.22	**2.9**	**1.9**	0.25 J	0.67
Benzo(b)fluoranthene	1	1	**2.1**	**2.3**	**3.8**	0.27	**3.8**	**2.3**	0.33 J	0.93
Benzo(k)fluoranthene	3.9	0.8	***0.83***	0.76	***1.3***	0.096 J	***1.3***	***1***	ND	0.32
Chrysene	3.9	1	***1.5***	***1.7***	***2.7***	0.2	***2.8***	***2.1***	0.26 J	0.68
Acenaphthylene	100	100	0.13 J	0.15 J	0.26 J	ND	0.27 J	0.1 J	ND	0.12 J
Anthracene	100	100	0.28	0.57	0.41	0.044 J	0.98	1	ND	0.19 J
Benzo(ghi)perylene	100	100	1.2	1.2	1.6	0.13 J	2.1	1.2	0.22 J	0.53
Fluorene	100	30	0.094 J	0.21 J	0.11 J	ND	0.28 J	0.39	ND	0.049 J
Phenanthrene	100	100	1.3	2.2	1.5	0.14	3.4	3.3	0.31 J	0.65
Dibenzo(a,h)anthracene	0.33	0.33	0.28	0.29	**0.45**	0.034 J	**0.47 J**	**0.33**	ND	0.12 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	**1.4**	**1.3**	**2**	0.16	**2.1**	**1.2**	0.2 J	**0.51**
Pyrene	100	100	2.6	3.1	4.2	0.3	5.5	3.6	0.44 J	1.1
Biphenyl	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	1.5	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	0.06 J	0.11 J	0.053 J	ND	0.15 J	0.19	ND	0.043 J
2-Methylnaphthalene	NS	NS	0.11 J	0.12 J	0.056 J	ND	ND	0.077 J	ND	0.13 J
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.12 J	0.23 J	0.08 J	ND	0.19 J	0.28	ND	0.051 J

TABLE 7.

Shallow Soil Sample Results-Test Pitting - VOCs, SVOCs, Total, Pesticides, PCBS
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: **Date Collected:** **Sampled By:**	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	**W18-TP#1 (0-2')** **5/23/2016** **Integral**	**W18-TP#1 (2-3.7')** **5/23/2016** **Integral**	**W18-TP#2 (0-2')** **5/23/2016** **Integral**	**W18-TP#2 (2-3')** **5/23/2016** **Integral**	**W18-TP#3 (0-2')** **5/24/2016** **Integral**	**W18-TP#3 (3-4.6')** **5/24/2016** **Integral**	**W18-TP#4 (0-1.7')** **5/24/2016** **Integral**	**W18-TP#5 (0-2')** **5/24/2016** **Integral**
Total Metals										
Aluminum, Total	NS	NS	4600	2800	8600	7000	3400	5400	4700	3100
Antimony, Total	NS	NS	5.5	27	ND	ND	7	ND	1.8 J	2.2 J
Arsenic, Total	16	13	9.3	6.1	8.2	2.4	10	2.6	12	5.4
Barium, Total	400	350	**900**	290	120	53	240	190	71	170
Beryllium, Total	72	7.2	0.21 J	0.1 J	0.28 J	0.22 J	0.194 J	0.18 J	0.28 J	0.15 J
Cadmium, Total	4.3	2.5	1.4	0.9 J	0.09 J	ND	1.7	0.17 J	0.7 J	0.91
Calcium, Total	NS	NS	17000	11000	23000	1900	5900	4800	23000	8400
Chromium, Total	NS	NS	19	14	23	13	18	14	16	10
Cobalt, Total	NS	NS	5	2.5	13	5.6	5.7	4.5	4.8	3.6
Copper, Total	270	50	***100***	***160***	***63***	18	***140***	***82***	***62***	***75***
Iron, Total	NS	NS	14000	8800	42000	11000	17000	11000	15000	10000
Lead, Total	400	63	**690**	**780**	**160**	33	**960**	**260**	**170**	**380**
Magnesium, Total	NS	NS	3700	1900	12000	2700	1600	2600	5600	1600
Manganese, Total	2000	1600	290	150	780	180	230	210	160	120
Mercury, Total	0.81	0.18	**1.7**	**0.88**	***0.49***	***0.26***	***0.69***	***0.2***	***0.22***	***0.62***
Nickel, Total	310	30	18	25	24	15	***30***	13	21	12
Potassium, Total	NS	NS	780	400	2200	1200	690	1200	590	650
Selenium, Total	180	3.9	0.26 J	ND	ND	ND	0.989 J	ND	ND	0.53 J
Silver, Total	180	2	0.39 J	0.33 J	0.25 J	ND	0.52 J	ND	0.36 J	0.24 J
Sodium, Total	NS	NS	220	180	370	150 J	330	140 J	240	250
Thallium, Total	NS	NS	ND	ND	ND	ND	2.04	ND	ND	ND
Vanadium, Total	NS	NS	25	16	41	20	30	18	28	22
Zinc, Total	10000	109	***990***	***410***	***240***	49	***590***	***260***	***190***	***850***
Organochlorine Pesticides										
Delta-BHC	100	0.04	ND	ND	ND	ND	ND	ND	ND	ND
Lindane	1.3	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Alpha-BHC	0.48	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Beta-BHC	0.36	0.036	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	2.1	0.042	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	0.097	0.005	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	NS	NS	ND	ND	ND	ND	ND	0.0025 J	ND	ND
Endrin	11	0.014	0.00576 P	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	0.2	0.005	ND	ND	ND	ND	ND	ND	0.00277	ND
4,4'-DDE	8.9	0.0033	ND	ND	ND	ND	ND	ND	***0.00431 P***	ND
4,4'-DDD	13	0.0033	ND	ND	ND	ND	***0.0042***	ND	***0.00671***	ND
4,4'-DDT	7.9	0.0033	ND	ND	ND	ND	***0.00815 P***	***0.00341 J***	***0.012***	ND
Endosulfan I	24	2.4	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	24	2.4	ND	ND	0.00123 J	ND	0.000914 J	0.00136 J	ND	0.000654 J
Endosulfan sulfate	24	2.4	ND	ND	ND	ND	ND	0.000658 J	ND	ND
Methoxychlor	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
cis-Chlordane	4.2	0.094	ND	ND	ND	ND	ND	ND	0.00114 J	ND
trans-Chlordane	NS	NS	ND	ND	ND	ND	ND	0.00061 J	0.00204 J	ND
Chlordane	NS	NS	0.0263	ND	ND	ND	0.00754 J	ND	0.0245 PI	ND
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	1	0.1	ND	ND	ND	ND	ND	ND	0.0256 J	0.00678 J
Aroclor 1262	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1268	1	0.1	ND	ND	ND	ND	ND	ND	ND	ND
PCBs, Total			ND	ND	ND	ND	ND	ND	0.0256 J	0.00678 J

Notes:
Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
All values in mg/kg
J = Estimated Value
ND = Not Detected
NS = No Standard
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b)

TABLE 8.

Pre-Design Soil Sample Results - VOCs and SVOCs
Remedial Action Work Plan
515 West 18th Street, New York, NY

Location ID: / Date Collected: / Sampled By:	Part 375 Unrestricted Use SCOs*	Part 375 Restricted Residential SCOs**	W18-CTDHS-01(8-9') 6/25/2016 Integral	W18-CTDHS-02(9-10') 6/25/2016 Integral	W18-CTDHS-06(9-10') 6/25/2016 Integral	W18-CTDHS-09(9-10') 6/26/2016 Integral	W18-CTDHS-13(7-8') 6/27/2016 Integral	W18-CTDHS-14(9-10') 6/27/2016 Integral	W18-CTDHN-04(8-10') 6/28/2016 Integral
Volatile Organics Compounds (VOCs)									
Methylene chloride	0.05	100	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.27	26	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.76	2.4	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.02	3.1	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.68	100	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Benzene	0.06	4.8	ND	***2.5 J***	***0.8 J***	***0.22 J***	***2.3 J***	***0.96***	***0.62***
Toluene	0.7	100	ND	***38***	***1.8***	0.23 J	***34***	0.13	0.13 J
Ethylbenzene	1	41	***13***	**85**	***32***	***4.7***	**75**	***5.6***	***13***
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.02	0.9	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.33	100	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.19	100	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2.4	49	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	13	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	0.93	100	ND	ND	ND	ND	ND	ND	ND
p/m-Xylene	NS	NS	1.2 J	360	120	23	320	1.7	2.3
o-Xylene	NS	NS	ND	130	35	8.2	120	0.33	0.23 J
Xylenes, Total	0.26	100	***1.2 J***	**490**	**160**	***31***	**440**	***2***	***2.5 J***
cis-1,2-Dichloroethene	0.25	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Acetone	0.05	100	***1.9 J***	***4.7 J***	ND	ND	ND	ND	***0.18 J***
Carbon disulfide	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Butanone	0.12	100	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	12	100	9.1	***18***	8.9	1.3	***15***	4.8	5.4
sec-Butylbenzene	11	100	3.4	**270**	2.7	0.38	4.7	1.4	2.5
tert-Butylbenzene	5.9	100	ND	ND	ND	ND	ND	0.071 J	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	9.8	23	8.6	1	18	3.6	4.1
p-Isopropyltoluene	NS	NS	1.7	11	2	0.71	5.6	2.2	1.2
Naphthalene	12	100	***29***	***48***	***26***	3.9	***34***	***17***	***12***
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	3.9	100	***28***	***52***	***23***	2.9	***45***	***10***	***11***
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8.4	52	***21***	**100**	**52**	7.4	**90**	1	3.5
1,2,4-Trimethylbenzene	3.6	52	***11***	**340**	**180**	***24***	**290**	1.4	***11***
1,4-Dioxane	0.1	13	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	16	130	62	9.5	98	0.31	2.4
p-Ethyltoluene	NS	NS	6.1	260	130	20	240	2.6	6
1,2,4,5-Tetramethylbenzene	NS	NS	22	39	19	3	28	14	7.6
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organics Compounds (SVOCs)									
Acenaphthene	20	100	0.11 J	2.1	0.11 J	0.06	0.51	0.38	0.32
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	0.33	1.2	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2.4	49	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	13	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	0.46	30	1	0.5	3	2.2	0.18
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	9.6	***20***	***12***	3.8	6.6	5.2	2.4
Nitrobenzene	NS	15	ND	ND	ND	0.78	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	0.16	**12**	0.38	0.22	**1.2**	0.88	0.067
Benzo(a)pyrene	1	1	0.12 J	**13**	0.43	0.21	0.85	0.65	0.085
Benzo(b)fluoranthene	1	1	0.12	**15**	0.46	0.24	**1**	0.68	0.081
Benzo(k)fluoranthene	0.8	3.9	0.047 J	***3.5***	0.16	0.09	0.24	0.23	ND
Chrysene	1	3.9	0.15	**13**	0.42	0.23	0.94	0.69	0.075
Acenaphthylene	100	100	ND	0.1 J	0.19	ND	ND	0.062 J	ND
Anthracene	100	100	0.14	5.2	0.29	0.17	1.1	0.66	0.19
Benzo(ghi)perylene	100	100	0.055 J	8	0.39	0.14	0.42	0.38	0.035
Fluorene	30	100	0.14 J	1.9	0.28	0.095	0.65	0.59	0.92
Phenanthrene	100	100	0.62	20	1.2	0.52	3.6	2.6	1.8
Dibenzo(a,h)anthracene	0.33	0.33	ND	**1.5**	0.068 J	0.03	0.12	0.1	0.11
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.05 J	**7.6**	0.31	0.14	**0.5**	0.39	0.07
Pyrene	100	100	0.51	28	0.98	0.5	2.7	2.4	0.41
Biphenyl	NS	NS	0.12 J	0.46	0.21J	0.062	0.18	0.095	0.048
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	7	59	0.069 J	1.5	0.12 J	0.051	0.4	0.26	0.32
2-Methylnaphthalene	NS	NS	4.7	11	9.6	3.2	4.5	5.6	7.9
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	0.8	6.7	ND	ND	ND	ND	ND	ND	ND
Phenol	0.33	100	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	0.33	100	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	0.33	100	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.034 J	0.92	0.11 J	0.05 J	0.29	0.38	ND

Bold and *Italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded value indicates concentration exceeds Restricted-Residential SCOs
All vaules in mg/kg
J = Estimated Value
ND = Not Detected
NS = No Standard
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
** = 6 NYCRR Part 375-6.8(b)

Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-1 (1-3)	IN-SB-1 (6-8)	IN-SB-1 (10-12)	IN-SB-1 (15-17)	IN-SB-2 (1-3)	IN-SB-2 (5-7)	IN-SB-2 (10-12)	IN-SB-2 (15-17)
Sample Date	*NY-RESRR	**NY-UNRES	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/13/2017	4/13/2017	4/13/2017	4/13/2017
Labe Sample ID			L1711444-01	L1711444-02	L1711444-03	L1711444-04	L1711695-05	L1711695-06	L1711695-07	L1711695-08
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Volatile Organics										
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	0.00041 J	ND	ND	ND	0.0016	0.00058 J	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	ND	ND	0.001	0.02	ND	ND	0.0035	0.0098
Toluene	100	0.7	ND	ND	ND	0.00063 J	ND	ND	ND	ND
Ethylbenzene	41	1	ND	ND	ND	0.0002 J	ND	ND	ND	ND
Chloromethane	NS	NS	0.00077 J	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	0.00021 J	ND	ND	ND	ND
p/m-Xylene	NS	NS	ND	ND	ND	0.00077 J	ND	ND	ND	ND
o-Xylene	NS	NS	ND	ND	ND	0.00056 J	ND	ND	ND	ND
Xylenes, Total	100	0.26	ND	ND	ND	0.0013 J	ND	ND	ND	ND
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	ND	ND	0.016	0.013	0.0051 J	0.008 J	0.021	0.016
Carbon disulfide	NS	NS	ND	ND	ND	0.0022 J	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	0.0021 J	0.0022 J	ND	ND	0.0031 J	ND
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	100	11	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	ND	ND	0.0003 J	ND	ND	ND	ND
p-Isopropyltoluene	NS	NS	0.0013	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.022	ND	0.002 J	0.036	ND	ND	ND	ND
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	ND	ND	ND	0.00035 J	ND	ND	ND	ND
1,2,4-Trimethylbenzene	52	3.6	ND	ND	ND	0.00076 J	ND	ND	ND	ND
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Ethyltoluene	NS	NS	ND	ND	ND	0.00031 J	ND	ND	ND	ND
1,2,4,5-Tetramethylbenzene	NS	NS	ND	ND	ND	0.00023 J	ND	ND	ND	ND
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York Restricted use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	**NY-UNRES	IN-SB-3 (1-3) 4/12/2017 L1711444-05 Soil mg/kg	DUP02 IN-SB-3 (1-3) 4/12/2017 L1711444-08 Soil mg/kg	IN-SB-3 (8-10) 4/12/2017 L1711444-06 Soil mg/kg	IN-SB-3 (12-14) 4/12/2017 L1711444-07 Soil mg/kg	IN-SB-3 (15-17) 4/12/2017 L1711444-09 Soil mg/kg	IN-SB-4 (1-3) 4/12/2017 L1711444-10 Soil mg/kg	IN-SB-4 (5-7) 4/12/2017 L1711444-11 Soil mg/kg	IN-SB-4 (10-12) 4/12/2017 L1711444-12 Soil mg/kg	IN-SB-4 (16-18) 4/12/2017 L1711444-13 Soil mg/kg
Volatile Organics											
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	0.0009 J	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	ND	ND	0.0013	0.0023	***2.5***	ND	ND	0.00097	0.014
Toluene	100	0.7	ND	ND	ND	0.0002 J	0.032 J	ND	*ND*	ND	0.0004 J
Ethylbenzene	41	1	ND	ND	ND	ND	***4.2***	ND	ND	ND	ND
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	ND	ND	ND	ND	ND	0.00036 J
p/m-Xylene	NS	NS	ND	ND	ND	ND	2.6	ND	ND	ND	ND
o-Xylene	NS	NS	ND	ND	ND	ND	0.88	ND	ND	ND	ND
Xylenes, Total	100	0.26	ND	ND	ND	ND	***3.5***	ND	ND	ND	ND
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	0.0027 J	0.0048 J	0.021	0.017	ND	0.0037 J	0.0032 J	0.012	0.02
Carbon disulfide	NS	NS	ND	ND	ND	ND	0.92 J	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	0.003 J	0.0021 J	***0.24 J***	ND	ND	ND	0.0035 J
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	100	11	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	ND	ND	ND	0.15	ND	ND	ND	0.00039 J
p-Isopropyltoluene	NS	NS	ND	ND	ND	ND	0.27	ND	ND	ND	ND
Naphthalene	100	12	0.0012 J	ND	0.0016 J	0.0017 J	0.45 J	ND	0.0003 J	0.0081	0.06
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	ND	ND	ND	ND	0.19 J	ND	ND	ND	ND
1,2,4-Trimethylbenzene	52	3.6	ND	ND	ND	ND	0.42 J	ND	ND	ND	ND
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Ethyltoluene	NS	NS	ND	ND	ND	ND	0.38 J	ND	ND	ND	0.0003 J
1,2,4,5-Tetramethylbenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	0.00049 J
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID	*NY-RESRR	**NY-UNRES	IN-SB-5 (1-3)	IN-SB-5 (5-7)	IN-SB-5 (10-12)	IN-SB-5 (16-18)	IN-SB-6 (1-3)	IN-SB-6 (6-8)	IN-SB-6 (10-12)	IN-SB-6 (15-17)
Sample Date			4/13/2017	4/13/2017	4/13/2017	4/13/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711695-01	L1711695-02	L1711695-03	L1711695-04	L1711241-09	L1711241-10	L1711241-11	L1711241-12
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Volatile Organics										
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	ND	0.0006 J	ND	***2.6***	0.00076 J	ND	ND	ND
Toluene	100	0.7	ND	0.00029 J	ND	0.046 J	0.002	ND	ND	ND
Ethylbenzene	41	1	ND	ND	ND	***1.3***	0.00068 J	ND	ND	ND
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	0.026 J	ND	ND	ND	ND
p/m-Xylene	NS	NS	ND	ND	ND	0.9	0.002 J	ND	ND	ND
o-Xylene	NS	NS	ND	ND	ND	0.62	ND	ND	ND	ND
Xylenes, Total	100	0.26	ND	ND	ND	***1.5***	0.002 J	ND	ND	ND
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	0.0052 J	ND	0.0027 J	ND	0.0066 J	ND	0.0029 J	0.022
Carbon disulfide	NS	NS	ND	ND	ND	0.41 J	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	ND	ND	ND	ND	ND	0.0032 J
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	100	11	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	ND	ND	0.073 J	ND	ND	ND	ND
p-Isopropyltoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	ND	ND	ND	0.44	0.00086 J	ND	ND	ND
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	ND	ND	ND	0.068 J	0.00048 J	ND	ND	ND
1,2,4-Trimethylbenzene	52	3.6	ND	ND	ND	0.21 J	0.0012 J	ND	ND	ND
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Ethyltoluene	NS	NS	ND	ND	ND	0.12 J	0.00076 J	ND	ND	ND
1,2,4,5-Tetramethylbenzene	NS	NS	ND	ND	ND	ND	0.00023 J	ND	ND	ND
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
\- = Not Analyzed

Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-7 (1-3)	IN-SB-7 (8-10)	DUP01 IN-SB-7 (8-10)	IN-SB-7 (10-13)	IN-SB-7 (15-17)	IN-SB-8 (1-3)	IN-SB-8 (6-8)	IN-SB-8 (10-12)	IN-SB-8 (15-17)
Sample Date	*NY-RESRR	**NY-UNRES	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711083-01	L1711083-02	L1711083-10	L1711083-03	L1711083-04	L1711241-01	L1711241-02	L1711241-03	L1711241-04
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Volatile Organics											
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	0.00058 J	ND	ND	0.00057 J	0.004	0.00039 J	0.00042 J	ND	0.00029 J
Toluene	100	0.7	0.00034 J	ND	ND	ND	0.00022 J	ND	ND	ND	ND
Ethylbenzene	41	1	0.0004 J	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	0.02 J	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	0.00035 J	0.00076 J	ND	ND	ND	0.00021 J
p/m-Xylene	NS	NS	0.00082 J	ND	ND	0.00074 J	ND	ND	ND	ND	ND
o-Xylene	NS	NS	ND	ND	ND	0.00055 J	ND	ND	ND	ND	ND
Xylenes, Total	100	0.26	0.00082 J	ND	ND	0.0013 J	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	ND	ND	ND	0.014	0.024	0.0051 J	0.027	0.0031 J	0.038
Carbon disulfide	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	ND	ND	ND	ND	ND	ND	0.0066 J
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	0.48	0.05 J	0.0032	ND	ND	ND	ND	ND
sec-Butylbenzene	100	11	ND	0.39	0.042 J	0.0039	ND	ND	ND	ND	ND
tert-Butylbenzene	100	5.9	ND	0.05 J	ND	0.00071 J	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	0.45	0.039 J	0.0056	ND	ND	ND	ND	ND
p-Isopropyltoluene	NS	NS	ND	0.034 J	ND	0.00043 J	ND	ND	ND	ND	ND
Naphthalene	100	12	0.00058 J	ND	0.018 J	0.002 J	0.00095 J	0.00051 J	ND	ND	ND
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	0.7	0.064	0.0075	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	0.00021 J	ND	ND	0.00082 J	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	52	3.6	0.00075 J	ND	0.02 J	0.0026 J	ND	ND	ND	ND	ND
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	0.38	ND	0.0043	ND	ND	ND	ND	ND
p-Ethyltoluene	NS	NS	0.00054 J	ND	ND	0.0014 J	ND	ND	ND	ND	ND
1,2,4,5-Tetramethylbenzene	NS	NS	ND	0.61	0.086 J	0.0086	ND	ND	ND	ND	ND
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
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Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	**NY-UNRES	IN-SB-9 (1-3) 4/11/2017 L1711241-05 Soil mg/kg	IN-SB-9 (7-9) 4/11/2017 L1711241-06 Soil mg/kg	IN-SB-9 (12-14) 4/11/2017 L1711241-07 Soil mg/kg	IN-SB-9 (15-17) 4/11/2017 L1711241-08 Soil mg/kg	IN-SB-10 (1-3) 4/10/2017 L1711083-14 Soil mg/kg	IN-SB-10 (8-10) 4/10/2017 L1711083-15 Soil mg/kg	IN-SB-10 (10-12) 4/10/2017 L1711083-16 Soil mg/kg	IN-SB-10 (15-17) 4/10/2017 L1711083-17 Soil mg/kg
Volatile Organics										
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	***26***	ND	ND	ND	***0.26***	ND	ND	***0.075***
Toluene	100	0.7	***20***	ND	ND	ND	0.36	ND	ND	0.00089 J
Ethylbenzene	41	1	***2.9***	ND	ND	ND	0.71	ND	ND	0.0035
Chloromethane	NS	NS	0.22 J	ND	ND	ND	0.024 J	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	ND	ND	ND	ND	0.0013 J
p/m-Xylene	NS	NS	16	ND	ND	ND	2.8	ND	ND	0.0023 J
o-Xylene	NS	NS	4.7	ND	ND	ND	0.56	ND	ND	0.0047
Xylenes, Total	100	0.26	***21***	ND	ND	ND	***3.4***	ND	ND	0.007 J
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	ND	0.023	0.023	0.019	ND	ND	ND	***0.056***
Carbon disulfide	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	0.0028 J	0.0031 J	ND	ND	ND	0.011 J
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	0.7	ND	ND	ND	0.74	6.1	0.086	ND
sec-Butylbenzene	100	11	0.38	ND	ND	ND	0.31	5.2	0.11	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	0.033 J	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	0.36	ND	ND	ND	0.29	7.3	0.2	0.00066 J
p-Isopropyltoluene	NS	NS	0.24	ND	ND	ND	0.3	ND	ND	ND
Naphthalene	100	12	***34***	ND	0.00014 J	ND	6.8	3.2 J	0.038 J	0.00025 J
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	1.7	ND	ND	ND	1.1	***11***	0.28	ND
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	1.6	ND	ND	ND	0.88	ND	ND	0.00028 J
1,2,4-Trimethylbenzene	52	3.6	***5.8***	ND	ND	ND	***4.1***	ND	ND	0.00032 J
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	1.2	ND	ND	ND	3.3	ND	ND	ND
p-Ethyltoluene	NS	NS	3.5	ND	ND	ND	2.8	ND	ND	ND
1,2,4,5-Tetramethylbenzene	NS	NS	0.37 J	ND	ND	ND	2	5.8 J	0.13 J	ND
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
\- = Not Analyzed

Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-11 (2-4)	IN-SB-11 (6-8)	IN-SB-11 (11-14)	IN-SB-11 (16-18)	IN-SB-12R (4-6)	IN-SB-12R2 (1-3)	IN-SB-12R2 (7-9)	IN-SB-12R2 (10-11)	IN-SB-12R2 (15-16)
Sample Date	*NY-RESRR	**NY-UNRES	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711083-05	L1711083-06	L1711083-07	L1711083-08	L1711241-13	L1711241-14	L1711241-15	L1711241-16	L1711241-17
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Volatile Organics											
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	ND	ND	ND	ND	ND	0.082	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	0.0016	ND	***0.17***	0.01	***0.086***	***0.17***	ND	ND	0.003
Toluene	100	0.7	0.0025	ND	0.12	0.00022 J	0.042 J	0.27	ND	ND	0.00072 J
Ethylbenzene	41	1	0.0026	ND	0.33	ND	0.1	0.37	ND	ND	0.025
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	0.00085 J	ND	ND	ND	ND	0.0022 J
p/m-Xylene	NS	NS	0.0078	ND	0.63	ND	ND	1.4	ND	ND	0.0065
o-Xylene	NS	NS	0.0018 J	ND	0.054 J	ND	ND J	0.31	ND	ND	0.016
Xylenes, Total	100	0.26	0.0096 J	ND	***0.68 J***	ND	0.26 J	***1.7***	ND	ND	0.023
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	0.0042 J	ND	ND	0.021	ND	ND	ND	ND	0.035
Carbon disulfide	NS	NS	ND	1.3 J	ND	ND	0.27 J	ND	ND	ND	ND
2-Butanone	100	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	1.5	0.2	ND	0.072	0.13	0.34	3	0.0025
sec-Butylbenzene	100	11	0.0023	1.5	0.078	ND	0.033 J	0.046 J	0.3	2.6	0.003
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	0.32 J	0.0005 J
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	0.0012	1.2	0.11	ND	0.02 J	0.075	0.36	3.4	0.0052
p-Isopropyltoluene	NS	NS	0.0048	ND	0.061 J	ND	0.58	0.095	ND	ND	ND
Naphthalene	100	12	0.05	ND	0.91	0.00096 J	0.92	0.88	ND	ND	0.0024 J
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	0.0016	1.8	0.36	ND	0.072	0.25	0.55	***5***	0.0054
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	0.0068
1,3,5-Trimethylbenzene	52	8.4	0.021	ND	0.15 J	ND	0.11 J	0.34	ND	ND	0.00025 J
1,2,4-Trimethylbenzene	52	3.6	0.029	ND	0.43	ND	0.26 J	1.2	ND	ND	0.00098 J
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	0.078	ND	0.38	ND	0.45	0.74	0.21	ND	ND
p-Ethyltoluene	NS	NS	0.012	ND	0.48	ND	0.23 J	1.1	ND	ND	ND
1,2,4,5-Tetramethylbenzene	NS	NS	0.024	5.4	0.2 J	0.00031 J	0.21 J	0.18 J	0.58	3.5	0.0045 J
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
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ND = Not Detected
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Table 9a
Supplementary Subsurface Soil Results - VOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID	*NY-RESRR	**NY-UNRES	IN-SB-13 (1-3)	IN-SB-13 (5-8)	IN-SB-13 (10-12)	IN-SB-13 (15-17)	IN-SB-14 (1-3)	DUP03 IN-SB-14 (1-3)	IN-SB-14 (8-10)	IN-SB-14 (10-12)	IN-SB-14 (16-18)
Sample Date			4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Labe Sample ID			L1711083-09	L1711083-11	L1711083-12	L1711083-13	L1711444-14	L1711444-18	L1711444-15	L1711444-16	L1711444-17
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Volatile Organics											
Methylene chloride	100	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	26	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.4	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	19	1.3	ND	0.0011	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	3.1	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100	0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.8	0.06	ND	ND	ND	***0.65***	ND	ND	ND	ND	***1.6***
Toluene	100	0.7	ND	ND	ND	0.016 J	0.00028 J	0.00037 J	ND	ND	0.035 J
Ethylbenzene	41	1	ND	ND	ND	0.25	ND	ND	0.45	***7.6***	0.63
Chloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.9	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	100	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	100	0.93	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J
p/m-Xylene	NS	NS	ND	ND	ND	0.18	ND	ND	ND	ND	0.69
o-Xylene	NS	NS	ND	ND	ND	0.13 J	ND	ND	ND	ND	0.27
Xylenes, Total	100	0.26	ND	ND	ND	***0.31 J***	ND	ND	ND	ND	***0.96***
cis-1,2-Dichloroethene	100	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100	0.05	ND	ND	0.0061 J	ND	0.0054 J	0.0054 J	ND	ND	ND
Carbon disulfide	NS	NS	ND	ND	ND	ND	ND	ND	0.59 J	1.5 J	0.86 J
2-Butanone	100	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100	12	ND	ND	ND	ND	ND	ND	5.3	12	ND
sec-Butylbenzene	100	11	ND	ND	ND	ND	ND	ND	3.2	4.1	ND
tert-Butylbenzene	100	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NS	ND	ND	ND	0.07 J	ND	ND	3.9	13	0.19
p-Isopropyltoluene	NS	NS	ND	ND	ND	ND	ND	ND	0.95	2.5	ND
Naphthalene	100	12	0.00021 J	ND	0.00016 J	1.5	ND	ND	ND	***36***	1.4
Acrylonitrile	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100	3.9	ND	ND	ND	0.053 J	ND	ND	***14***	***36***	0.12
1,2,3-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	52	8.4	ND	ND	ND	0.05 J	ND	ND	0.09 J	3.5 J	0.068 J
1,2,4-Trimethylbenzene	52	3.6	ND	ND	ND	0.13 J	ND	ND	0.17 J	ND	0.18 J
1,4-Dioxane	13	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	NS	ND	ND	ND	ND	ND	ND	8.5	7.6	ND
p-Ethyltoluene	NS	NS	ND	ND	ND	0.11 J	ND	ND	ND	0.68 J	0.15 J
1,2,4,5-Tetramethylbenzene	NS	NS	ND	ND	ND	0.079 J	ND	ND	33	29	0.051 J
Ethyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
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ND = Not Detected
NS = No Standard
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Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID	*NY-RESRR	**NY-UNRES	IN-SB-1 (1-3)	IN-SB-1 (6-8)	IN-SB-1 (10-12)	IN-SB-1 (15-17)	IN-SB-2 (1-3)	IN-SB-2 (5-7)	IN-SB-2 (10-12)	IN-SB-2 (15-17)
Sample Date			4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/13/2017	4/13/2017	4/13/2017	4/13/2017
Labe Sample ID			L1711444-01	L1711444-02	L1711444-03	L1711444-04	L1711695-05	L1711695-06	L1711695-07	L1711695-08
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics										
Acenaphthene	100	20	0.13 J	ND	ND	ND	0.043 J	0.034 J	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	2.6	0.026 J	ND	0.16	0.79	0.62	0.096 J	ND
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.081 J	ND	ND	0.031 J	0.031 J	0.044 J	0.033 J	ND
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	**1.1**	ND	ND	0.068 J	0.36	0.23	0.05 J	ND
Benzo(a)pyrene	1	1	**1.1**	ND	ND	0.064 J	0.36	0.22	0.05 J	ND
Benzo(b)fluoranthene	1	1	**1.3**	ND	ND	0.084 J	0.46	0.3	0.064 J	ND
Benzo(k)fluoranthene	3.9	0.8	0.42	ND	ND	ND	0.16	0.11 J	ND	ND
Chrysene	3.9	1	1	ND	ND	0.067 J	0.37	0.26	0.058 J	ND
Acenaphthylene	100	100	0.065 J	ND	ND	ND	0.048 J	0.047 J	ND	ND
Anthracene	100	100	0.4	ND	ND	ND	0.12	0.1 J	ND	ND
Benzo(ghi)perylene	100	100	0.69	ND	ND	0.039 J	0.23	0.14 J	0.031 J	ND
Fluorene	100	30	0.089 J	ND	ND	ND	0.036 J	0.038 J	ND	ND
Phenanthrene	100	100	2.1	ND	ND	0.16	0.48	0.5	0.065 J	ND
Dibenzo(a,h)anthracene	0.33	0.33	0.14	ND	ND	ND	0.058 J	0.036 J	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	**0.63**	0.054 J	ND	0.082 J	0.25	0.15 J	0.032 J	ND
Pyrene	100	100	2.4	0.022 J	ND	0.14	0.72	0.51	0.085 J	ND
Biphenyl	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	0.093 J	ND	ND	ND	0.022 J	0.035 J	ND	ND
2-Methylnaphthalene	NS	NS	0.036 J	ND	ND	ND	ND	0.024 J	ND	ND
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.18 J	ND	ND	ND	0.034 J	0.055 J	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York Restricted use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-3 (1-3)	DUP02 IN-SB-3 (1-3)	IN-SB-3 (8-10)	IN-SB-3 (12-14)	IN-SB-3 (15-17)	IN-SB-4 (1-3)	IN-SB-4 (5-7)	IN-SB-4 (10-12)	IN-SB-4 (16-18)
Sample Date	*NY-RESRR	**NY-UNRES	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Labe Sample ID			L1711444-05	L1711444-08	L1711444-06	L1711444-07	L1711444-09	L1711444-10	L1711444-11	L1711444-12	L1711444-13
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics											
Acenaphthene	100	20	0.028 J	ND	ND	ND	ND	0.036 J	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	0.51	0.23	ND	ND	ND	1	ND	ND	ND
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.04 J	ND	0.04 J	ND	0.18 J	0.044 J	0.028 J	0.027 J	0.048 J
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	0.19	0.1	ND	ND	ND	0.57	ND	ND	ND
Benzo(a)pyrene	1	1	0.21	0.11 J	ND	ND	ND	0.62	ND	ND	ND
Benzo(b)fluoranthene	1	1	0.27	0.14	ND	ND	ND	0.7	ND	ND	ND
Benzo(k)fluoranthene	3.9	0.8	0.077 J	0.042 J	ND	ND	ND	0.26	ND	ND	ND
Chrysene	3.9	1	0.22	0.1	ND	ND	ND	0.54	ND	ND	ND
Acenaphthylene	100	100	ND	ND	ND	ND	ND	0.056 J	ND	ND	ND
Anthracene	100	100	0.056 J	ND	ND	ND	ND	0.12	ND	ND	ND
Benzo(ghi)perylene	100	100	0.13 J	0.081 J	ND	ND	ND	0.36	ND	ND	ND
Fluorene	100	30	0.028 J	ND	0.096 J	ND	ND	0.025 J	ND	ND	ND
Phenanthrene	100	100	0.44	0.16	ND	ND	ND	0.44	ND	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	0.03 J	ND	ND	ND	ND	0.084 J	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.15	0.1 J	ND	ND	ND	0.35	0.057 J	0.052 J	ND
Pyrene	100	100	0.46	0.21	ND	ND	ND	0.99	ND	0.022 J	ND
Biphenyl	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	0.027 J	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.035 J	ND	0.32	ND	ND	0.029 J	ND	0.024 J	0.055 J

Notes:

Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs

*NY-RESRR: Restricted-Residential Criteria, New York I use current as of 5/2007

**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007

J = Estimated value

ND = Not Detected

NS = No Standard

\- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-5 (1-3)	IN-SB-5 (5-7)	IN-SB-5 (10-12)	IN-SB-5 (16-18)	IN-SB-6 (1-3)	IN-SB-6 (6-8)	IN-SB-6 (10-12)	IN-SB-6 (15-17)
Sample Date	*NY-RESRR	**NY-UNRES	4/13/2017	4/13/2017	4/13/2017	4/13/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711695-01	L1711695-02	L1711695-03	L1711695-04	L1711241-09	L1711241-10	L1711241-11	L1711241-12
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics										
Acenaphthene	100	20	0.048 J	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	0.88	ND	ND	ND	1.4	ND	ND	ND
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.11 J	ND	ND	0.038 J	4.9	ND	ND	ND
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	0.024 J	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	0.13 J	ND	0.92	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	14	ND	89	ND
Di-n-butylphthalate	NS	NS	0.04 J	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	0.41	ND	ND	ND	**1.1**	ND	ND	ND
Benzo(a)pyrene	1	1	0.42	ND	ND	ND	0.57	ND	ND	ND
Benzo(b)fluoranthene	1	1	0.57	ND	ND	ND	**2**	ND	ND	ND
Benzo(k)fluoranthene	3.9	0.8	0.2	ND	ND	ND	0.59	ND	ND	ND
Chrysene	3.9	1	0.44	ND	ND	ND	***1.4***	ND	ND	ND
Acenaphthylene	100	100	0.071 J	ND	ND	ND	0.28	ND	ND	ND
Anthracene	100	100	0.16	ND	ND	ND	0.19	ND	ND	ND
Benzo(ghi)perylene	100	100	0.35	ND	ND	ND	1.2	ND	ND	ND
Fluorene	100	30	0.044 J	ND	ND	ND	0.031 J	ND	ND	ND
Phenanthrene	100	100	0.53	ND	ND	ND	0.78	ND	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	0.078 J	ND	ND	ND	0.27	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.34	ND	ND	ND	**1.4**	ND	ND	ND
Pyrene	100	100	0.77	ND	ND	ND	0.81	ND	ND	ND
Biphenyl	NS	NS	ND	ND	ND	ND	0.18 J	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	0.035 J	ND	ND	ND	0.26	ND	ND	ND
2-Methylnaphthalene	NS	NS	0.12 J	ND	ND	ND	1.2	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.052 J	ND	ND	ND	0.11 J	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York I use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID	*NY-RESRR	**NY-UNRES	IN-SB-7 (1-3)	IN-SB-7 (8-10)	DUP01 IN-SB-7 (8-10)	IN-SB-7 (10-13)	IN-SB-7 (15-17)	IN-SB-8 (1-3)	IN-SB-8 (6-8)	IN-SB-8 (10-12)	IN-SB-8 (15-17)
Sample Date			4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711083-01	L1711083-02	L1711083-10	L1711083-03	L1711083-04	L1711241-01	L1711241-02	L1711241-03	L1711241-04
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics											
Acenaphthene	100	20	ND	0.64	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	ND	2	ND	ND	ND	4.7	0.3	0.16	ND
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.04 J	0.19	ND	ND	ND	0.66	0.024 J	0.054 J	ND
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	0.84	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	0.023 J	0.69	ND	ND	ND	**2**	0.35	0.16	ND
Benzo(a)pyrene	1	1	ND	0.36	ND	ND	ND	**1.1**	0.28	0.14 J	ND
Benzo(b)fluoranthene	1	1	0.053 J	0.5	ND	ND	ND	**5.2**	0.32	0.16	ND
Benzo(k)fluoranthene	3.9	0.8	ND	0.18	ND	ND	ND	***0.88***	0.099 J	0.052 J	ND
Chrysene	3.9	1	0.028 J	0.62	ND	ND	ND	***3.8***	0.29	0.14	ND
Acenaphthylene	100	100	ND	0.17	ND	ND	ND	0.34	ND	ND	ND
Anthracene	100	100	ND	0.59	ND	ND	ND	0.32	ND	ND	ND
Benzo(ghi)perylene	100	100	0.041 J	0.15	ND	ND	ND	2	0.14 J	0.064 J	ND
Fluorene	100	30	ND	1.1	ND	ND	ND	0.067 J	ND	ND	ND
Phenanthrene	100	100	ND	3.3	ND	ND	ND	1.9	0.054 J	0.027 J	ND
Dibenzo(a,h)anthracene	0.33	0.33	ND	0.047 J	ND	ND	ND	**0.56**	0.046 J	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.042 J	0.18	ND	ND	ND	**2.7**	0.14 J	0.069 J	ND
Pyrene	100	100	0.018 J	1.9	ND	ND	ND	2.6	0.35	0.16	ND
Biphenyl	NS	NS	ND	ND	ND	ND	ND	0.077 J	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	ND	0.46	ND	ND	ND	0.3	ND	ND	ND
2-Methylnaphthalene	NS	NS	ND	0.97	ND	ND	ND	0.21 J	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	ND	ND	ND	ND	ND	0.17 J	ND	ND	ND

Notes:

Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs

Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs

*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007

**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007

J = Estimated value

ND = Not Detected

NS = No Standard

- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-9 (1-3)	IN-SB-9 (7-9)	IN-SB-9 (12-14)	IN-SB-9 (15-17)	IN-SB-10 (1-3)	IN-SB-10 (8-10)	IN-SB-10 (10-12)	IN-SB-10 (15-17)
Sample Date	*NY-RESRR	**NY-UNRES	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/10/2017	4/10/2017	4/10/2017	4/10/2017
Labe Sample ID			L1711241-05	L1711241-06	L1711241-07	L1711241-08	L1711083-14	L1711083-15	L1711083-16	L1711083-17
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics										
Acenaphthene	100	20	0.31	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	4.8	0.047 J	ND	ND	15	0.026 J	ND	ND
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	6.9	ND	ND	ND	5.8	ND	ND	ND
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	0.071 J	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	**3.7**	ND	ND	ND	**5.4**	ND	ND	ND
Benzo(a)pyrene	1	1	**5.2**	ND	ND	ND	**4**	ND	ND	ND
Benzo(b)fluoranthene	1	1	**6.8**	ND	ND	ND	**6.8**	ND	ND	ND
Benzo(k)fluoranthene	3.9	0.8	***1.3***	ND	ND	ND	***2.4***	ND	ND	ND
Chrysene	3.9	1	***3.4***	ND	ND	ND	**5.4**	ND	ND	ND
Acenaphthylene	100	100	0.1 J	ND	ND	ND	0.38	ND	ND	ND
Anthracene	100	100	0.62	ND	ND	ND	1.2	ND	ND	ND
Benzo(ghi)perylene	100	100	4.1	ND	ND	ND	2.9	ND	ND	ND
Fluorene	100	30	0.18 J	ND	ND	ND	0.34	ND	ND	ND
Phenanthrene	100	100	3.1	ND	ND	ND	13	ND	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	**1.1**	ND	ND	ND	**0.83**	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	**5.2**	ND	ND	ND	**3.6**	ND	ND	ND
Pyrene	100	100	3.9	0.03 J	ND	ND	12	0.028 J	ND	ND
Biphenyl	NS	NS	0.18 J	ND	ND	ND	0.34	ND	ND	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	59	7	0.52	ND	ND	ND	1.5	ND	ND	ND
2-Methylnaphthalene	NS	NS	0.9	ND	ND	ND	3.1	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	1	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	ND	ND	ND	ND	0.13 J	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.3	ND	ND	ND	0.37	ND	ND	ND

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York I use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-11 (2-4)	IN-SB-11 (6-8)	IN-SB-11 (11-14)	IN-SB-11 (16-18)	IN-SB-12R (4-6)	IN-SB-12R2 (1-3)	IN-SB-12R2 (7-9)	IN-SB-12R2 (10-11)	IN-SB-12R2 (15-16)
Sample Date	*NY-RESRR	**NY-UNRES	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711083-05	L1711083-06	L1711083-07	L1711083-08	L1711241-13	L1711241-14	L1711241-15	L1711241-16	L1711241-17
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics											
Acenaphthene	100	20	2.6	0.34	0.17	ND	***32***	0.4 J	0.6	-	-
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	-	-
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	-	-
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	-	-
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	-	-
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Fluoranthene	100	100	35	1	2	ND	**480**	5.1	1.4	-	-
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Naphthalene	100	12	4.5	0.16 J	0.29	ND	11	1.5	0.71	-	-
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	-	-
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Benzo(a)anthracene	1	1	**32**	0.6	**2.1**	ND	**180**	**6.8**	0.46	-	-
Benzo(a)pyrene	1	1	**52**	0.66	**3.2**	ND	**170**	**15**	0.23	-	-
Benzo(b)fluoranthene	1	1	**55**	0.76	**3.4**	ND	**200**	**15**	0.3	-	-
Benzo(k)fluoranthene	3.9	0.8	**14**	0.29	***1.4***	ND	**48**	**5.2**	0.1 J	-	-
Chrysene	3.9	1	**29**	0.62	***2***	ND	**170**	**6.5**	0.37	-	-
Acenaphthylene	100	100	1.7	0.2	0.12 J	ND	1.9 J	0.29 J	0.24	-	-
Anthracene	100	100	6.6	0.25	0.4	ND	**130**	0.84	0.61	-	-
Benzo(ghi)perylene	100	100	32	0.38	1.7	ND	**130**	10	0.12 J	-	-
Fluorene	100	30	1.9	0.72	0.19 J	ND	***44***	0.21 J	1.1	-	-
Phenanthrene	100	100	18	1.8	1.2	ND	**370**	2.2	2.8	-	-
Dibenzo(a,h)anthracene	0.33	0.33	**8.6**	0.12	**0.61**	ND	**26**	**3**	0.036 J	-	-
Indeno(1,2,3-cd)pyrene	0.5	0.5	**40**	0.4	**2.1**	ND	**150**	**12**	0.14 J	-	-
Pyrene	100	100	29	0.98	1.9	ND	**430**	4.8	1.2	-	-
Biphenyl	NS	NS	0.2 J	ND	ND	ND	3.4 J	ND	ND	-	-
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Dibenzofuran	59	7	1.3	0.26	0.11 J	ND	***25***	0.16 J	0.3	-	-
2-Methylnaphthalene	NS	NS	2.6	0.066 J	0.12 J	ND	8.1	1	0.097 J	-	-
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,4-Dimethylphenol	NS	NS	0.14 J	ND	ND	ND	ND	ND	ND	-	-
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	-	-
Phenol	100	0.33	0.28 J	ND	ND	ND	ND	ND	ND	-	-
2-Methylphenol	100	0.33	0.15 J	ND	ND	ND	ND	ND	ND	-	-
3-Methylphenol/4-Methylphenol	100	0.33	***0.44 J***	ND	0.034 J	ND	ND	ND	ND	-	-
2,4,5-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	-	-
Carbazole	NS	NS	3.2	0.056 J	0.19 J	ND	19	0.48 J	ND	-	-

Notes:
Bold and *italicized* value indicates concentration exceeds Unrestricted SCOs
Bold and shaded red value indicates concentration exceeds Restricted-Residential SCOs
*NY-RESRR: Restricted-Residential Criteria, New York F use current as of 5/2007
**NY-UNRES: New York Unrestricted use Criteria current as of 5/2007
J = Estimated value
ND = Not Detected
NS = No Standard
- = Not Analyzed

Table 9b
Supplementary Subsurface Soil Results - SVOCs
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID			IN-SB-13 (1-3)	IN-SB-13 (5-8)	IN-SB-13 (10-12)	IN-SB-13 (15-17)	IN-SB-14 (1-3)	DUP03 IN-SB-14 (1-3)	IN-SB-14 (8-10)	IN-SB-14 (10-12)	IN-SB-14 (16-18)
Sample Date	*NY-RESRR	**NY-UNRES	4/10/2017	4/10/2017	4/10/2017	4/10/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/12/2017
Labe Sample ID			L1711083-09	L1711083-11	L1711083-12	L1711083-13	L1711444-14	L1711444-18	L1711444-15	L1711444-16	L1711444-17
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organics											
Acenaphthene	100	20	0.78	ND	ND	ND	0.082 J	0.057 J	0.33	0.19	ND
1,2,4-Trichlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	1.2	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	49	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	13	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	12	0.05 J	0.049 J	ND	1.6	1.4	2.4	1.2	0.063 J
4-Chlorophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	100	12	0.35	ND	ND	0.025 J	0.21	0.33	ND	9.6	0.24
Nitrobenzene	15	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
NDPA/DPA	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodi-n-propylamine	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	NS	NS	ND	ND	ND	ND	0.043 J	0.053 J	ND	ND	ND
Di-n-octylphthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1	1	**7.5**	0.034 J	0.023 J	ND	0.86	0.72	0.86	0.37	0.036 J
Benzo(a)pyrene	1	1	**8.4**	ND	ND	ND	1	0.84	0.78	0.28	ND
Benzo(b)fluoranthene	1	1	**9.8**	0.042 J	ND	ND	**1.3**	**1.1**	0.88	0.33	ND
Benzo(k)fluoranthene	3.9	0.8	***3.5***	ND	ND	ND	0.34	0.31	0.34	0.12	ND
Chrysene	3.9	1	**6.9**	0.032 J	0.021 J	ND	0.95	0.73	0.8	0.32	0.026 J
Acenaphthylene	100	100	0.26	ND	ND	ND	0.12 J	0.13 J	0.14 J	0.054 J	ND
Anthracene	100	100	2.4	ND	ND	ND	0.33	0.26	0.53	0.29	ND
Benzo(ghi)perylene	100	100	3.9	0.021 J	ND	ND	0.82	0.66	0.4	0.14 J	ND
Fluorene	100	30	0.69	ND	ND	ND	0.096 J	0.067 J	0.69	0.46	ND
Phenanthrene	100	100	8.5	0.023 J	0.03 J	ND	1.2	0.86	2.8	1.7	0.05 J
Dibenzo(a,h)anthracene	0.33	0.33	**1.4**	ND	ND	ND	0.19	0.14	0.094 J	0.035 J	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	**5**	ND	ND	ND	**0.68**	**0.56**	0.38	0.16	0.074 J
Pyrene	100	100	10	0.048 J	0.044 J	ND	1.4	1.2	2.1	1	0.054 J
Biphenyl	NS	NS	0.062 J	ND	ND	ND	ND	ND	ND	0.096 J	ND
4-Chloroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NS	NS	ND	ND	ND	ND	ND	0.19 J	ND	ND	ND
Dibenzofuran	59	7	0.47	ND	ND	ND	0.087 J	0.067 J	0.36	0.27	ND
2-Methylnaphthalene	NS	NS	0.19 J	ND	ND	ND	0.15 J	0.26	0.2 J	6.8	0.089 J
1,2,4,5-Tetrachlorobenzene	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-o-cresol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	6.7	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	100	0.33	0.03 J	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	100	0.33	0.046 J	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	NS	NS	ND U	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic Acid	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzyl Alcohol	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NS	NS	0.91	ND	ND	ND	0.1 J	0.088 J	0.093 J	0.076 J	0.026 J

Notes:

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Table 9c
Supplementary Subsurface Soil Results - Metals
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Sample ID	NY-RESRR	NY-UNRES	IN-SB-1 (1-3)	IN-SB-1 (6-8)	IN-SB-1 (10-12)	IN-SB-1 (15-17)	IN-SB-2 (1-3)	IN-SB-2 (5-7)	IN-SB-2 (10-12)	IN-SB-2 (15-17)
Sample Date			4/12/2017	4/12/2017	4/12/2017	4/12/2017	4/13/2017	4/13/2017	4/13/2017	4/13/2017
Labe Sample ID			L1711444-01	L1711444-02	L1711444-03	L1711444-04	L1711695-05	L1711695-06	L1711695-07	L1711695-08
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Metals										
Aluminum	NS	NS	3000	3700	5000	4900	2500	5100	6800	7800
Antimony	NS	NS	1.8 J	ND	ND	0.71 J	1.1 J	ND	ND	ND
Arsenic	16	13	5.2	4.6	1.4	4.8	***15***	7.4	3	2.3
Barium	400	350	**500**	24	36	40	320	120	42	45
Beryllium	72	7.2	0.19 J	0.19 J	0.26 J	0.17 J	0.14 J	0.13 J	0.29 J	0.45
Cadmium	4.3	2.5	0.87	1.1	ND	ND	2.2	**8.6**	0.14 J	ND
Calcium	NS	NS	30000	18000	930	1800	2800	16000	5100	1100
Chromium	NS	NS	14	7.3	14	16	11	17	11	25
Cobalt	NS	NS	4	3.1	4.3	8.9	3.6	4.4	4.3	8
Copper	270	50	***61***	11	18	29	***85***	***53***	12	18
Iron	NS	NS	7800	12000	7500	16000	11000	24000	11000	14000
Lead	400	63	**650**	***350***	15	37	***340***	**520**	31	8.8
Magnesium	NS	NS	2300	2700	2100	2600	970	2700	4000	4100
Manganese	2000	1600	170	240	130	360	150	300	330	320
Mercury	0.81	0.18	***0.47***	0.11	ND	0.03 J	**1.2**	***0.5***	0.04 J	0.02 J
Nickel	310	30	17	9.4	9.2	16	18	14	9.6	12
Potassium	NS	NS	590	680	600	1200	380	790	620	830
Selenium	180	3.9	ND	ND	ND	ND	ND	ND	ND	ND
Silver	180	2	ND	ND	0.89	ND	ND	ND	ND	ND
Sodium	NS	NS	530	340	200	280	110 J	280	230	160 J
Thallium	NS	NS	ND	ND	1.8	ND	ND	ND	ND	ND
Vanadium	NS	NS	40	14	14	49	21	20	13	20
Zinc	10000	109	***380***	***330***	19	54	***340***	***2100***	39	38

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Table 9c
Supplementary Subsurface Soil Results - Metals
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New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	NY-RESRR	NY-UNRES	IN-SB-3 (1-3) 4/12/2017 L1711444-05 Soil mg/kg	DUP02 IN-SB-3 (1-3) 4/12/2017 L1711444-08 Soil mg/kg	IN-SB-3 (8-10) 4/12/2017 L1711444-06 Soil mg/kg	IN-SB-3 (12-14) 4/12/2017 L1711444-07 Soil mg/kg	IN-SB-3 (15-17) 4/12/2017 L1711444-09 Soil mg/kg	IN-SB-4 (1-3) 4/12/2017 L1711444-10 Soil mg/kg	IN-SB-4 (5-7) 4/12/2017 L1711444-11 Soil mg/kg	IN-SB-4 (10-12) 4/12/2017 L1711444-12 Soil mg/kg	IN-SB-4 (16-18) 4/12/2017 L1711444-13 Soil mg/kg
Total Metals											
Aluminum	NS	NS	6900	7700	5000	4600	8600	6400	5600	5100	7600
Antimony	NS	NS	ND	1.2 J	ND	ND	ND	5.4	ND	ND	ND
Arsenic	16	13	3.9	1.6	1.5	2.5	7.4	4.8	2.3	2.1	5.8
Barium	400	350	270	***370***	33	29	27	180	32	79	26
Beryllium	72	7.2	0.26 J	ND	0.29 J	0.28 J	0.35 J	0.24 J	0.3 J	0.22 J	0.31 J
Cadmium	4.3	2.5	0.94	0.21 J	0.21 J	0.22 J	ND	0.32 J	ND	0.32 J	ND
Calcium	NS	NS	32000	24000	5400	490	2700	26000	1800	14000	4700
Chromium	NS	NS	23	22	11	11	17	12	16	33	16
Cobalt	NS	NS	9.4	7.7	7	4.2	7.1	4.8	4.8	4.7	6.8
Copper	270	50	25	23	13	10	13	**1000**	17	21	13
Iron	NS	NS	13000	12000	8500	8500	18000	9500	9200	11000	16000
Lead	400	63	**420**	**870**	7.9	7.1	12	***360***	17	***71***	8.5
Magnesium	NS	NS	5100	4800	2100	1900	3600	2600	1900	6200	3200
Manganese	2000	1600	210	140	120	110	460	200	88	170	630
Mercury	0.81	0.18	0.16	0.18	0.04 J	ND	0.08 J	0.14	0.04 J	ND	ND
Nickel	310	30	24	18	10	9.1	16	28	13	13	14
Potassium	NS	NS	3600	5100	730	420	1200	1600	670	710	1100
Selenium	180	3.9	0.7 J	ND	0.36 J	0.45 J	ND	ND	ND	0.24 J	ND
Silver	180	2	ND	ND	ND	ND	ND	0.35 J	ND	ND	ND
Sodium	NS	NS	570	500	240	240	530	1200	420	320	510
Thallium	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	NS	NS	21	19	14	13	21	18	18	19	20
Zinc	10000	109	***330***	***130***	14	20	44	***130***	27	***110***	32

Notes:
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Table 9c
Supplementary Subsurface Soil Results - Metals
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Sample ID			IN-SB-5 (1-3)	IN-SB-5 (5-7)	IN-SB-5 (10-12)	IN-SB-5 (16-18)	IN-SB-6 (1-3)	IN-SB-6 (6-8)	IN-SB-6 (10-12)	IN-SB-6 (15-17)
Sample Date	NY-RESRR	NY-UNRES	4/13/2017	4/13/2017	4/13/2017	4/13/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
Labe Sample ID			L1711695-01	L1711695-02	L1711695-03	L1711695-04	L1711241-09	L1711241-10	L1711241-11	L1711241-12
Sample Media			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Unit of Measure			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total Metals										
Aluminum	NS	NS	4500	7800	7000	9700	1300	8800	6800	6700
Antimony	NS	NS	1.3 J	ND	ND	ND	0.61 J	ND	ND	ND
Arsenic	16	13	**51**	2.7	2.2	4.2	**130**	**26**	2.2	2.2
Barium	400	350	***350***	40	50	29	43	34	40	51
Beryllium	72	7.2	0.32 J	0.3 J	0.34 J	0.4 J	ND	0.22 J	0.23 J	0.26 J
Cadmium	4.3	2.5	2.2	0.13 J	ND	0.15 J	0.15 J	ND	0.24 J	ND
Calcium	NS	NS	9100	1200	1000	1600	1200	640	470	440
Chromium	NS	NS	16	18	13	16	14	20	16	11
Cobalt	NS	NS	4.2	5.1	4.6	6.5	2.1	2.8	7.8	5.7
Copper	270	50	**510**	21	16	16	***80***	***68***	24	12
Iron	NS	NS	15000	11000	9400	16000	43000	9200	6700	8800
Lead	400	63	**850**	14	8.6	17	***220***	28	4.8	6.2
Magnesium	NS	NS	2300	2500	2000	3500	480	1800	1700	1700
Manganese	2000	1600	170	280	110	550	78	65	52	88
Mercury	0.81	0.18	***0.42***	0.03 J	0.02 J	0.05 J	0.06 J	ND	ND	ND
Nickel	310	30	20	12	10	14	3.6	11	19	10
Potassium	NS	NS	630	740	600	1100	820	400	610	430
Selenium	180	3.9	ND	ND	ND	ND	0.42 J	ND	ND	ND
Silver	180	2	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	NS	NS	220	200	98 J	450	690	340	180	190
Thallium	NS	NS	ND	ND	ND	ND	0.42 J	ND	ND	ND
Vanadium	NS	NS	40	19	15	20	19	16	16	14
Zinc	10000	109	***380***	37	21	40	12	32	92	32

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Table 9c
Supplementary Subsurface Soil Results - Metals
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Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	NY-RESRR	NY-UNRES	IN-SB-7 (1-3) 4/10/2017 L1711083-01 Soil mg/kg	IN-SB-7 (8-10) 4/10/2017 L1711083-02 Soil mg/kg	DUP01 IN-SB-7 (8-10) 4/10/2017 L1711083-10 Soil mg/kg	IN-SB-7 (10-13) 4/10/2017 L1711083-03 Soil mg/kg	IN-SB-7 (15-17) 4/10/2017 L1711083-04 Soil mg/kg	IN-SB-8 (1-3) 4/11/2017 L1711241-01 Soil mg/kg	IN-SB-8 (6-8) 4/11/2017 L1711241-02 Soil mg/kg	IN-SB-8 (10-12) 4/11/2017 L1711241-03 Soil mg/kg	IN-SB-8 (15-17) 4/11/2017 L1711241-04 Soil mg/kg
Total Metals											
Aluminum	NS	NS	8000	-	9000	7300	7200	400	3400	5700	7900
Antimony	NS	NS	ND	-	ND	ND	ND	0.69 J	ND	ND	ND
Arsenic	16	13	2.6	1.6	2.9	2.3	9.2	9.6	5.4	3.4	2.4
Barium	400	350	77	-	65	52	33	63	46	39	66
Beryllium	72	7.2	0.22 J	-	0.39 J	0.33 J	0.32 J	ND	0.16 J	0.31 J	0.36 J
Cadmium	4.3	2.5	ND	-	ND	ND	ND	ND	0.13 J	ND	ND
Calcium	NS	NS	970	-	1200	1200	2000	880	10000	920	1100
Chromium	NS	NS	14	-	15	15	14	6.3	10	12	12
Cobalt	NS	NS	3.8	-	5.8	4.1	6	1.4 J	12	7.1	4.2
Copper	270	50	35	-	15	11	15	29	28	14	9.9
Iron	NS	NS	14000	-	9800	8800	15000	22000	12000	10000	12000
Lead	400	63	58	-	17	12	15	***120***	14	18	50
Magnesium	NS	NS	2400	-	2000	1700	2700	130	4500	2000	1900
Manganese	2000	1600	120	-	220	210	440	17	460	250	690
Mercury	0.81	0.18	0.1	-	0.13	0.09	0.08	***0.25***	0.02 J	0.09	0.05 J
Nickel	310	30	10	-	12	9.6	14	3.7	20	12	8.7
Potassium	NS	NS	1400	-	490	480	1000	400	490	590	410
Selenium	180	3.9	ND	-	ND	0.26 J	ND	0.34 J	ND	ND	ND
Silver	180	2	ND	-	ND	ND	ND	ND	ND	ND	ND
Sodium	NS	NS	590	-	300	310	750	900	450	160 J	230
Thallium	NS	NS	ND	-	ND	ND	ND	ND	ND	ND	ND
Vanadium	NS	NS	21	-	21	19	20	11	9.4	16	13
Zinc	10000	109	25	-	21	20	32	7.4	100	95	27

Notes:

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515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	NY-RESRR	NY-UNRES	IN-SB-9 (1-3) 4/11/2017 L1711241-05 Soil mg/kg	IN-SB-9 (7-9) 4/11/2017 L1711241-06 Soil mg/kg	IN-SB-9 (12-14) 4/11/2017 L1711241-07 Soil mg/kg	IN-SB-9 (15-17) 4/11/2017 L1711241-08 Soil mg/kg	IN-SB-10 (1-3) 4/10/2017 L1711083-14 Soil mg/kg	IN-SB-10 (8-10) 4/10/2017 L1711083-15 Soil mg/kg	IN-SB-10 (10-12) 4/10/2017 L1711083-16 Soil mg/kg	IN-SB-10 (15-17) 4/10/2017 L1711083-17 Soil mg/kg
Total Metals										
Aluminum	NS	NS	840	4600	6000	6300	2600	- -	6600	11000
Antimony	NS	NS	ND	ND	ND	ND	ND	- -	ND	ND
Arsenic	16	13	**44**	3.7	2.4	2.7	***16***	1.9	1.6	8.2
Barium	400	350	36	36	32	38	54	- -	35	26
Beryllium	72	7.2	ND	0.18 J	0.24 J	0.31 J	0.06 J	- -	0.27 J	0.46 J
Cadmium	4.3	2.5	0.12 J	1.1	ND	ND	0.43 J	- -	ND	ND
Calcium	NS	NS	4800	4900	700	720	1400	- -	870	3500
Chromium	NS	NS	7	12	12	9.8	12	- -	13	20
Cobalt	NS	NS	0.97 J	35	4.6	4.6	5.3	- -	4.5	9
Copper	270	50	13	44	9	7.8	***74***	- -	12	16
Iron	NS	NS	51000	18000	8800	9100	66000	- -	10000	24000
Lead	400	63	**510**	5	4.1 J	9.2	**1800**	- -	6.7	15
Magnesium	NS	NS	350	1600	1500	1500	900	- -	1800	4400
Manganese	2000	1600	48	***2000***	210	120	160	- -	230	500
Mercury	0.81	0.18	**1.1**	ND	ND	0.03 J	**3.3**	- -	ND	0.08 J
Nickel	310	30	1.1 J	***59***	8.9	8	8.4	- -	10	20
Potassium	NS	NS	1800	770	500	300	1400	- -	480	1700
Selenium	180	3.9	3	ND	ND	ND	0.63 J	- -	ND	ND
Silver	180	2	ND	ND	ND	ND	ND	- -	ND	ND
Sodium	NS	NS	4400	280	250	240	1100	- -	170 J	950
Thallium	NS	NS	ND	0.78 J	ND	ND	ND	- -	ND	ND
Vanadium	NS	NS	16	11	14	12	19	- -	17	25
Zinc	10000	109	6.1	***430***	15	19	35	- -	20	55

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Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	NY-RESRR	NY-UNRES	IN-SB-11 (2-4) 4/10/2017 L1711083-05 Soil mg/kg	IN-SB-11 (6-8) 4/10/2017 L1711083-06 Soil mg/kg	IN-SB-11 (11-14) 4/10/2017 L1711083-07 Soil mg/kg	IN-SB-11 (16-18) 4/10/2017 L1711083-08 Soil mg/kg	IN-SB-12R (4-6) 4/11/2017 L1711241-13 Soil mg/kg	IN-SB-12R2 (1-3) 4/11/2017 L1711241-14 Soil mg/kg	IN-SB-12R2 (7-9) 4/11/2017 L1711241-15 Soil mg/kg	IN-SB-12R2 (10-11) 4/11/2017 L1711241-16 Soil mg/kg	IN-SB-12R2 (15-16) 4/11/2017 L1711241-17 Soil mg/kg
Total Metals											
Aluminum	NS	NS	4700	7000	6500	2600	-	-	-	-	-
Antimony	NS	NS	ND	ND	ND	ND	-	-	-	-	-
Arsenic	16	13	3	1.4	4.4	1.4	9	8.1	2	-	-
Barium	400	350	46	34	61	17	-	-	-	-	-
Beryllium	72	7.2	0.25 J	0.29 J	0.26 J	0.17 J	-	-	-	-	-
Cadmium	4.3	2.5	0.1 J	ND	ND	ND	-	-	-	-	-
Calcium	NS	NS	780	1600	5800	860	-	-	-	-	-
Chromium	NS	NS	9.2	13	14	8.2	-	-	-	-	-
Cobalt	NS	NS	4.1	3.9	5	2.5	-	-	-	-	-
Copper	270	50	***54***	12	49	8.7	-	-	-	-	-
Iron	NS	NS	9600	9600	13000	6600	-	-	-	-	-
Lead	400	63	38	8.6	***93***	3.4 J	-	-	-	-	-
Magnesium	NS	NS	1200	2100	2400	1200	-	-	-	-	-
Manganese	2000	1600	90	120	330	520	-	-	-	-	-
Mercury	0.81	0.18	0.12	0.05 J	0.16	ND	-	-	-	-	-
Nickel	310	30	10	10	13	7	-	-	-	-	-
Potassium	NS	NS	520	550	790	570	-	-	-	-	-
Selenium	180	3.9	0.29 J	ND	ND	0.23 J	-	-	-	-	-
Silver	180	2	ND	ND	ND	ND	-	-	-	-	-
Sodium	NS	NS	460	250	420	160 J	-	-	-	-	-
Thallium	NS	NS	ND	ND	ND	ND	-	-	-	-	-
Vanadium	NS	NS	14	17	16	8.3	-	-	-	-	-
Zinc	10000	109	70	20	67	10	-	-	-	-	-

Notes:
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Table 9c
Supplementary Subsurface Soil Results - Metals
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	NY-RESRR	NY-UNRES	IN-SB-13 (1-3) 4/10/2017 L1711083-09 Soil mg/kg	IN-SB-13 (5-8) 4/10/2017 L1711083-11 Soil mg/kg	IN-SB-13 (10-12) 4/10/2017 L1711083-12 Soil mg/kg	IN-SB-13 (15-17) 4/10/2017 L1711083-13 Soil mg/kg	IN-SB-14 (1-3) 4/12/2017 L1711444-14 Soil mg/kg	DUP03 IN-SB-14 (1-3) 4/12/2017 L1711444-18 Soil mg/kg	IN-SB-14 (8-10) 4/12/2017 L1711444-15 Soil mg/kg	IN-SB-14 (10-12) 4/12/2017 L1711444-16 Soil mg/kg	IN-SB-14 (16-18) 4/12/2017 L1711444-17 Soil mg/kg
Total Metals											
Aluminum	NS	NS	5100	7900	6800	7700	3900	4600	-	-	-
Antimony	NS	NS	ND	ND	ND	ND	3.5 J	7.3	-	-	-
Arsenic	16	13	9	2.7	1.7	6.9	**26**	**27**	6.6	1.4	-
Barium	400	350	42	77	38	37	**410**	290	-	-	-
Beryllium	72	7.2	0.34 J	0.36 J	0.23 J	0.32 J	0.14 J	0.15 J	-	-	-
Cadmium	4.3	2.5	0.17 J	ND	ND	ND	1.6	***2.7***	-	-	-
Calcium	NS	NS	6300	1100	12000	2400	63000	25000	-	-	-
Chromium	NS	NS	9.2	16	14	15	17	23	-	-	-
Cobalt	NS	NS	9.3	5.3	4	6.6	4.9	6	-	-	-
Copper	270	50	***67***	14	11	12	***180***	***240***	-	-	-
Iron	NS	NS	22000	12000	9500	16000	24000	33000	-	-	-
Lead	400	63	***400***	7.4	9.2	13	**1000**	**950**	-	-	-
Magnesium	NS	NS	1200	2400	2200	3100	3600	4700	-	-	-
Manganese	2000	1600	320	200	140	480	310	280	-	-	-
Mercury	0.81	0.18	***0.54***	ND	ND	0.09	***0.21***	***0.28***	-	-	-
Nickel	310	30	15	12	10	14	17	23	-	-	-
Potassium	NS	NS	610	590	650	1100	830	1200	-	-	-
Selenium	180	3.9	0.41 J	ND	ND	ND	1 J	1.2 J	-	-	-
Silver	180	2	ND	ND	ND	ND	0.33 J	0.37 J	-	-	-
Sodium	NS	NS	920	440	230	480	700	760	-	-	-
Thallium	NS	NS	ND	ND	ND	ND	ND	ND	-	-	-
Vanadium	NS	NS	14	19	16	23	34	42	-	-	-
Zinc	10000	109	59	23	16	38	***480***	***760***	-	-	-

Notes:
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-1 (1-3) 4/12/2017 L1711444-01 Soil mg/kg		IN-SB-1 (6-8) 4/12/2017 L1711444-02 Soil mg/kg		IN-SB-1 (10-12) 4/12/2017 L1711444-03 Soil mg/kg		IN-SB-1 (15-17) 4/12/2017 L1711444-04 Soil mg/kg		IN-SB-2 (1-3) 4/13/2017 L1711695-05 Soil mg/kg		IN-SB-2 (5-7) 4/13/2017 L1711695-06 Soil mg/kg		IN-SB-2 (10-12) 4/13/2017 L1711695-07 Soil mg/kg		IN-SB-2 (15-17) 4/13/2017 L1711695-08 Soil mg/kg	
Total Petroleum Hydrocarbon																		
Gasoline Range Organics	NS	NS	1.4	J	0.67	J	ND		ND		1.6	J	2.4	J	1.7	J	1	J
DROD (C9-C44)	NS	NS	40.1		62.3		9.94	J	22.8	J	163		114		70.1		31	J
General Chemistry																		
Cyanide	27	27	ND		ND		ND		ND		0.57	J	0.55	J	0.38	J	ND	

Notes:
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-3 (1-3) 4/12/2017 L1711444-05 Soil mg/kg		DUP02 4/12/2017 L1711444-08 Soil mg/kg		IN-SB-3 (8-10) 4/12/2017 L1711444-06 Soil mg/kg		IN-SB-3 (12-14) 4/12/2017 L1711444-07 Soil mg/kg		IN-SB-3 (15-17) 4/12/2017 L1711444-09 Soil mg/kg		IN-SB-4 (1-3) 4/12/2017 L1711444-10 Soil mg/kg		IN-SB-4 (5-7) 4/12/2017 L1711444-11 Soil mg/kg		IN-SB-4 (10-12) 4/12/2017 L1711444-12 Soil mg/kg		IN-SB-4 (16-18) 4/12/2017 L1711444-13 Soil mg/kg	
Total Petroleum Hydrocarbon																				
Gasoline Range Organics	NS	NS	ND	U	ND		ND		ND		11		1	J	ND		1.7	J	1.9	J
DROD (C9-C44)	NS	NS	20.9	J	12.3	J	7.06	J	5.02	J	16	J	68.2		6.85	J	6.36	J	6.16	J
General Chemistry																				
Cyanide	27	27	ND	U	ND		ND		ND		ND		0.39	J	ND		ND		ND	

Notes:
Bold and *italicized* value indicates concentration
exceeds Unrestricted SCOs
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exceeds Restricted-Residential SCOs
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current as of 5/2007
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-5 (1-3) 4/13/2017 L1711695-01 Soil mg/kg		IN-SB-5 (5-7) 4/13/2017 L1711695-02 Soil mg/kg		IN-SB-5 (10-12) 4/13/2017 L1711695-03 Soil mg/kg		IN-SB-5 (16-18) 4/13/2017 L1711695-04 Soil mg/kg		IN-SB-6 (1-3) 4/11/2017 L1711241-09 Soil mg/kg		IN-SB-6 (6-8) 4/11/2017 L1711241-10 Soil mg/kg		IN-SB-6 (10-12) 4/11/2017 L1711241-11 Soil mg/kg		IN-SB-6 (15-17) 4/11/2017 L1711241-12 Soil mg/kg	
Total Petroleum Hydrocarbon																		
Gasoline Range Organics	NS	NS	2.8	J	ND		ND		7		5.9		0.67	J	ND		0.9	J
DROD (C9-C44)	NS	NS	2220		15.6	J	9.22	J	19.1	J	664		14	J	43.6		11.6	J
General Chemistry																		
Cyanide	27	27	3.2		0.8	J	ND		ND		14		0.2	J	0.48	J	ND	

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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-7 (1-3) 4/10/2017 L1711083-01 Soil mg/kg	IN-SB-7 (8-10) 4/10/2017 L1711083-02 Soil mg/kg	IN-SB-7 (10-13) 4/10/2017 L1711083-03 Soil mg/kg	DUP01 IN-SB-7 (10-13) 4/10/2017 L1711083-10 Soil mg/kg	IN-SB-7 (15-17) 4/10/2017 L1711083-04 Soil mg/kg	IN-SB-8 (1-3) 4/11/2017 L1711241-01 Soil mg/kg	IN-SB-8 (6-8) 4/11/2017 L1711241-02 Soil mg/kg	IN-SB-8 (10-12) 4/11/2017 L1711241-03 Soil mg/kg	IN-SB-8 (15-17) 4/11/2017 L1711241-04 Soil mg/kg
Total Petroleum Hydrocarbon											
Gasoline Range Organics	NS	NS	7.8	160	11	26	0.88 J	2.5 J	0.92 J	ND	ND
DROD (C9-C44)	NS	NS	99.3	4250	13.9 J	9.45 J	7.41 J	653	242	56.3	15.3 J
General Chemistry											
Cyanide	27	27	0.21 J	ND	ND	ND	ND	**42**	0.36 J	ND	ND

Notes:
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-9 (1-3) 4/11/2017 L1711241-05 Soil mg/kg		IN-SB-9 (7-9) 4/11/2017 L1711241-06 Soil mg/kg		IN-SB-9 (12-14) 4/11/2017 L1711241-07 Soil mg/kg		IN-SB-9 (15-17) 4/11/2017 L1711241-08 Soil mg/kg		IN-SB-10 (1-3) 4/10/2017 L1711083-14 Soil mg/kg		IN-SB-10 (8-10) 4/10/2017 L1711083-15 Soil mg/kg		IN-SB-10 (10-12) 4/10/2017 L1711083-16 Soil mg/kg		IN-SB-10 (15-17) 4/10/2017 L1711083-17 Soil mg/kg	
Total Petroleum Hydrocarbon																		
Gasoline Range Organics	NS	NS	170		0.54	J	ND		ND		360		2500		25		2.3	J
DROD (C9-C44)	NS	NS	728		45.2		8.64	J	7.26	J	1210		126		10.9	J	11.6	J
General Chemistry																		
Cyanide	27	27	3.5		ND		ND		0.3	J	15		0.41	J	0.23	J	0.38	J

Notes:
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Sample Date Labe Sample ID Sample Media Unit of Measure	*NY-RESRR	***NY-UNRES	IN-SB-11 (2-4) 4/10/2017 L1711083-05 Soil mg/kg	IN-SB-11 (6-8) 4/10/2017 L1711083-06 Soil mg/kg	IN-SB-11 (11-14) 4/10/2017 L1711083-07 Soil mg/kg	IN-SB-11 (16-18) 4/10/2017 L1711083-08 Soil mg/kg	IN-SB-12R (4-6) 4/11/2017 L1711241-13 Soil mg/kg	IN-SB-12R2 (1-3) 4/11/2017 L1711241-14 Soil mg/kg	IN-SB-12R2 (7-9) 4/11/2017 L1711241-15 Soil mg/kg	IN-SB-12R2 (10-11) 4/11/2017 L1711241-16 Soil mg/kg	IN-SB-12R2 (15-16) 4/11/2017 L1711241-17 Soil mg/kg
Total Petroleum Hydrocarbon											
Gasoline Range Organics	NS	NS	9.7	570	27	1.6 J	73	41	70	740	4.9
DROD (C9-C44)	NS	NS	5980	2650	742	23.4 J	11000	1300	2600	1040	67.2
General Chemistry											
Cyanide	27	27	0.39 J	ND	ND	ND	1.3	0.66 J	ND	-	-

Notes:
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Table 9d
Supplementary Subsurface Soil Results - TPH Cyanide
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID	*NY-RESRR	***NY-UNRES	IN-SB-13 (1-3)		IN-SB-13 (5-8)		IN-SB-13 (10-12)		IN-SB-13 (15-17)		IN-SB-14 (1-3)		DUP03		IN-SB-14 (8-10)		IN-SB-14 (10-12)		IN-SB-14 (16-18)	
Sample Date			4/10/2017		4/10/2017		4/10/2017		4/10/2017		4/12/2017		4/12/2017		4/12/2017		4/12/2017		4/12/2017	
Labe Sample ID			L1711083-09		L1711083-11		L1711083-12		L1711083-13		L1711444-14		L1711444-18		L1711444-15		L1711444-16		L1711444-17	
Sample Media			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Unit of Measure			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Total Petroleum Hydrocarbon																				
Gasoline Range Organics	NS	NS	ND		ND		0.7	J	4.9		2.1	J	8.8		480		1500		9.4	
DROD (C9-C44)	NS	NS	355		47.9		16	J	6.07	J	1440		1620		1090		823		63.1	
General Chemistry																				
Cyanide	27	27	0.89	J	ND		0.22	J	0.32	J	0.36	J	0.46	J	0.22	J	ND		-	

Notes:
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Table 10
Supplementary Subsurface
Groundwater Analytical Results
Remedial Action Work Plan
515 West 18th Street
New York, NY

Sample ID Lab Sample ID Sampling Date Sample Media Unit of Measure	NY-AWQS	IN-GW-1 L1711702-02 4/13/2017 Groundwater ug/l	IN-GW-2 L1711917-03 4/14/2017 Groundwater ug/l	IN-GW-5 L1711917-02 4/14/2017 Groundwater ug/l	IN-GW-7 L1711702-01 4/13/2017 Groundwater ug/l	DUP04 IN-GW-7 L1711702-05 4/13/2017 Groundwater ug/l	IN-GW-8 L1711917-04 4/14/2017 Groundwater ug/l	IN-GW-12 L1711702-03 4/13/2017 Groundwater ug/l	IN-GW-14 L1711917-01 4/14/2017 Groundwater ug/l	TRIP BLANK-20170410 L1711083-18 4/10/2017 Water ug/l	TRIP BLANK_20170411 L1711241-18 4/11/2017 Water ug/l	TRIP BLANK-20170412 L1711444-19 4/12/2017 Water ug/l	TRIP BLANK-20170413 L1711702-04 4/13/2017 Water ug/l	TRIP BLANK-20170414 L1711917-05 4/14/2017 Water ug/l
SVOCs														
1,2,4-Trichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Bis(2-chloroethyl)ether	1	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
1,3-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
1,4-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
3,3'-Dichlorobenzidine	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4-Dinitrotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,6-Dinitrotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
4-Chlorophenyl phenyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
4-Bromophenyl phenyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Bis(2-chloroisopropyl)ether	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Bis(2-chloroethoxy)methane	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Hexachlorocyclopentadiene	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Isophorone	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Nitrobenzene	0.4	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
NDPA/DPA	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
n-Nitrosodi-n-propylamine	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Bis(2-ethylhexyl)phthalate	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Butyl benzyl phthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Di-n-butylphthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Di-n-octylphthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Diethyl phthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Dimethyl phthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Biphenyl	NS	ND	ND	ND	ND	ND	ND	ND	1.2 J	- -	- -	- -	- -	- -
4-Chloroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
3-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
4-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Dibenzofuran	NS	ND	ND	ND	ND	ND	ND	ND	1.7 J	- -	- -	- -	- -	- -
1,2,4,5-Tetrachlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Acetophenone	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4,6-Trichlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
p-Chloro-m-cresol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2-Chlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4-Dichlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4-Dimethylphenol	50	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2-Nitrophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
4-Nitrophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4-Dinitrophenol	10	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
4,6-Dinitro-o-cresol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Phenol	1	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2-Methylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
3-Methylphenol/4-Methylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
2,4,5-Trichlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Benzoic Acid	NS	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Benzyl Alcohol	NS	ND	ND	ND	ND	ND	1.3 J	ND	ND	- -	- -	- -	- -	- -
Carbazole	NS	ND	ND	ND	ND	ND	ND	ND	4.8	- -	- -	- -	- -	- -
Acenaphthene	20	0.38	0.16	0.05 J	0.22	0.16	ND	0.56	2.4	- -	- -	- -	- -	- -
2-Chloronaphthalene	10	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Fluoranthene	50	0.04 J	ND	0.08 J	0.05 J	ND	ND	0.13 J	1.8	- -	- -	- -	- -	- -
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Naphthalene	10	0.96	0.07 J	0.24	0.31	0.16 J	0.29	0.18 J	**330**	- -	- -	- -	- -	- -
Benzo(a)anthracene	0.002	ND	ND	ND	ND	ND	ND	ND	**0.43**	- -	- -	- -	- -	- -
Benzo(a)pyrene	0	ND	ND	ND	ND	ND	ND	ND	**0.34**	- -	- -	- -	- -	- -
Benzo(b)fluoranthene	0.002	ND	ND	ND	ND	ND	ND	ND	**0.51**	- -	- -	- -	- -	- -
Benzo(k)fluoranthene	0.002	ND	ND	ND	ND	ND	ND	ND	**0.18 J**	- -	- -	- -	- -	- -
Chrysene	0.002	ND	ND	ND	ND	ND	ND	ND	**0.44**	- -	- -	- -	- -	- -
Acenaphthylene	NS	0.05 J	0.07 J	0.05 J	0.05 J	ND	ND	0.08 J	0.29	- -	- -	- -	- -	- -
Anthracene	50	0.07 J	ND	0.07 J	0.06 J	0.04 J	0.04 J	0.08 J	0.72	- -	- -	- -	- -	- -
Benzo(ghi)perylene	NS	ND	ND	ND	ND	ND	ND	ND	0.28	- -	- -	- -	- -	- -
Fluorene	50	0.16 J	ND	ND	0.12 J	0.09 J	ND	0.24	3.1	- -	- -	- -	- -	- -
Phenanthrene	50	0.22	ND	0.04 J	0.19 J	0.14 J	ND	0.41	5.6	- -	- -	- -	- -	- -
Dibenzo(a,h)anthracene	NS	ND	ND	ND	ND	ND	ND	ND	0.06 J	- -	- -	- -	- -	- -
Indeno(1,2,3-cd)pyrene	0.002	ND	ND	ND	ND	ND	ND	ND	**0.22**	- -	- -	- -	- -	- -
Pyrene	50	ND	ND	0.28	0.04 J	ND	ND	0.12 J	1.5	- -	- -	- -	- -	- -
2-Methylnaphthalene	NS	0.16 J	ND	ND	0.24	0.15 J	0.05 J	0.07 J	100	- -	- -	- -	- -	- -
Pentachlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Hexachlorobenzene	0.04	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
Hexachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	- -	- -	- -	- -	- -
VOCs														
Methylene chloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	0.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropene, Total	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	**150**	**73**	**5.7**	**6.7**	**6.8**	0.24 J	**7.1**	**370**	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	1.4 J	ND	ND	ND	ND	**720**	ND	ND	ND	ND	ND
Chloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	10	2 J	ND	2.1 J	1.2 J	1.1 J	ND	ND	ND	ND	ND	ND	ND	ND
p/m-Xylene	5	ND	ND	ND	ND	ND	ND	0.73 J	**19 J**	ND	ND	ND	ND	ND
o-Xylene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	NS	ND	ND	ND	ND	ND	ND	0.73 J	19 J	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene, Total	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	ND	ND	ND	2.4 J	2.6 J	ND	ND	ND	ND	5.7	4 J	5.1	5.8
Carbon disulfide	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.0006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	5	ND	ND	ND	ND	ND	ND	1.7 J	**57**	ND	ND	ND	ND	ND
sec-Butylbenzene	5	ND	ND	ND	0.81 J	0.81 J	ND	3.6	**23 J**	ND	ND	ND	ND	ND
tert-Butylbenzene	5	ND	ND	ND	1.4 J	1.4 J	ND	2.5	ND	ND	ND	ND	ND	ND
o-Chlorotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chlorotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	3	2.3 J	2.3 J	ND	**16**	**300**	ND	ND	ND	ND	ND
p-Isopropyltoluene	5	ND	ND	ND	ND	ND	ND	ND	**14 J**	ND	ND	ND	ND	ND
Naphthalene	10	1.6 J	ND	ND	1.1 J	1 J	ND	1.4 J	**740**	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	1.8 J	2.7	2.7	ND	**12**	**630**	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	**110**	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	ND	ND	ND	0.74 J	0.74 J	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Diethylbenzene	NS	ND	ND	ND	0.74 J	0.74 J	ND	1.5 J	200	ND	ND	ND	ND	ND
p-Ethyltoluene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4,5-Tetramethylbenzene	5	ND	ND	ND	1.4 J	1.3 J	ND	3.5	**120**	ND	ND	ND	ND	ND
Ethyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-Dichloro-2-butene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold and shaded value indicates concentration exceeds TOGS AWQS
J = Estimated value
ND = Not detected
NS = No Standard
-- = Not Analyzed
* = NYSDEC TOGS 1.1.1. Ambient Water Quality Standards (AWQS)

Table 11A
Remedial Cost Estimate - Alternative I
Remedial Action Work Plan
515 West 18th Street

Item No.	Description	Estimated Quantity	Unit	Unit Price	Cost
Contractor Fees					
1	Remediation Facilities, Mobilization, Demobilization, Permits, and Site Maintenance	1	Allowance	$700,000	$700,000
2	Temporary/Construction Fence	1,020	Linear Feet	$154	$156,825
3	Decontamination Pad/Area	2	Lump Sum	$125,000	$250,000
4	Suport of Excavation: Secant Pile Wall (SOE around lot 40)		vertical foot		$5,000,000
5	Support of Excavation: Watertight Sheeting		SF		$5,600,000
6	Support of Excavation: Tiebacks and Walers		n/a		$2,500,000
7	Support of Excavation: Soil Mix Walls (N and S of the High Line)		vertical foot	$1,273,090	$1,273,090
8	Con Ed Vault (Driven Soldier Piles & Lagging)	1	n/a	$222,743	$222,743
9	Support of Excavation: High Line Pile Caps		n/a	$334,000	$334,000
10	Waste Characterization	1	Lump Sum	$350,000	$350,000
11	Soil Excavation, Handling and Disposal 45% Non-Haz Historic	37,935	Ton	$115	$4,362,525
12	Soil Excavation, Handling and Disposal 10% Coal Tar Impacted	8,430	Ton	$240	$2,023,200
13	Soil Excavation, Handling and Disposal 15% Hazardous	12,645	Ton	$240	$3,034,800
14	Soil Excavation, Handling and Disposal 30% Petroleum Impacted	25,290	Ton	$219	$5,538,510
15	Foam Suppressant (Vapor/Odor Control)	12	Month	$25,000	$300,000
16	Clean Imported Material (to raise the cut to design subgrade +12')	36,600	Ton	$155	$5,673,000
17	Dewatering, Fees and Treatment	1	Lump Sum	$3,500,000	$3,500,000
18	Contaminated Water Disposal - NAPL Impacted	400,000	Allowance Gallons/year	$0.63	$250,000
19	NYCDEP Approved and Treated Discharge	1,000,000	Allowance Gallons/year	$0.13	$125,000
20	Foundation (piles, caissons, anchors, foundation caps, grade beams, slabs on grade & foundation wa	1	Lump Sum	$14,751,762	$14,751,762
21	Cellar Ventilation System	1	Lump Sum	$300,000	$300,000
22	Waterproofing		SF		$1,363,164
				Subtotal	**$57,608,619**
Engineering Fees					
23	UST Remedial Interim Measures (excavation, decommisioning, disposal)	2	Moblization	$25,000	$50,000
24	Endpoint Sampling (sidewall, bottom) Analysis VOCs, SVOCs, Metals	74	Sample	$475	$35,150
26	Endpoint Sampling QA/QC samples (1 for every 20)	4	Sample	$475	$1,900
27	Endpoint Sampling DUSRs	37	Report	$2,200	$81,400
28	Remedial Oversight / Dust, Odor, and Vapor Control	18	Month	$35,000	$630,000
29	Dewatering Sampling Events (During and Post Remedial) Includes Analytical Analysis	4	Events	$8,000	$32,000
30	BCP Engineering Services (Remedial Design, Closure Reporting)	18	Month	$5,000	$90,000
31	Bid Specs and Construction Administration	1	Lump Sum	$60,000	$60,000
				Subtotal	**$980,450**
				Remediation Contingency (10% of contractor fee)	$5,760,862
				2016 Total Estimated Cost	**$64,349,931**

Assumptions and Conditions:

Soil volumes based on excavating the Site to approximately 30 feet below current grade.

The density used for conversion from cubic yards to tons was 1.58 tons per cubic yard.

Table 11B
Remedial Cost Estimate - Alternative II
Remedial Action Work Plan
515 West 18th Street

Item No.	Description	Estimated Quantity	Unit	Unit Price	Cost
Contractor Fees for Remedial Action					
1	Decontamination Pad/Area	2	Lump Sum	$125,000	$250,000
2	Support of Excavation: Sheeting (permanent hydraulic barrier)		SF		$3,487,860
3	Support of Excavation: Soil Mix Walls (N and S of the High Line)		vertical foot		$1,273,090
4	Soil Excavation, Handling and Disposal Non-Haz Historic	5,976	Ton	$115	$689,630
5	Soil Excavation, Handling and Disposal Coal Tar Impacted	9,726	Ton	$240	$2,337,577
6	Soil Excavation, Handling and Disposal Hazardous	7,678	Ton	$240	$1,845,455
7	Soil Excavation, Handling and Disposal Petroleum Impacted	12,797	Ton	$219	$2,807,022
8	Foam Suppressant (Vapor/Odor Control)	12	Month	$25,000	$300,000
9	Clean Imported Material (to raise the subgrade within the holders +3')	2,250	Ton	$155	$348,750
10	Dewatering, Fees and Treatment	1	Lump Sum	$3,500,000	$3,500,000
11	Contaminated Water Disposal - NAPL Impacted	400,000	Allowance Gallons/year	$0.63	$250,000
12	NYCDEP Approved and Treated Discharge	1,000,000	Allowance Gallons/year	$0.13	$125,000
13	Vapor Barrier/Waterproofing	19,400	SF	$7	$136,316
				Subtotal	$17,350,701
Engineering Fees for Remedial Action					
14	UST Remedial Interim Measures (excavation, decommisioning, disposal)	2	Moblization	$25,000	$50,000
15	Remedial Oversight / Dust, Odor, and Vapor Control	15	Month	$35,000	$525,000
16	Endpoint Sampling (sidewall, bottom, HL) Analysis VOCs, SVOCs, Metals	13	Sample	$475	$6,175
17	Endpoint Sampling QA/QC samples (1 for every 20)	1	Sample	$475	$475
18	Endpoint Sampling DUSRs	7	Report	$2,200	$15,400
19	Dewatering Sampling Events (During and Post Remedial) Includes Analytical Analysis	4	Events	$8,000	$32,000
20	Institutional Controls	1	Lump Sum	$80,000	$80,000
21	BCP Engineering Services (Remedial Design, Closure Reporting, Oversight for Vapor Barrier Installation)	15	Month	$9,000	$135,000
22	Environmental Specifications and Contractor Coordination for BCP Complience	1	Lump Sum	$60,000	$60,000
23	Annual PE Certification of Engineering Controls	20	Year	$5,000	$100,000
				Subtotal	$1,004,050
				Remedial Total	**$18,354,751**
Contractor Fees for Development					
24	Remediation Facilities, Mobilization, Demobilization, Permits, and Site Maintenance	1	Allowance	$700,000	$700,000
25	Temporary/Construction Fence	1,020	Linear Feet	$154	$156,825
26	Support of Excavation: Tiebacks and Walers		n/a		$1,141,089
27	Con Ed Vault (Driven Solder Piles & Lagging)	1	n/a	$222,743	$222,743
28	Support of Excavation: High Line Pile Caps		n/a	$334,000	$334,000
29	Waste Characterization	1	Lump Sum	$350,000	$350,000
30	Soil Excavation, Handling and Disposal Non-Haz Historic	15,011	Tons	$115	$1,726,265
31	Foundation (piles, caissons, anchors, foundation caps, grade beams, slabs on grade & foundation walls)	1	Lump Sum	$14,751,762	$14,751,762
32	Cellar Ventilation System	1	Lump Sum	$300,000	$300,000
33	Vapor Barrier/Waterproofing	174,600	SF	$7	$1,226,848
				Development Total	$20,909,532
				2017 Total Estimated Cost without Contingecy	**$39,264,283**

Assumptions and Conditions:

Soil volumes based on excavating the Site to approximately 18 feet below current grade with localized deeper excavations.

The density used for conversion from cubic yards to tons was 1.58 tons per cubic yard.

Soil volumes per waste stream were estimated using existing soil data and represent the following percentage breakdowns:

41% Non Haz, 25% Petro Impacted, 19% Coal Tar Impacted and 15% Haz

Soil volumes for development are assumed to be Non Haz

Rakers and walers are necessary to support the installation of the sheeting and excavation of material to 15 feet below grade

The soil mix walls are a componenet of the sheeting system and a part of the permanent hydruailc barrier against site recontamination

Costs assocaited with odor suppression assume a level of odor that would be properly mitigated using foam, these costs are subject to change based upon varing field conditions encountered during excavation

Costs associated with dewatering, contaminated water disposal and treated discharge assume a 12 month dewatering period and an average number of gallons per day, these costs are subject to change based upon actual dewatering system operation and field conditions encountered during excavation

Table 12 - Emergency Site Contacts
515 West 18th Street
NYSDEC BCP No. C231093
Remedial Action Work Plan

Contact Name	Email	Phone
New York State Department of Environmental Conservation		
Elizabeth Lukowski, Project Manager	elizabeth.lukowski@dec.ny.gov	(518) 402-9680
New York State Department of Health		
TBD		
Integral Engineering P.C.		
Kevin McCarty, Principal	kmccarty@integral-corp.com	(212) 440-6714 (o); (917) 510-5147 (m)
Alana Carroll, Project Manager	acarroll@integral-corp.com	(212) 440-6706 (o); (646) 895-1430 (m)
Jordan Junion, Field Team Leader	jjunion@integral-corp.com	(212) 440-6705 (o); (646) 946-9320 (m)
18th Highline Associates, L.L.C. (Site Owner)		
Frank Montresi, Project Manager	FMonterisi@Related.com	(212) 801-3511 (o); (917) 226-8265 (m)

Appendix E

Excavation Work Plan

APPENDIX E – EXCAVATION WORK PLAN (EWP)

E-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	Contact Information
Douglas MacNeal, Project Manager	(518) 402-9662, douglas.macneal@dec.ny.gov
Samsudeen Arakhan, Regional Remediation Engineer	(718) 482-4995, samsudeen.arakhan@dec.ny.gov
Kelly A. Lewandowski, P.E., Chief, Site Control Section	(518) 402-9543, kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;

- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-Site disposal and material that requires testing to determine if the material can be reused on-Site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-Site disposal of materials and on-Site reuse is provided in Sections 6 and 7 of this Appendix.

E-3 SOIL STAGING METHODS

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

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.

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 the NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

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

A truck wash will be operated on-Site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

E-5 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.

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

Truck transport routes are as follows: trucks will exit the Site onto West 18th Street or 10th Avenue and head north on 10th Avenue. The trucks will continue onto Route 495, after which State highways and interstate roadways will predominantly be utilized thereafter to the final destination. A map depicting the trucking route is shown below.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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

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

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

E-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

E-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site. Contaminated on-Site material, including historic fill and contaminated soil, that is acceptable for reuse on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site.

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including but not limited to, excavation dewatering and decontamination waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-Site, unless prior approval is obtained from NYSDEC.

E-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the decision document. The existing cover system is comprised of an18-inch pressure slab that spans the entire footprint of the building. In places where the foundation was offset from existing adjacent buildings, the unexcavated material between the foundation walls and the property line was capped with a structural concrete slab. The cover system located above areas that met Track 4 requirements must be repaired in accordance with this SMP. Figure 8 shows the location of the cover system and applicable Track 2 and Track 4 locations. If the type of cover system changes from that which exists prior to the excavation (e.g., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

E-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 3. 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.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

E-11 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 the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

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

E-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

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. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

E-13 COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan (CAMP) will comply with the NYSDOH Generic CAMP and OSHA standards for construction (29 CFR 1926). Continuous monitoring on the perimeter of the work zones for odor, VOCs, and dust will be required for all ground intrusive activities within areas of the Site that met Track 4 requirements. Locations of air monitoring stations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least one downwind monitoring station. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers. Appendix G includes the NYSDOH Generic CAMP.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. Specific odor control methods to be used on a routine basis will include monitoring open excavations with a photoionization detector. If nuisance odors are identified at the Site boundary, or if odor complaints are received, 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 any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (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.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

E-15 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 through the use of a dedicated on-Site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger Sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

E-16 OTHER NUISANCES

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

Appendix F

Health and Safety Plan

HEALTH AND SAFETY PLAN
for
515 West 18th Street
Site Management Plan

515 West 18th Street
Manhattan, New York
Block 690, Lots 20 & 29
BCP # C231093
OER #15TMP0268M & 15EHAN268M

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
18th Highline Associates, L.L.C.
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New York, NY 10023

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December 2018

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared in conformance with the Occupational Safety and Health Administration (OSHA) standards and guidance that govern site investigation activities, other applicable regulations, and Tenen Environmental LLC (Tenen) health and safety policies and procedures. The purpose of this HASP is the protection of Tenen field personnel and others during the implementation of the Site Management Plan.

The Site is a irregular-shaped parcel of approximately 46,000 square feet located on the north side of West 18th Street and extending along the west side of 10th Avenue. The property extends back to the south side of West 19th Street. Other addresses associated with the Site are 511 West 18th Street and 131 10th Avenue. The tax map designation of the property is Block 690, Lots 20 & 29.

The site is a portion of the larger former West 18th Street Gas Works site, one of the MGP sites covered by the Con Edison VCA No. D2-0003-02-08, Site No. V00530. Previous investigations were conducted between 2005 and 2017 to evaluate environmental impacts at the Site. Petroleum related volatile organic compounds (VOCs), likely attributed to the historic uses of the Site, were identified in soil and groundwater sampling results. Four historical spills are also associated with the Site (NYSDEC Spill Nos. 9414276, 9514181, 9612012, and 0905252), all of which have since been closed. Subsurface investigations focused on potential manufactured gas plant (MGP) impacts (coal tar) due to historic uses of the Site as a gas works. Multiple subsurface investigations confirmed the presence of tar-like material (TLM) and oil-like material (OLM) within the northern and southern gas holders in Lot 29. Based on the distribution and location of the material, it was determined that the source is from the Site. These findings were consistent with the documented presence of a former gas works.

1.1 Scope of HASP

This HASP includes safety procedures to be used by Tenen staff during the following activities:

- Inspection of permanent environmental controls

2.0 PROJECT SAFETY AUTHORITY

The following personnel are responsible for project health and safety under this HASP.

- Project Manager: Alana Carroll, CPG
- Health and Safety Officer (HSO): Matthew Carroll, P.E.

In addition, each individual working at the Site will be responsible for compliance with this HASP and general safe working practices. All Site workers will have the authority to stop work if a potentially hazardous situation or event is observed.

2.1 Designated Personnel

The Project Manager is responsible for the overall operation of the project, including compliance with the HASP and general safe work practices. The Project Manager may also act as the Health and Safety Officer (HSO) for this project.

The HSO will be responsible for the implementation of the HASP. The HSO will have a 4-year college degree in occupational safety or a related science/engineering field, and at least two (2) years of experience in implementation of air monitoring and hazardous materials sampling programs. The HSO will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards, with annual 8-hour refresher training.

The HSO will be present on-site during all field operations involving drilling or other subsurface disturbance, and will be responsible for all health and safety activities and the delegation of duties to the field crew. The HSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO must be absent from the field, a replacement who is familiar with the health and safety plan, air monitoring and personnel protective equipment (PPE) will be designated.

3.0 HAZARD ASSESSMENT AND CONTROL MEASURES

Known previous uses of the Site include a manufactured gas plant, a storage yard, an automobile garage, a wagon yard, and a parking lot with a gasoline filling station. Historically, two 250,000 cubic feet gas holders were located on Lot 29. Four 550-gallon USTs and one 4,000-gallon UST were also located on Lot 20. Previous investigations at the Site were conducted between 2005 and 2017, and identified petroleum related VOCs present in the soil and groundwater. TLM and OLM was also detected in Lot 29 within the historic gas holders.

3.1 Human Exposure Pathways

The media of concern at the Site includes potentially impacted soil and groundwater. Potential exposure pathways include dermal contact and incidental ingestion. The risk of dermal contact and incidental ingestion will be minimized through general safe work practices, a personal hygiene program and the use of PPE. The risk of inhalation will be minimized through the use of an air monitoring program for volatile organic compounds and particulates.

3.2 Chemical Hazards

Based on historic research and sampling data, the following contaminants of concern are anticipated:

Petroleum Related VOCs

- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes

Coal Tar Residue

Material Safety Data Sheets (MSDSs) for each contaminant of concern are included in Appendix C. All personnel are required to review the MSDSs included in this HASP.

3.3 Physical Hazards

The physical hazards associated with the field activities likely present a greater risk of injury than the chemical constituents at the Site. Activities within the scope of this project shall comply with New York State and Federal OSHA construction safety standards.

Head Trauma
To minimize the potential for head injuries, field personnel will be required to wear National Institutes of Occupational Safety and Health (NIOSH)-approved hard hats during field activities. Hats must be worn properly and not altered in any way that would decrease the degree of protection provided.

Foot Trauma

To avoid foot injuries, field personnel will be required to wear steel-toed safety shoes while field activities are being performed. To afford maximum protection, all safety shoes must meet American National Standards Institute (ANSI) standards.

Eye Trauma
Field personnel will be required to wear eye protection (safety glasses with side shields) while field activities are being performed to prevent eye injuries caused by contact with chemical or physical agents.

Noise Exposure
Field personnel will be required to wear hearing protection (ear plugs or muffs) in high noise areas (noise from heavy equipment) while field activities are being performed.

Buried Utilities and Overhead Power Lines
Boring locations will be cleared by an underground utility locator service. In addition, prior to intrusive activities, the drilling subcontractor will contact the One Call Center to arrange for a utility mark-out, in accordance with New York State requirements. Protection from overhead power lines will be accomplished by maintaining safe distances of at least 15 feet at all times.

Thermal Stress
The effects of ambient temperature can cause physical discomfort, personal injury, and increase the probability of accidents. In addition, heat stress due to lack of body ventilation caused by protective clothing is an important consideration. Heat-related illnesses commonly consist of heat stroke and heat exhaustion.

The symptoms of heat stroke include: sudden onset; change in behavior; confusion; dry, hot and flushed skin; dilated pupils; fast pulse rate; body temperature reaching 105° or more; and/or, deep breathing later followed by shallow breathing.

The symptoms of heat exhaustion include: weak pulse; general weakness and fatigue; rapid shallow breathing; cold, pale and clammy skin; nausea or headache; profuse perspiration; unconsciousness; and/or, appearance of having fainted.

Heat-stress monitoring will be conducted if air temperatures exceed 70 degrees Fahrenheit. The initial work period will be set at 2 hours. Each worker will check his/her pulse at the wrist for 30 seconds early in each rest period. If the pulse rate exceeds 110 beats per minute, the next work period will be shortened by one-third.

One or more of the following precautions will reduce the risk of heat stress on the Site:
- Provide plenty of liquids to replace lost body fluids; water, electrolytic drinks, or both will be made available to minimize the risk of dehydration and heat stress
- Establish a work schedule that will provide appropriate rest periods
- Establish work regimens consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines
- Provide adequate employee training on the causes of heat stress and preventive measures

In the highly unlikely event of extreme low temperatures, reasonable precautions will be made to avoid risks associated with low temperature exposure.

<u>Traffic</u>

Field activities will occur near public roadways. As a result, vehicular traffic will be a potential hazard during these activities and control of these areas will be established using barricades or traffic cones. Additional staff will be assigned, as warranted, for the sole purpose of coordinating traffic. Personnel will also be required to wear high-visibility traffic vests while working in the vicinity of the public roadways and local requirements for lane closure will be observed as needed. All work in public rights-of-way will be coordinated with local authorities and will adhere to their requirements for working in traffic zones.

<u>Hazardous Weather Conditions</u>

All Site workers will be made aware of hazardous weather conditions, specifically including extreme heat, and will be requested to take the precautions described herein to avoid adverse health risks. All workers are encouraged to take reasonable, common sense precautions to avoid potential injury associated with possible rain or high wind. Conditions of sleet, snow or freezing are extremely unlikely.

<u>Slip, Trip and Fall</u>

Areas at the Site may be slippery from mud or water. Great care should be taken by all Site workers to avoid slip, trip and fall hazards. Workers shall not enter areas that not have adequate lighting. Additional portable lighting will be provided at the discretion of the HSO.

<u>Biological Hazards</u>

Drugs and alcohol are prohibited from the Site. Any on-site personnel violating this requirement will be immediately expelled from the Site.

It is the responsibility of any worker or oversight personnel with a medical condition that may require attention should inform the HSO of such condition. The HSO will describe appropriate measures to be taken if the individual should become symptomatic.

Due to the Site location in an urban area, it is highly unlikely that poisonous snakes, spiders, plants, and insects will be encountered. However, other animals (dogs, cats, etc.) may be encountered, and care should be taken to avoid contact.

4.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks is based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, "General Description and Discussion of the Levels of Protection and Protective Gear."

Tenen field personnel and other site personnel will begin work in Level D personal protective equipment. During activities such as drilling, well installation, or sampling, where there is a chance of contact with contaminated materials, modified Level D equipment will be worn. The protection will be upgraded to Level C if warranted by the results of the air monitoring. A description of the personnel protective equipment for Levels D and C is provided below.

Level D
Respiratory Protection: None
Protective Clothing: Hard hat, steel-toed shoes, long pants, nitrile gloves

Modified Level D
Respiratory Protection: None
Protective Clothing: Hard hat, steel-toed shoes, coveralls/tyvek, nitrile gloves

Level C
Respiratory Protection: Air purifying respirator with organic vapor cartridges and filters.
Protective Clothing: Same as modified Level D

5.0 EXPOSURE MONITORING

Selective monitoring of workers in the exclusion area may be conducted, as determined by the HSO, if sources of hazardous materials are identified. Personal monitoring may be conducted in the breathing zone at the discretion of the Project Manager or HSO and, if workers are wearing respiratory protective equipment, outside the face-piece.

6.0 SITE ACCESS

Access to the Site during the investigation will be controlled by the Project Manager or HSO. Unauthorized personnel will not be allowed access to the Site.

7.0 DECONTAMINATION PROCEDURES

Personnel Decontamination
Personnel decontamination (decon), if deemed necessary by the HSO, will take place in the designated decontamination area delineated for each sampling location. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Tyvek removal;
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

Equipment Decontamination
Sampling equipment, such as split-spoons and bailers, will be decontaminated in accordance with U.S. Environmental Protection Agency methodologies, as described in the work plan. Because site soil is considered essentially non-hazardous, there is no need to decontaminate vehicles used for transporting equipment and personnel over the Site.

Disposal of Materials
Purged well water, water used to decontaminate any equipment and well cuttings will be containerized and disposed off-site in accordance with federal, state and local regulations.

8.0 GENERAL SAFE WORK PRACTICES

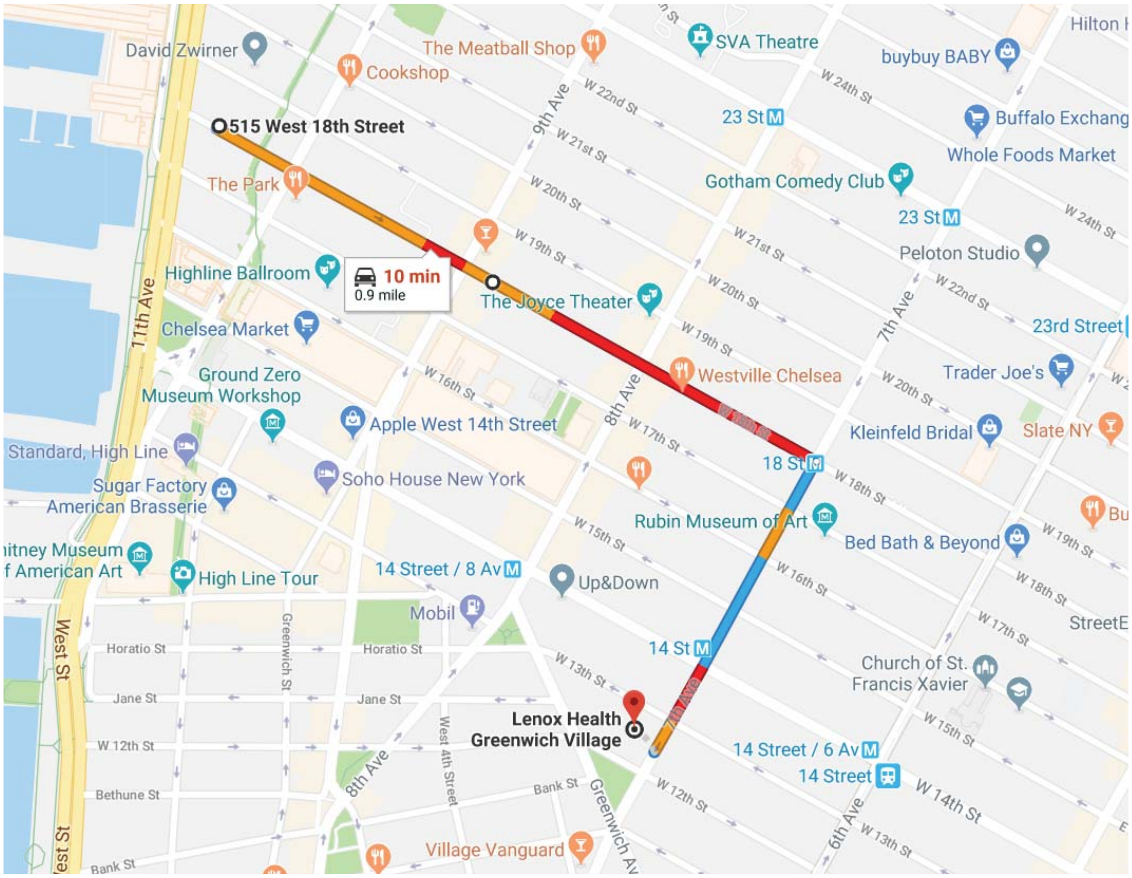
To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the HSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- Removal of potential contamination from PPE and equipment by blowing, shaking or any means that may disperse materials into the air is prohibited.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.
- Personnel will be cautioned to inform each other of symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract and heat stress.
- No excessive facial hair that interferes with a satisfactory fit of the face-piece of the respirator to the face will be allowed on personnel required to wear respiratory protective equipment.
- On-site personnel will be thoroughly briefed about the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods.

9.0 EMERGENCY PROCEDURES

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and will have someone call for an ambulance, if needed. If the nature of the injury is not serious—i.e., the person can be moved without expert emergency medical personnel—on-site personnel should drive him to a hospital. **The nearest emergency room is at Lenox Health Greenwich Village at 30 70th Avenue, New York, NY 10011. The phone number is (646) 665-6000.** The route to the hospital is shown and detailed on the next page.

9.1 Route to Hospital (Woodhull Medical Center at 760 Broadway, Brooklyn, NY 11206)



Driving directions to **Woodhull Medical Center** from **56 North 9th Street, Brooklyn, New York**

1. Head southwest on West 18th Street towards 10th Avenue
2. Turn right on 7th Avenue
3. The emergency room is on the right, after the a Wells Fargo on the right

Emergency Contacts

There will be an on-site field phone. Emergency and contact telephone numbers are listed below:

Table 1 – Emergency Contacts

Ambulance	911
Emergency Room	(646) 665-6000
NYSDEC Spill Hotline	(800) 457-7362
Tenen Project Manager, Alana Carroll	(646) 248-6795
HSO, Matthew Carroll	(646) 606-2332 x103
Owner, Frank Monterisi	(212) 801-3511

10.0 TRAINING

All personnel performing the field activities described in this HASP will have received the initial safety training required by 29 CFR, 1910.120. Current refresher training status also will be required for all personnel engaged in field activities.

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All field personnel must attend a training program covering the following areas:

- potential hazards that may be encountered;
- the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- the purpose and limitations of safety equipment; and
- protocols to enable field personnel to safely avoid or escape from emergencies.

Each member of the field crew will be instructed in the above objectives before he/she goes onto the site. The HSO will be responsible for conducting the training program.

11.0 MEDICAL SURVEILLANCE

All Tenen and subcontractor personnel performing field work involving drilling or other subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). The medical examination for Tenen employees will, at a minimum, be provided annually and upon termination of hazardous waste site work.

Appendix A

Acknowledgement of HASP

ACKNOWLEDGMENT OF HASP

Below is an affidavit that must be signed by all Tenen employees and Tenen subcontractors that enter the site. A copy of the HASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I, the undersigned, have read the Health and Safety Plan (HASP) for the 515 West 18th Street Site. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signature: ________________________________ Date: _________________

Company: ____

Signature: ________________________________ Date: _________________

Company: ____

Signature: ________________________________ Date: _________________

Company: ____

Signature: ________________________________ Date: _________________

Company: ____

Signature: ________________________________ Date: _________________

Company: ____

Appendix B

Injury Reporting Form (OSHA Form 300)

How to Fill Out the Log

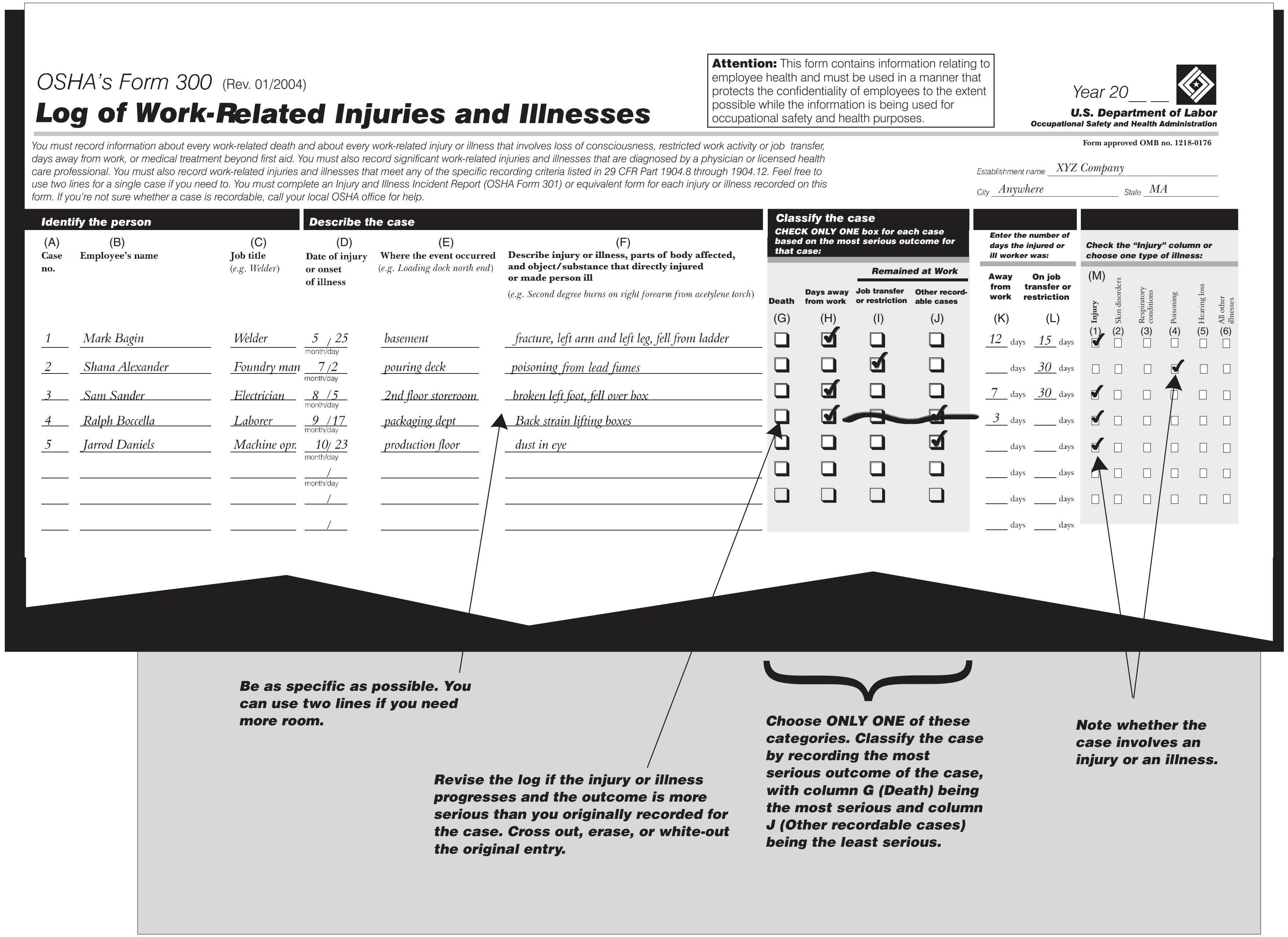
The *Log of Work-Related Injuries and Illnesses* is used to classify work-related injuries and illnesses and to note the extent and severity of each case. When an incident occurs, use the *Log* to record specific details about what happened and how it happened.

If your company has more than one establishment or site, you must keep separate records for each physical location that is expected to remain in operation for one year or longer.

We have given you several copies of the *Log* in this package. If you need more than we provided, you may photocopy and use as many as you need.

The *Summary* — a separate form — shows the work-related injury and illness totals for the year in each category. At the end of the year, count the number of incidents in each category and transfer the totals from the *Log* to the *Summary*. Then post the *Summary* in a visible location so that your employees are aware of injuries and illnesses occurring in their workplace.

You don't post the Log. You post only the Summary at the end of the year.


OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name *XYZ Company*
City *Anywhere* State *MA*

Identify the person			Describe the case			Classify the case — CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness:					
								Remained at Work				(M)					
(A) Case no.	(B) Employee's name	(C) Job title (e.g. Welder)	(D) Date of injury or onset of illness	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	(G) Death	(H) Days away from work	(I) Job transfer or restriction	(J) Other record-able cases	(K) Away from work	(L) On job transfer or restriction	(1) Injury	(2) Skin disorders	(3) Respiratory conditions	(4) Poisoning	(5) Hearing loss	(6) All other illnesses
1	Mark Bagin	Welder	5 / 25 month/day	basement	fracture, left arm and left leg, fell from ladder	☐	☑	☐	☐	12 days	15 days	☑	☐	☐	☐	☐	☐
2	Shana Alexander	Foundry man	7 / 2 month/day	pouring deck	poisoning from lead fumes	☐	☐	☑	☐	__ days	30 days	☐	☐	☐	☑	☐	☐
3	Sam Sander	Electrician	8 / 5 month/day	2nd floor storeroom	broken left foot, fell over box	☐	☑	☐	☐	7 days	30 days	☑	☐	☐	☐	☐	☐
4	Ralph Boccella	Laborer	9 / 17 month/day	packaging dept	Back strain lifting boxes	☐	☑	~~☐~~	~~☑~~	3 days	__ days	☑	☐	☐	☐	☐	☐
5	Jarrod Daniels	Machine opr.	10/ 23 month/day	production floor	dust in eye	☐	☐	☐	☑	__ days	__ days	☑	☐	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	__ days	__ days	☐	☐	☐	☐	☐	☐
			/			☐	☐	☐	☐	__ days	__ days	☐	☐	☐	☐	☐	☐
			/							__ days	__ days						

U.S. Department of Labor
Occupational Safety and Health Administration

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ____________________

City ____________________ *State* __________

Identify the person			Describe the case			Classify the case: CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness: (M)					
								Remained at Work									
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., Welder*)	(D) Date of injury or onset of illness	(E) Where the event occurred (*e.g., Loading dock north end*)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., Second degree burns on right forearm from acetylene torch*)	Death (G)	Days away from work (H)	Job transfer or restriction (I)	Other record-able cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
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			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐	☐
					Page totals ➤	___	___	___	___	___	___	___	___	___	___	___	___
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Appendix C

Material Safety Data Sheets (MSDS)

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability: Stable under normal conditions.

Conditions of instability: None known.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizers.

Hazardous decomposition products: See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

<u>Effects of Acute Exposure</u>

Eye contact: May cause irritation.

Skin contact: Prolonged contact may cause irritation.

Inhalation: Airborne particles may cause irritation.

Ingestion: May cause vomiting and diarrhea.
May cause abdominal pain.
May cause gastric distress.

Effects of chronic exposure: Contains an ingredient which may be corrosive.

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available for mixture, see the ingredients section.

Exposure limit of material: Not available for mixture, see the ingredients section.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

<u>First Aid</u>

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
Seek medical attention if symptoms persist.

Ingestion: Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.
Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

SAFETY DATA SHEET

Isobutylene

Section 1. Identification

GHS product identifier : Isobutylene

Chemical name : 2-methylpropene

Other means of identification : 1-Propene, 2-methyl-; Isobutene; Isobutylene; 1-Propene, 2-methyl- (isobutene)

Product use : Synthetic/Analytical chemistry.

Synonym : 1-Propene, 2-methyl-; Isobutene; Isobutylene; 1-Propene, 2-methyl- (isobutene)

SDS # : 001031

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Emergency telephone number (with hours of operation) : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Never Put cylinders into unventilated areas of passenger vehicles. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use and store only outdoors or in a well ventilated place.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage : Protect from sunlight. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Section 2. Hazards identification

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : 2-methylpropene

Other means of identification : 1-Propene, 2-methyl-; Isobutene; Isobutylene; 1-Propene, 2-methyl- (isobutene)

CAS number/other identifiers

CAS number : 115-11-7

Product code : 001031

Ingredient name	%	CAS number
2-methylpropene	100	115-11-7

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Section 4. First aid measures

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 6. Accidental release measures

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2-methylpropene	**ACGIH TLV (United States, 3/2012).** TWA: 250 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Gas. [Liquefied compressed gas.]
Color	: Colorless.
Molecular weight	: 56.12 g/mole
Molecular formula	: C4-H8
Boiling/condensation point	: -6.9°C (19.6°F)
Melting/freezing point	: -140.7°C (-221.3°F)
Critical temperature	: 144.75°C (292.6°F)
Odor	: Characteristic.
Odor threshold	: Not available.
pH	: Not available.
Flash point	: Closed cup: -76.1°C (-105°F)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Lower and upper explosive (flammable) limits	: Lower: 1.8% Upper: 9.6%

Section 9. Physical and chemical properties

Vapor pressure	:	24.3 (psig)
Vapor density	:	1.94 (Air = 1)
Specific Volume (ft^3/lb)	:	6.6845
Gas Density (lb/ft^3)	:	0.1496 (25°C / 77 to °F)
Relative density	:	Not applicable.
Solubility	:	Not available.
Solubility in water	:	0.263 g/l
Partition coefficient: n-octanol/water	:	2.34
Auto-ignition temperature	:	465°C (869°F)
Decomposition temperature	:	Not available.
SADT	:	Not available.
Viscosity	:	Not applicable.

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatibility with various substances	:	Extremely reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	:	Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2-methylpropene	LC50 Inhalation Vapor	Rat	550000 mg/m^3	4 hours

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Section 11. Toxicological information

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact	:	No known significant effects or critical hazards.
Inhalation	:	No known significant effects or critical hazards.
Skin contact	:	No known significant effects or critical hazards.
Ingestion	:	As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	No specific data.
Inhalation	:	No specific data.
Skin contact	:	No specific data.
Ingestion	:	No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	:	Not available.
Potential delayed effects	:	Not available.

Long term exposure

Potential immediate effects	:	Not available.
Potential delayed effects	:	Not available.

Potential chronic health effects

Not available.

General	:	No known significant effects or critical hazards.
Carcinogenicity	:	No known significant effects or critical hazards.
Mutagenicity	:	No known significant effects or critical hazards.
Teratogenicity	:	No known significant effects or critical hazards.
Developmental effects	:	No known significant effects or critical hazards.
Fertility effects	:	No known significant effects or critical hazards.

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
2-methylpropene	2.34	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1055	UN1055	UN1055	UN1055	UN1055
UN proper shipping name	ISOBUTYLENE	ISOBUTYLENE	ISOBUTYLENE	ISOBUTYLENE	ISOBUTYLENE
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 

Section 14. Transport information

Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: 150 kg **Special provisions** 19, T50	**Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Ship Index** Forbidden **Passenger Carrying Road or Rail Index** Forbidden **Special provisions** 29	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 0 Forbidden **Cargo Aircraft Only** Quantity limitation: 150 kg

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act (CAA) 112 regulated flammable substances: 2-methylpropene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Sudden release of pressure

Section 15. Regulatory information

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
2-methylpropene	100	Yes.	Yes.	No.	No.	No.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

Canada inventory : This material is listed or exempted.

International regulations

International lists : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class A: Compressed gas.
Class B-1: Flammable gas.

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	4
Physical hazards	2

Section 16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing	: 10/15/2014.
Date of issue/Date of revision	: 10/15/2014.
Date of previous issue	: 10/6/2014.
Version	: 0.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United NationsACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
CAS – Chemical Abstract Services
CEPA – Canadian Environmental Protection Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA)
CFR – United States Code of Federal Regulations
CPR – Controlled Products Regulations
DSL – Domestic Substances List
GWP – Global Warming Potential
IARC – International Agency for Research on Cancer
ICAO – International Civil Aviation Organisation
Inh – Inhalation
LC – Lethal concentration
LD – Lethal dosage
NDSL – Non-Domestic Substances List
NIOSH – National Institute for Occupational Safety and Health

Section 16. Other information

TDG – Canadian Transportation of Dangerous Goods Act and Regulations
TLV – Threshold Limit Value
TSCA – Toxic Substances Control Act
WEEL – Workplace Environmental Exposure Level
WHMIS – Canadian Workplace Hazardous Material Information System

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

1 Identification of the Substance/mixture and of the Company/Undertaking

1.1 Product identifier
Trade name: LIQUINOX
Application of the substance / the preparation: Hand detergent.

1.2 Relevant identified uses of the substance or mixture and uses advised against:
No additional information available.

1.3 Details of the supplier of the Safety Data Sheet
Manufacturer/Supplier:
Alconox, Inc.
30 Glenn St., Suite 309
White Plains, NY 10603
Phone: 914-948-4040

Further information obtainable from: Product Safety Department.

1.4 Emergency telephone number:
ChemTel Inc.: (800)255-3924, +1 (813)248-0585

2 Hazards Identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008:
Classification according to Directive 67/548/EEC or Directive 1999/45/EC:

GHS07
Skin Irrit. 2, H315: Causes skin irritation.

Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classification system:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:
The product is classified and labelled according to the CLP regulation.

Hazard pictograms:

GHS07

Signal word: Warning

Hazard-determining components of labelling:
Alkyl benzene sulfonic acid, sodium salt.

Hazard statements:
H315: Causes skin irritation.

Precautionary statements:

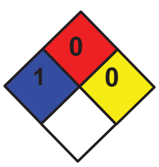
P332+P313: If skin irritation occurs: Get medical advice/attention.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazard description:
WHMIS-classification and symbols:
D2B - Toxic material causing other toxic effects

NFPA ratings (scale 0 - 4)



Health = 1
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH	1	Health = 1
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/Information on Ingredients

3.2 Chemical characterization: Mixture
Description: Hazardous ingredients of mixture listed below.

Identifying Nos.	Description	Wt. %
CAS: 68081-81-2	Alkyl benzene sulfonic acid, sodium salt	10 - 25%
CAS: 1300-72-7 EINECS: 215-090-9	Sodium xylene sulphonate	2.5 - 10%
CAS: 84133-50-6	Alcohol Ethoxylate	2.5 - 10%
CAS: 68603-42-9 EINECS: 271-657-0	Coconut diethanolamide	2.5 - 10%
CAS: 17572-97-3 EINECS: 241-543-5	Ethylenediaminetetraacetic acid, tripotassium salt	2.5 - 10%

Additional information: For the wording of the listed risk phrases refer to section 16.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

4 First Aid Measures

4.1 Description of first aid measures

General information:

Take affected persons out into the fresh air.

After inhalation:

Supply fresh air; consult doctor in case of complaints.

After skin contact:

Immediately wash with water and soap and rinse thoroughly for 30 minutes. If skin irritation continues, consult a doctor.

After eye contact:

Remove contact lenses if worn.

Rinse opened eye for at least 30 minutes under running water, lifting upper and lower lids occasionally. Immediately consult a doctor.

After swallowing:

Do not induce vomiting; call for medical help immediately. Rinse out mouth and then drink plenty of water.

A person vomiting while laying on their back should be turned onto their side.

4.2 Most important symptoms and effects, both acute and delayed:

Irritating, all routes of exposure.

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information available.

5 Firefighting Measures

5.1 Extinguishing media:

Suitable extinguishing agents:

CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture:

No additional information available.

5.3 Advice for firefighters:

Protective equipment:

Wear self-contained respiratory protective device.

Wear fully protective suit.

6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.

Particular danger of slipping on leaked/spilled product.

6.2 Environmental precautions:

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Clean the affected area carefully; suitable cleaners are: Warm water

Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

6.4 Reference to other sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information

7 Handling and Storage

7.1 Precautions for safe handling:

No special precautions are necessary if used correctly.

Information about fire - and explosion protection:

No special measures required.

7.2 Conditions for safe storage, including any incompatibilities:
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: No special requirements.
Further information about storage conditions: None

7.3 Specific end use(s): No additional information available.

8 Exposure Controls/Personal Protection

8.1 Control parameters
Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls:
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Respiratory protection:
Not required under normal conditions of use.
Protection of hands:

Protective gloves
The glove material has to be impermeable and resistant to the product. Selection of the glove material should be based on the penetration time, rates of diffusion and the degradation of the glove material.
Material of gloves:
The selection of a suitable gloves does not only depend on the material, but also on the quality, and varies from manufacturer to manufacturer.
Penetration time of glove material:
The exact break through time has to be determined by the manufacturer of the protective gloves. DO NOT exceed the breakthrough time set by the Manufacturer.
For long term contact, gloves made of the following materials are considered suitable:
Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber (NR)
Neoprene gloves
Eye protection:

Safety glasses
Goggles recommended during refilling.

Body protection: Protective work clothing

9 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

General Information:	
Appearance:	
Form:	Liquid
Color:	Light Yellow
Odor:	Odorless
Odor threshold:	Not determined.
pH-value:	8.5
Change in condition:	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	100°C
Flash point:	Not applicable.
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	Not applicable.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure at 20°C:	23 hPa
Density:	1.08 g/cm³
Relative density:	Not determined.
Vapor density:	Not determined.
Evaporation rate:	Not determined.
Solubility in / Miscibility with water:	Fully miscible.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	Not determined.
Solids content:	Not determined.
9.2 Other information:	No additional information available.

10 Stability and Reactivity

10.1 Reactivity:

10.2 Chemical stability:

Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions:

Reacts with strong oxidizing agents. Reacts with strong acids.

10.4 Conditions to avoid:

No additional information available.

10.5 Incompatible materials:

No additional information available.

10.6 Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Sulphur oxides (SOx)
Nitrogen oxides

11 Toxicological Information

11.1 Information on toxicological effects:
Toxicity data: Toxicity data is available for mixture:
Primary irritant effect:
On the skin: Irritating to skin and mucous membranes.
On the eye: Strong irritant with the danger of severe eye injury.
Sensitization: No sensitizing effects known.
Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Irritant

12 Ecological Information

12.1 Toxicity:
Aquatic toxicity: No additional information available.
12.2 Persistence and degradability: Biodegradable.
12.3 Bioaccumulative potential: Does not accumulate in organisms.
12.4 Mobility in soil: No additional information available.
Additional ecological information:
General notes:
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or un-neutralized.
12.5 Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects: No additional information available.

13 Disposal Considerations

13.1 Waste treatment methods:
Recommendation:
Smaller quantities can be disposed of with household waste.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agents: Water, together with cleansing agents, if necessary.

14 Transport Information

14.1 UN-Number:
DOT, ADR, ADN, IMDG, IATA: Not Regulated

14.2 UN proper shipping name:
DOT, ADR, IMDG, IATA: Not Regulated

14.3 Transport hazard class(es):
DOT, ADR, IMDG, IATA:
Class: Not Regulated
Label: -

14.4 Packing group:
DOT, ADR, IMDG, IATA: Not Regulated

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user: Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN "Model Regulation": Not Regulated

15 Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
United States (USA):
SARA:
Section 355 (extremely hazardous substances): None of the ingredient is listed.
Section 313 (Specific toxic chemical listings): None of the ingredient is listed.
TSCA (Toxic Substances Control Act): All ingredients are listed.

Proposition 65 (California):
Chemicals known to cause cancer: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for females: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for males: None of the ingredient is listed.
Chemicals known to cause developmental toxicity: None of the ingredient is listed.

Carcinogenic Categories:
EPA (Environmental Protection Agency): None of the ingredient is listed.
TLV (Threshold Limit Value established by ACGIH): None of the ingredient is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredient is listed.
OSHA-Ca (Occupational Safety & Health Administration): None of the ingredient is listed.
Canadá:
Canadian Domestic Substances List (DSL): All ingredients are listed.
Canadian Ingredient Disclosure list (limit 0.1%): None of the ingredient is listed.
Canadian Ingredient Disclosure list (limit 1%): None of the ingredient is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases:
H315: Causes skin irritation.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Abbreviations and Acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
IMDG: International Maritime Code for Dangerous Goods.
DOT: US Department of Transportation.
IATA: International Air Transport Association.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH: American Conference of Governmental Industrial Hygienists.
NFPA: National Fire Protection Association (USA).
HMIS: Hazardous Materials Identification System (USA).
WHMIS: Workplace Hazardous Materials Information System (Canada).
VOC: Volatile Organic Compounds (USA, EU).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.

SDS Created by:

Global Safety Management, Inc.
10006 Cross Creek Blvd
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Website: www.GSMSDS.com

Appendix G

Community Air Monitoring Plan

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

December 2009

Appendix H

Site Management Forms

Project Name: 515 West 18th Street

Project Number: BCP #C231093

Site Management Reporting Period:

Inspection Date:

Inspector and Certifier: Matthew Carroll, PE

Report Submittal Date:

Report Preparer: Tenen Environmental on behalf of 18th Highline Associates, L.L.C.

Site Inspection and Certification Letter Report

18th Highline Associates, L.L.C. c/o the Related Companies hereby submits a Site Management Inspection and Certification Report for the property located at 515 West 18th Street in the West Chelsea section of Manhattan, New York for the reporting period, [year] to [year], pursuant to the Site Management Plan (SMP) that is included in the NYSDEC approved Final Engineering Report (FER), dated [month/year]. The Site is identified as Block 690 and Lots 20 & 29 on the New York City Tax Map.

1.0 ENGINEERING CONTROLS

Engineering Controls were employed in the Remedial Action to assure permanent protection of public health by eliminating human exposure to residual materials remaining at the site. The Site has one Engineering Control System. The Engineering Control for this property is:

Composite Cover System

The composite cover system is a permanent control and the quality and integrity of those portions of this system over the Track 4 portions of the site will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

2.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls are required under the Remedial Action to assure permanent protection of public health by eliminating human exposure to residual materials remaining at the site. The Institutional Controls for the Remedial Action are:

- The property may be used for: restricted residential, commercial, and industrial uses (subject to applicable zoning);
- All ECs must be operated and maintained as specified in this SMP;

- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement; and,
- Vegetable gardens and farming on the site are prohibited.

3.0 INSPECTION NARRATIVE

The site inspection was performed by Matthew Carrol, PE. The date of the inspection was [date].

Provide comprehensive narrative description of the site inspection performed by the party preparing this report and the results of that inspection. The Site inspection must be performed by the P.E. or Qualified Environmental Professional (QEP) certifying this report. The narrative should be comprehensive and should include:

- Description of the inspection activities performed on each Engineering and Institutional Control;
- Description of the performance of each Engineering and Institutional Control;
- Description of findings, conclusions, or recommendations;
- Narrative that refers liberally to an addendum with photos of inspection;
- Description of any deficiencies that were identified during the inspection and how they were (or will be) corrected;
- Copy of any periodic maintenance inspection forms prepared by the building staff.

4.0 STATUS OF ENGINEERING AND INSTITUTIONAL CONTROLS

- Are the Engineering Controls and Institutional Controls employed at the Site continuing to perform as designed and continuing to be protective of human health and the environment?
  Response:
- Has anything occurred that impairs the ability of the Engineering Controls or Institutional Controls to protect public health and the environment?
  Response:
- Are any changes needed to the remedial systems or controls?
  Response:
- Has compliance with this SMP been maintained during this reporting period?
  Response:
- Are site records complete and up to date?
  Response:

5.0 DEVIATIONS IN PERFORMANCE OF ENGINEERING AND INSTITUTIONAL CONTROLS

6.0 NEXT INSPECTION

The next Site Management Inspection will be performed [year], and the Site Inspection and Periodic Review Report will be submitted by July 30, [year].

7.0 CERTIFICATION

I, Matthew Carroll, PE, certify the following:

- I am a Professional Engineer;
- I inspected 515 West 18th Street , NYSDEC BCP #C231093 on [date];
- I prepared this Site Inspection and Certification Letter Report;
- Engineering Controls or Institutional Controls employed at the Site continue to be in place and perform as designed and continue to be protective of human health and the environment;
- Activities on the Site that have disturbed residual soil/fill material have been in accordance with the Excavation Work Plan in the SMP;
- Site records are complete and up to date;

- Nothing has occurred on the Site that impairs the ability of Engineering Controls or Institutional Controls to protect public health and the environment;
- No changes are needed to the remedial systems or engineering controls;
- Compliance with the Site Management Plan has been maintained;
- Vegetable gardening and farming in residual soils has been prevented;
- Groundwater underlying the Site is not being utilized without treatment rendering it safe for the intended purpose has been prevented;
- The Site has not been used for a higher level of use other than the restricted residential, commercial or industrial use addressed by the Remedial Action;
- The Site continues to have a NYSDEC-approved Environmental Easement recorded with the property deed by the Manhattan Register’s Office.

QEP Name

QEP Signature

Date