
REMEDIAL INVESTIGATION REPORT

for

**475 BAY STREET AND 31 WAVE STREET
STATEN ISLAND, NEW YORK**

Prepared For:

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**August 2021
Langan Project No. 170610601**

LANGAN

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LIST OF ACRONYMS

Acronym	Definition
AAI	All Appropriate Inquiries
AGV	Air Guidance Values
AOC	Area of Concern
AST	Aboveground Storage Tank
ASTM	ASTM International
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Grade Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAMP	Community Air Monitoring Program
COC	Contaminants of Concern
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DOT	Department of Transportation
DUSR	Data Usability Summary Report
E-Designation	Environmental Designation
el	Elevation
ELAP	Environmental Laboratory Approval Program
USEPA	Environmental Protection Agency
ESA	Environmental Site Assessment
eV	Electron Volt
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FWRIA	Fish and Wildlife Resources Impact Analysis
GPR	Ground Penetrating Radar
GQS	Groundwater Quality Standards
HASP	Health and Safety Plan
ICP-AES	Inductively Coupled Plasma Atomic Emission Spectrometry
IDW	Investigation-Derived Waste
L/min	Liters per Minute
$\mu\text{g}/\text{m}^3$	Micrograms per Cubic Meter
$\mu\text{g}/\text{L}$	Micrograms per Liter
mg/kg	Milligrams per Kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ng/L	nanograms per liter
NAPL	Non-Aqueous Phase Liquid
NAVD88	North American Vertical Datum of 1988

Acronym	Definition
NTU	Nephelometric Turbidity Units
NYCRR	New York City Rules and Regulations
NYCT	New York City Transit
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
ppt	Parts per trillion
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RAWP	Remedial Action Work Plan
REC	Recognized Environmental Concerns
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RURR	Restricted Use – Restricted-Residential
SCO	Soil Cleanup Objective
SGVs	Ambient Water Quality Standards and Guidance Values for Class GA water
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

CERTIFICATION

I, Michael D. Burke, certify that I am currently a Qualified Environmental Professional as defined in 6 New York Codes, Rules, and Regulations Part 375 and that this Remedial Investigation Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).



Michael D. Burke, PG, CHMM

1.0 INTRODUCTION

This Remedial Investigation Report (RIR) was prepared on behalf of BFC 475 Residential LLC (the Volunteer) for the proposed development located at 475 Bay Street and 31 Wave Street (Block 488, Lots 9, 157, 162, and 164¹) in the Stapleton Heights neighborhood of Staten Island, New York (the site). The Volunteer plans to remediate the site in conjunction with a new affordable housing development under the New York State Brownfield Cleanup Program (BCP), pursuant to the Brownfield Cleanup Agreement (BCA) Site No. C243044 with the New York State Department of Environmental Conservation (NYSDEC), executed on November 12, 2020. The site was assigned an Environmental Designation (E-Designation) (E-429) for hazardous materials, air and noise as part of the Bay Street Corridor Rezoning Area (City Environmental Quality Review # 16DCP156R). Sites with E-Designations are subject to environmental review by the New York City Mayor's Office of Environmental Remediation (NYCOER).

This RIR presents environmental data and findings from the Remedial Investigation (RI) conducted from April 28, 2020 to May 11, 2020 and on May 22, 2020 and Supplemental Remedial Investigation (SRI) conducted from June 14, 2021 to June 22, 2021. The RI and SRI were completed by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) and were conducted in accordance with Title 6 of the Official Compilation of New York Codes, Rules and Regulations (NYCRR) Part 375-1, 3.8, 6.8, NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10), and applicable New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, with updates. The objectives of this RI and SRI include:

- Define the nature and extent of contamination in soil, soil vapor, and groundwater at or emanating from the site
- Generate sufficient data to evaluate the remedial action alternatives and prepare a Remedial Action Work Plan (RAWP) to be implemented concurrently with site redevelopment
- Generate sufficient data to evaluate the actual and potential threats to human health and the environment

The remainder of this report is organized as follows:

- Section 2.0 describes the site setting and physical characteristics
- Section 3.0 describes the site background including results of previous investigations and identified areas of concern (AOC)

¹ An application for the merger of Lots 157, 162 and 164 into Lot 164 dated April 28, 2020 was submitted to the New York State Department of Finance - Property Division.

- Section 4.0 presents the investigation field procedures
- Section 5.0 describes the field observations and analytical results
- Section 6.0 presents an assessment of the exposure risks of site contaminants to human, fish, and wildlife receptors
- Section 7.0 presents the nature and extent of contamination in all site media as determined through the field investigation and analysis of environmental samples
- Section 8.0 summarizes the results of the investigation and presents conclusions based on field observations and analytical results

2.0 SITE PHYSICAL CHARACTERISTICS

2.1 Site Description

The site is located at 475 Bay Street and 31 Wave Street in the Stapleton Heights neighborhood of Staten Island, New York and is identified on the Borough of Staten Island Tax Map as Block 488, Lots 9, 157, 162, and 164². A site location map is provided as Figure 1. The site encompasses an area of approximately 66,800 square-feet, is comprised of three vacant asphalt and gravel-paved lots (Block 488, Lots 9, 157 and 162) and a vacant one-story slab-on-grade building (Block 488, Lot 164). The site is bound by a two-story commercial building and a one-story industrial building to the north; New York City Transit (NYCT) elevated Staten Island Rail structure to the east; Wave Street and a two-story McDonalds restaurant to the south; and Bay Street to the west. A site plan is provided as Figure 2.

2.2 Surrounding Property Land Use

The site is located in a mixed-use area with commercial and industrial uses, residential properties, and public parks. The following is a summary of surrounding property usage:

Direction	Adjoining and Adjacent Properties			Surrounding Properties
	Block No.	Lot No.	Description	
South	Wave Street			One- and two-story industrial buildings and parking lots.
	488	1	Two-story McDonalds restaurant	
North	488	18	Two 2-story commercial buildings	Single and multi-story commercial and industrial use buildings and a parking lot followed by Baltic Street.
		206	One-story industrial and manufacturing building (467 Bay Street)	
West	Bay Street			One- and two-story commercial buildings and multi-story residential buildings.
	509	8	Two 2-story commercial and office buildings (478 Bay Street)	
East	Elevated NYCT Staten Island Railway			A parking lot followed by Murray Hulbert Avenue and parkland

Public infrastructure (storm drains, sewers, and underground utility lines) exists within the streets surrounding the site.

Land use within a half-mile radius is urban and includes commercial, institutional, utility/transportation, residential, light industrial buildings and public parks. The nearest ecological

² An application for the merger of Lots 157, 162 and 164 into Lot 164 dated April 28, 2020 was submitted to the New York State Department of Finance - Property Division.

receptor is the Narrows, a tidal strait separating Staten Island and Brooklyn, about 700 feet east of the site. Adjacent properties and land uses are shown on Figure 3. Sensitive receptors, as defined in DER-10, located within a half mile of the site include those listed below:

Number	Name (Approximate distance from site)	Address
1	The Merciful Seniors Care (about 370 feet south-southwest of the site)	541 Bay Street Staten Island, NY 10304
2	Stapleton Waterfront Park (about 685 feet southeast of the site)	455 Front Street Staten Island, NY 10304
3	Eden II Programs (about 765 feet south-southwest of the site)	15 Beach Street Staten Island, NY 10304
4	Tappen Park (about 955 feet south of the site)	Between Bay Street and Canal Street Staten Island, NY
5	PS 65 The Academy of Innovative Learning (about 1,165 mile northwest of the site)	155 St Pauls Avenue Staten Island, NY 10301
6	Little Miracles Preschool (about 1,185 feet west of the site)	309 St. Pauls Avenue Staten Island, NY 10304
7	Maker Park (about 1,410 feet south of the site)	Thompson Street between Front and Bay Streets Staten Island, NY 10304
8	Ga Ga Group Family Day Care, LLC (about 0.16 miles southwest of the site)	126 Prospect Street, Basement Floor Staten Island, NY 10304
9	Siphon Arts (about 0.3 mile south-southwest of the site)	12 Broad Street Staten Island, NY 10304
10	United Multicultural Learning Center (about 0.3 miles southwest of the site)	158 Canal Street Staten Island, NY 10304
11	MindfulNEST Center (about 0.35 mile southwest of the site)	45 Thompkins Street Staten Island, NY 10304
12	Ms. Jay Kinder Care (about 0.4 miles southwest of the site)	16 Tappen Court, 1st Floor, Staten Island, NY 10304
13	Castle Day Care II (about 0.41 mile south of the site)	211 Canal Street Staten Island, NY 10304
14	Thompkinsville Park (about 0.42 miles northwest of the site)	45 Victory Boulevard Staten Island, NY 10301
15	Stapleton Playground (about 0.42 miles southwest of the site)	Tompkins Avenue and Broad Street Staten Island, New York 10304

Number	Name (Approximate distance from site)	Address
16	First Steps to Success Daycare (about 0.45 miles southwest of the site)	32 Hudson Street Staten Island, NY 10304
17	Sr. Elizabeth Boyle Manor (about 0.5 mile southwest of the site)	35 Gordon Street Staten Island, NY 10304

2.3 Site Physical Conditions

2.3.1 Topography

According to monitoring well survey measurements obtained by Langan on May 11, 2020, site surface elevations (el) range from about el 9.32 feet³ (at the southeast corner of the site) to el 10.66 feet (on the center of the site). The topography of the site and immediate surrounding area slopes gently east, and the general topographic gradient of the surrounding areas slopes east towards the Narrows.

2.3.2 Regional Geology

Geologic surface features (e.g., rock outcroppings) were not observed at the site. Based on a review of “Geologic and Geohydrologic Reconnaissance of Staten Island, New York” prepared by Julian Soren for the United States Geological Survey (USGS) and dated 1988, the site is underlain by surficial deposits comprised of ground moraine, which is comprised of reddish-brown clayey till derived from the Upper Triassic and Lower Jurassic shale and sandstone. Based on “Plate 2 Bedrock Geology of Staten Island and Configuration of Bedrock Surface”, prepared by United States Department of the Interior Geological Survey in cooperation with the NYSDEC and dated 1986, the ground moraine is underlain by Staten Island Serpentine at the site. According to the geotechnical investigation conducted by GeoDesign in March 2020, bedrock was observed beneath the ground moraine layer at depths of about 75 to 84 feet below grade surface (bgs).

2.3.3 Regional Hydrogeology

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeologic network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeologic and anthropogenic variables such as precipitation, evaporation, extent of vegetation cover, coverage by impervious surfaces, and subsurface structures. Other factors influencing groundwater include depth to bedrock, the presence of

³ Elevations in this RIR refer to North American Vertical Datum of 1988 (NAVD88), which is about 1.1 feet above mean sea level at Sandy Hook, NJ.

anthropogenic fill, and variability in local geology and groundwater sources or sinks. Groundwater flow within the regional overburden material is anticipated to be to the east, towards The Narrows. Groundwater flow within overburden material located on the site flows outward in all directions from the highest elevation in the central region of the site according to groundwater elevation measurements obtained by Langan on May 11, 2020. A second synoptic groundwater measurement was collected on August 6, 2021 and identified similar conditions with groundwater flowing outward to the northeast, east, southeast, and west from the highest elevation in the central region of the site. Groundwater flow direction may be influenced by nearby utilities or unidentified subsurface obstructions and is also likely tidally influenced due to the site's proximity to the Narrows. Groundwater contours are shown on Figure 4.

2.3.4 Wetlands

Wetlands on or near the site were evaluated by reviewing the National Wetlands Inventory and NYSDEC regulated wetlands map. There are no wetlands on or adjacent to the site. The Narrows, an estuarine and marine deep-water wetland is located about 700 feet east of the site.

3.0 SITE BACKGROUND

This section describes historical site use, the proposed redevelopment, and provides a summary of the findings from previous environmental investigations. Potential Areas of Concern (AOCs) were developed based on a review of the previous reports and are summarized in Section 3.4.

3.1 Historical Site Usage

Historical Sanborn Fire Insurance Maps indicate that the site was located in a developed urban area as early as 1885. In 1885, Lot 9 was developed with a one- and two-story dwelling and a shed. Lots 157, 162 and 164 were unmapped in 1885; however, the 1898 map shows five individual buildings occupied by residential dwellings, a carpenter shop, and storage. Various commercial and industrial entities occupied the site including James Thompson and Sons Lumber Yard (1889 to 1917), Chas F. McAteer, Inc. coal yard (1937 to 1950), a filling station with three gasoline tanks, a grease and oil storage shed (1937 to 1950), J.T. Montesani Company Inc. sand and gravel yard with one gasoline tank and two garages (1950 to 1962), and auto sales (1977 to 1990) on Lot 9; an auto painting shop (1937 to 1950), auto repair (1977) and unlabeled manufacturing (1981 to 1988) on Lot 164; and a truck shop (1937 to 1950) on Lot 157. By 1991, Lots 9, 157, and 162 are vacant and Lot 164 is developed with a one-story commercial building. Site conditions appear generally the same from 1991 to 2007. City Directory documents also provide additional site usage detail including a gasoline service station (1928) on Lot 9 and auto repair facility (1934; 1979; 1990; 2000 to 2014) and iron works facility (1984) on Lot 164.

Prior to the current redevelopment plan, the Volunteer leased Lot 9 for use as a temporary parking lot in 2014. During this time, about three feet of material from across the Lot 9 footprint was removed to install a small drainage system and repair the asphalt surface cover. The area was backfilled with sand and gravel after installation of the drainage system. The parking lot operation was closed due to lack of demand, and the lot became a temporary storage space for construction materials (rebar, barricades, piping) through the beginning of 2020.

3.2 Proposed Redevelopment Plan

Current plans call for the development of a new 12-story mixed use commercial and residential building on Lot 9 and a three-story mixed-use commercial and community facility on Lots 157, 162, and 164. An application for the merger of Lots 157, 162 and 164 into Lot 164 dated April 28, 2020 was submitted to the New York State Department of Finance - Property Division. The ground floor of both buildings will consist of commercial space. Floors 2 through 12 of the Lot 9 building will consist of residential units. Floors 2 and 3 of the building on Lots 157, 162 and 164 will consist of community space. A site-wide cellar level is no longer being considered; however, excavation in some areas to about five feet to seven below surface grade is anticipated for installation of foundation elements and a below grade utility room. A 116-car ground-floor parking lot is proposed for the southern and western sections of Lot 9. Excavation across the site will

be required for foundation elements. The proposed development plans are included as Appendix A.

3.3 Summary of Previous Environmental Investigations

The following previous environmental reports and investigations were reviewed as part of this RIR and are summarized below. The reports are included in Appendix B.

- Phase I Environmental Site Assessment (ESA) for 475 Bay Street, Staten Island, New York, dated January 12, 2000, prepared by AVT Enterprises (AVT)
- Phase I ESA for 475 Bay Street Staten Island, New York, dated April 2013, prepared by URS Corporation (URS)
- Subsurface (Phase II) Investigation for 475 Bay Street, Staten Island, New York, dated September 2013, prepared by AKRF Engineering, P.C. (AKRF)
- Remedial Action Plan for 475 Bay Street, Staten Island, New York, dated April 2016, prepared by AKRF
- Phase I ESA, dated March 20, 2020, prepared by Langan,
- Geotechnical Memorandum, dated April 20, 2020, prepared by GeoDesign, Inc. (GeoDesign)
- Phase II Environmental Site Investigation for 31 Wave Street, Staten Island, New York, prepared by Langan, dated May 15, 2020

Phase I ESA for 475 Bay Street, Staten Island, New York, prepared by AVT, dated January 2000

AVT prepared a Phase I ESA in January 2000 for Mr. Mervin Rampaul in accordance with the previous ASTM E1257-99 standard for Lot 9. At the time of the Phase I, the site was a vacant asphalt-paved parking lot. The following recognized environmental conditions (RECs) were identified in the Phase I ESA:

- REC 1 – Historical On-Site Operations - Historical use of the site as a coal yard and filling station with potential petroleum bulk storage in 1934.
- REC 2 – Historical Adjoining and Surrounding Property Operations - Historical use of the adjoining and surrounding properties for industrial and commercial uses that predate regulatory controls.

Phase I ESA for 475 Bay Street, Staten Island, New York, prepared by URS, dated April 2013

URS conducted a Phase I ESA and geophysical survey in April 2013 for BFC Partners. The Phase I was conducted for Lot 9 in accordance with the previous ASTM E1257-05 standard. At the time of the Phase I, the site was vacant and partially paved with asphalt. The geophysical survey did

not identify subsurface anomalies indicative of underground storage tanks (UST), aboveground storage tanks (AST) or drums; however, a suspected buried concrete pad, buried metal and unidentified objects were identified. The following REC's were identified in the Phase I ESA:

- REC 1 – Historical On-Site Operations - Historical use of the site as a lumber yard, coal storage yard, sand and gravel storage yard, and a vehicle storage yard.
- REC 2 – Historical Adjoining and Surrounding Operations - Historical use of the adjoining and up-gradient surrounding properties as a gasoline station, dry cleaner, and other historically industrial properties.

Subsurface (Phase II) Investigation for 475 Bay Street, Staten Island, New York, prepared by AKRF, dated September 2013

AKRF conducted a subsurface investigation on Lot 9 to determine if the former use of the site and adjoining and surrounding properties had impacted the subsurface. The investigation was conducted between August 20 and 21, 2013 and consisted of the advancement of eight soil borings, installation of four temporary groundwater monitoring wells, and four soil vapor points, and collection of soil, groundwater and soil vapor samples. The results of the subsurface investigation are summarized below:

- Historic fill material consisting of sand with silt, gravel, asphalt and brick was identified from surface grade to about 5 to 10 feet bgs. Fill was underlain by native sand to termination depth of borings ranging from 20 to 25 feet bgs.
- Groundwater was encountered between 6 and 15 feet bgs. Sheen or product was not observed in groundwater samples.
- Volatile organic compounds (VOC), polychlorinated biphenyl (PCB), pesticides and metals were detected in at least one or more soil samples above NYSDEC Part 6 of the NYCRR Part 375 Unrestricted Use (UU) Soil Cleanup Objectives (SCO), but below the Restricted Use – Restricted Residential (RURR) SCOs. Four metals, including barium, cadmium, lead and nickel, were detected above RURR SCOs.
- Semi-Volatile Organic Compounds (SVOC) and dissolved metals were identified in groundwater samples above their NYSDEC Technical and Operational Guidance Series (1.1.1): Class GA Ambient Water Quality Standards (AWQS). VOCs were detected at concentrations below the AWQS. Pesticides and PCBs were not detected in groundwater samples.
- Petroleum-related and chlorinated VOCs (CVOOC) were detected in soil vapor samples. VOCs were not detected at concentrations above the NYSDOH Air Guidance Values (AGVs).

-

Remedial Action Plan, prepared by AKRF, dated April 2016

AKRF prepared a Remedial Action Plan (RAP) for Lot 9 to address the excavation and off-site disposal of historic fill material, dewatering, and decommissioning and closure of USTs, if encountered, during redevelopment of the site. The RAP also discussed the removal of the suspected buried concrete pad, buried metal, and unidentified objects identified in the August 2013 geophysical survey during remedial excavation.

Phase I Environmental Site Assessment, prepared by Langan, dated March 20, 2020

The Phase I ESA was completed for Block 488, Lots 9, 157, 162, and 164 in accordance with ASTM International (ASTM) Standard E1527-13 and the United States Environmental Protection (USEPA) All Appropriate Inquiries (AAI) Rule. The following RECs were identified:

- REC 1 - Historical On-Site Operations - Historical operations include a lumber yard (1898 to 1917), a gasoline service station (1929 to 1934), a coal yard (1934 to 1950), a gasoline filling station with petroleum bulk storage and an oil shed (1937 to 1950), auto painting (1937 to 1950), a truck shop (1937 to 1950), auto repair (1934; 1977 to 2019), a gravel and sand company with a gasoline tank (1950 to 1972), used auto sales (1968; 1977 to 1990), unidentified manufacturing (1981 to 1988) and an ironworks (1984). Additionally, Lot 164 is identified in the Solid Waste/Landfill (SW/LF) database as a car dismantling facility. Leaks or spills of petroleum products, solvents, chemicals and/or other hazardous materials associated with former business operations may have adversely affected soil, groundwater and/or soil vapor.
- REC 2 – Potential Former Hydraulic Lifts Filled with Liquid - Three rectangular pits filled with water were observed in the former auto repair building located on Lot 164. The pits appeared to be lined with concrete. One pit measured about 15 x 8 x 3 feet and the remaining two measured about 3 x 3 x 3 feet. The pits appear to be remnants of former hydraulic lifts. What appeared to be globules of free product were observed floating on the surface of the water. Although the pits appeared to be lined with concrete the condition of the pits could not be inspected.
- REC 3 – Historical Use of the Adjoining and Surrounding Properties - Historical use of the adjoining and surrounding properties include an auto supply and factory (1917), dry cleaning company with historical generation of hazardous waste and petroleum bulk storage (1934 to present), a filling station with three gasoline tanks (1928 to 1996), a bus garage (1937), a factory (1937 to 1962), parking lot with an oil house (1937 to 1950), a gasoline filling station (1937 to 2011), used auto sales (1950 to 1995) and auto repair (1962 to 1992). Historical operations on adjoining and surrounding properties may have resulted in releases of petroleum products, solvents, chemicals, and/or other hazardous substances that may have affected groundwater or soil vapor beneath the site.

Geotechnical Memorandum, prepared by GeoDesign, dated April 20, 2020

GeoDesign completed a geotechnical investigation to determine subsurface conditions and provide geotechnical recommendations. The investigation included advancement of ten soil borings and installation of two temporary groundwater monitoring wells. The investigation revealed that the site stratigraphy generally consists of an approximately 5 to 12 feet thick historic fill layer underlain by layers of silt, coarse to fine-grained sand, and clayey silt to depths of about 60 to 80 feet bgs. Top of bedrock was observed from 75 to 84 feet bgs. Groundwater was measured between 4.5 and 6 feet bgs across the site. GeoDesign recommended a pile-supported foundation.

Phase II Environmental Site Investigation, prepared by Langan, Dated May 15, 2020

A Phase II ESI report was prepared using the RI data for Lots 157, 162, and 164. The report was prepared to satisfy lender requirements prior to purchase of the property. The investigation consisted of the advancement of six environmental soil borings, installation of three permanent groundwater monitoring wells, installation of two soil vapor probes, two sub-slab probes, and collection of soil, groundwater and soil vapor samples. The field observations and analytical results are discussed in depth as part of this RIR.

3.4 Summary of Potential Areas of Concern

Based on site observations, the site development history, and the findings of the previous environmental reports, potential AOCs were identified and investigated during this RI and SRI and are described in detail below. A potential AOC map is provided as Figure 5A.

Potential AOC 1: Historic Fill

Material from unknown sources was used as backfill during various phases of the site development history. According to boring logs from the 2013 Subsurface Phase II Investigation prepared by AKRF and 2020 Geotechnical Memorandum prepared by GeoDesign, the fill layer extends to between 5 and 12 feet bgs. Soil samples collected during the 2013 AKRF investigation identified VOCs, PCBs, pesticides, and metals in fill exceeding the UU SCOs, but below the RURR SCOs. Four metals, including barium, cadmium, lead and nickel, were detected above RURR SCOs.

Potential AOC 2: Historical Coal Yard and Filling Station

Lot 9 historically operated as a coal yard (1937 to 1950), a filling station with three gasoline tanks, a grease and oil storage shed (1937 to 1950), and automobile sales (1977 to 1990). During the 2013 Subsurface Phase II Investigation by AKRF, VOCs, PCBs, pesticides, and metals were detected on Lot 9 in at least one or more soil samples at concentrations above UU SCOs and four metals were detected at concentrations exceeding RURR SCOs. SVOCs were detected in groundwater samples at concentrations above AWQS. In addition, releases of petroleum

products and/or other hazardous materials associated with on-site operations may have adversely affected soil, groundwater and/or soil vapor.

Potential AOC 3: Historical Automobile Repair Shop and Manufacturing

The southern part of the site (Lots 157 and 162) historically operated as an automobile painting shop (1937 to 1950), an automobile repair facility (1977), and unlabeled manufacturing (1981 to 1988). Lot 164 was used as a vehicle dismantling facility and listed as a solid waste/landfill; however, the year of operation is unknown. Inadvertent releases of petroleum products, solvents, and/or other hazardous materials associated with automobile painting, repair, and manufacturing during the on-site operations may have adversely affected soil, groundwater and/or soil vapor.

Potential AOC 4: Metals-Impacted Hot Spots

Concentrations of lead, barium and/or mercury were identified in borings SB-08, SB-108 and SB-111, respectively, above NYSDEC Part 375 CU SCOs during the April/May 2020 RI. Additional sampling was conducted during the SRI to delineate these hot spots. Concentrations of lead, barium and mercury above CU SCOs may be attributed to on-site historic operations and/or the quality of historic fill.

4.0 REMEDIAL INVESTIGATION

The RI was completed from April 28, 2020 to May 11, 2020 to investigate potential AOCs and to determine, to the extent practical, the nature and extent of contamination in soil, groundwater, and soil vapor. A limited soil sampling event was completed on May 22, 2020 to further investigate AOC 1 and to characterize soil based on revised redevelopment plans for the site. In addition, a Supplemental Remedial Investigation (SRI) was completed from June 14, 2021 to June 22, 2021 in accordance with an SRIWP provided to NYSDEC on June 4, 2021 to define the extent and magnitude of lead, barium, and mercury in historic fill, characterize water in hydraulic lift pits, and to assess the metals contamination distribution in soils at depth. The scope of the RI and SRI included the field tasks listed below to supplement the data and findings of previous investigations. A summary of samples collected and rationale for each investigation point in relation to the potential AOCs is provided in Table 1. Sample locations and AOCs are presented on Figure 5A.

The April/May 2020 RI and consisted of the following:

- A geophysical survey to identify potential USTs, underground structures, and subsurface utilities
- Advancement of 27 soil borings to depths between 10 and 20 feet bgs, from which 63 soil samples (including four quality assurance/quality control [QA/QC] duplicates), were collected
- Installation of nine groundwater monitoring wells and collection of 10 groundwater samples (including one QA/QC duplicate sample) from each well location
- Survey and gauging of monitoring wells to evaluate groundwater elevation and flow direction
- Installation of nine temporary soil vapor probes and collection of nine soil vapor samples, plus one ambient air sample.
- Installation of two sub-slab soil vapor probes and collection of two sub-slab soil vapor samples with co-located indoor air samples, plus one ambient air sample.

The June 2021 SRI consisted of the following:

- Advancement of 26 soil borings to depths ranging from 10 to 21 feet bgs, from which 57 soil samples (including three quality assurance/quality control [QA/QC] duplicates) were collected
- Advancement of 17 borings to depths between 10 and 25 feet bgs to delineate lead, barium and mercury hot spots identified during the RI, from which 36 soil samples (including one QA/QC duplicate) were collected
- Collection of three aqueous samples from the three former hydraulic pits on Lot 164

The RI and SRI were conducted in accordance with NYCRR DER-10 Technical Guidance for Site Investigation and Remediation (May 2010) and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006) with updates.

4.1 Geophysical Survey and Utility Location

On April 28, 2020, NOVA Geophysical Services Inc. (NOVA) of Douglaston, New York completed a geophysical survey under the supervision of a Langan field geologist. NOVA used ground-penetrating radar (GPR) and electromagnetic detection equipment to identify potential USTs and locate buried utilities and anomalies across the site. Borings were relocated as necessary to avoid subsurface utilities and anomalies (other subsurface impediments). A copy of the geophysical survey report presenting these findings is included in Appendix C.

4.2 Soil Investigation

4.2.1 Soil Boring Investigation Methodology

Twenty-seven soil borings (SB-01 through SB-16 and SB-101 through SB-111) were completed as part of the April/May 2020 RI. In addition, 26 supplemental soil borings (SB-01R through SB-16R, SB-101R through SB-104R, and SB-106R through SB-111R) and 24 delineation borings were advanced around each of the metals hot spots (SB-08, SB-108, and SB-11) during the SRI in June 2021. Soil borings were advanced by AARCO Environmental Services (AARCO) of Lindenhurst, New York. Borings advanced during the RI were selected to evaluate AOCs listed in Section 3.4 and to characterize soil based on redevelopment plans for the site. Borings advanced during the SRI were selected to vertically delineate soil/fill, to assess metals contamination distribution in soils at depth, and to vertically and horizontally delineate lead, barium, and mercury hot spots. RI soil borings SB-08 and SB-09 were advanced using a Geoprobe® 420M limited access drill rig; the remaining borings, including interior borings completed during the SRI, were advanced with direct push methodologies using a Geoprobe® 7822DT track mounted drill rig. A map showing the boring and delineation locations is presented on Figures 5A and 5B. The following table indicates which borings are associated with each potential AOC:

Potential AOC	Associated Soil Borings
PAOC 1 – Historical Fill	SB-01 through SB-16; SB-101 through SB-111; SB-01R through SB-16R, SB-101R through SB-104R, and SB-106R through SB-111R
PAOC 2 – Historical Coal Yard and Filling Station – Lot 9	SB-01, SB-02, SB-11 through SB-16; SB-101 through SB-103
PAOC 3 – Historic Automobile Repair and Manufacturing – Lots 157, 162, 164	SB-06 through SB-09; SB-108 through SB-110
PAOC 4 – Metals-Impacted Hot Spots	SB-08/SB-08R, SB-108/SB-108R, and SB-111/SB-111R

In addition to the borings that were advanced to assess the AOCs, soil borings SB-01R through SB-16R were advanced to assess metals contamination distribution in the soils at depth and to determine the depth at which nickel concentrations are below the RURR SCOs.

The soil borings were advanced to between 10 and 25 feet bgs, as summarized below:

- Borings SB-101 through SB-111, SB-101R through SB-104R, SB-106R, SB-107R, SB-109R, and SB-110R were advanced to 10 feet bgs
- Borings SB-08, SB-09, SB-108R, and SB-111R were advanced to 15 feet bgs
- Boring SB-11 was advanced to 16 feet bgs due to refusal encountered
- Boring SB-01 through SB-07, SB-10, SB-12 through SB-16, SB-01R through SB-10R, and SB-12R through SB-16R were advanced to 20 feet bgs

Delineation step-out borings were advanced between 10 and 25 feet bgs, as summarized below:

- SB-08 (SB-08R_E1, SB-08R_N1, SB-08R_N2, SB-08R_S1, and SB-08R_W1): 20 to 25 feet bgs
- SB-108 (SB-108R_E1, SB-108R_N1, SB-108R_N2, SB-108R_S1, and SB-108R_W1): 10 feet bgs
- SB-111 (SB-111R_N1, SB-111R_N2, SB-111R_S1, SB-111R_S2, SB-111R_W1, SB-111R_E1, and SB-111R_E2): 15 feet bgs

RI soil samples were collected from the upper two-foot interval; the interval exhibiting the greatest degree of impacts, the historic fill and native soil interface or from the groundwater interface; and from the apparent native soil interval beneath observed impacts or termination depth of the boring.

During the SRI, soil samples were collected from native soil at intervals ranging from directly below the historic fill interface to about 18 to 20 feet bgs to vertically delineate soil/fill exceeding UU and/or RURR SCOs and to assess metals contamination distribution in soils at depth.

Hot spot delineation samples were collected from the impacted depth interval in each step-out boring as outlined above. Samples were also collected from the two one-foot intervals above and below the impacted interval in the original RI boring location and step-out borings.

Soil samples were collected continuously into 3-foot long acetate liners from Geoprobe® 420M or 4 to 5-foot long acetate liners from the direct push Geoprobe® 7822DT.

The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of VOCs was performed with a photoionization detector (PID) equipped with a 10.6-electron volt (eV) lamp. Langan personnel documented the work, logged the soil type, screened the soil samples for environmental impacts, and collected environmental

samples for laboratory analyses. Soil boring logs are presented in Appendix D. Following sample collection, nine borings (SB-01, SB-02, SB-05, SB-06, SB-08, SB-10, SB-11, SB-13 and SB-16) were converted to groundwater monitoring wells. Soil cuttings were backfilled into the original boring locations that were not converted into permanent monitoring wells or used to reach appropriate depth for installation of groundwater monitoring wells.

4.2.3 Soil Sampling Methodology

During implementation of the RI, 48 grab soil samples were collected for laboratory analysis. A minimum of three grab soil samples were collected for laboratory analysis from boring locations SB-01 through SB-16 to investigate potential AOCs. In addition, eleven QA/QC samples (including four duplicates, three Matrix Spike/Matrix Spike Duplicate [MS/MSD] samples, and four field blanks) were collected. Samples were collected within the historic fill material, at the groundwater interface, and from native material.

One grab soil sample was collected from boring locations SB-101 through SB-111, for a total of 11 soil samples plus one duplicate QA/QC sample. These additional samples were collected to further investigate AOCs listed in Section 3.4 to better characterize soil that will remain in place based on revised redevelopment plans provided by the Volunteer. Soil samples were collected within the historic fill layer from 3 to 10 feet bgs.

During implementation of the SRI, 23 samples, including one QA/QC duplicate, were collected from 15 soil borings to vertically delineate soil/fill exceeding UU SCOs, and 34 soil samples, including two duplicate QA/QC samples, were collected from 16 soil borings to assess metals contamination distribution in the soils at depth. One hundred and twenty-one samples were collected from the three delineation areas; 36 soil samples, including one duplicate QA/QC sample, were analyzed.

Samples submitted for VOC analysis were collected directly from the acetate liner via laboratory-supplied Terra Core soil samplers. The remaining sample volume was homogenized and placed in appropriate laboratory-supplied containers for all additional analyses. A dedicated pair of nitrile gloves were donned to collect each per- and polyfluoroalkyl substances (PFAS) sample in order to limit cross-contamination. The sample containers were labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of $4\pm 2^{\circ}\text{C}$). The sample coolers were picked up and delivered via courier under standard chain-of-custody protocol to York Analytical Laboratories, Inc. (York) in Stratford, Connecticut, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory (ELAP ID No. 10854).

Soil samples collected from borings SB-01 through SB-16 were analyzed for Part 375/Target Compound List (TCL) VOCs and SVOCs, PCBs, pesticides, herbicides, Part 375/Target Analyte List (TAL) metals including hexavalent chromium, and trivalent chromium, and emerging contaminants (1,4-dioxane and PFAS).

Soil samples collected from borings SB-101 through SB-111 were analyzed for Part 375/TCL VOCs and SVOCs, PCBs, and TAL metals including hexavalent chromium and trivalent chromium.

Soil samples collected from borings SB-01R through SB-16R were analyzed for copper, chromium, and/or nickel to identify the depth at which concentrations comply with the RURR SCOs. Soil samples collected from borings SB-02R, SB-06R, SB-08R, SB-09R, SB-13R, SB-101R through SB-104R and SB-106R through SB-111R were analyzed for Part 375/TCL SVOCs⁴, pesticides (alpha BHC), and/or metals⁵.

A sample summary is provided as Table 1.

4.3 Groundwater Investigation

A Langan field engineer documented conversion of 9 soil borings into permanent groundwater monitoring wells by AARCO. One groundwater sample was collected from each monitoring well to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs. One duplicate groundwater sample was also collected.

Nine of the borings (SB-01, SB-02, SB-05, SB-06, SB-08, SB-10, SB-11, SB-13 and SB-16) were converted into groundwater monitoring wells: MW-01, MW-02, MW-05, MW-06, MW-08, MW-10, MW-11, MW-13, and MW-16, respectively.

4.3.1 Monitoring Well Installation and Development Methodology

Following completion of soil borings, monitoring wells were constructed using 2-inch diameter polyvinyl chloride (PVC) riser pipes attached to 10 foot-long 0.01-inch slotted screen (+with the exception of MW-8). Monitoring well MW-8 was constructed by inserting 1-inch diameter PVC riser pipes attached to 1 foot-long 0.01-inch slotted screen. Monitoring wells were constructed so that the well screen straddled the observed groundwater table. The well annulus around the screen of each well was backfilled with No. 2 sand to about six-inches to one foot above the top of the screen. Approximately six-inches to one foot of hydrated bentonite seal was installed above the sand pack, and the borehole annulus was backfilled with soil cuttings to the surface. The monitoring wells were finished with flush-mount metal manhole covers encased in concrete.

Following installation, monitoring well MW-08 was developed with a peristaltic pump until the water became clear. The remaining monitoring wells were surged and developed with a submersible pump until the water became clear (having turbidity less than 50 Nephelometric

⁴ Select SVOCs were analyzed based on the analytical results of the RI to include 2-methyphenol, 3&4 methyphenol, Benzo(a)anthracene, benzon(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chryzene, dibenzo(a,h,)anthracene, indeno(1,2,3-c,d)pyrene, naphthalene, phenathrene, phenol, and/or pyrene.

⁵ Select metals were analyzed based on the analytical results of the RI to include arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and/or zinc.

Turbidity Units [NTU]). Purged groundwater was stored in a labeled 55-gallon drum staged on-site for future disposal.

Monitoring well locations are presented on Figure 5A, construction details are included in Table 2, and construction logs are found in Appendix E.

A Langan field engineer also completed synoptic groundwater gauging on May 6, 2020 and August 6, 2021 using a Solinst 122 oil/water interface probe, and top of casing elevations of the groundwater monitoring wells were surveyed by Langan on May 11, 2020. Groundwater elevations ranged from el 5.12 to el 6.31 North American Vertical Datum of 1988 (NAVD88) and are presented in Table 3. A groundwater contour map based on the synoptic groundwater levels of the wells is presented as Figure 4.

4.3.2 Groundwater Sampling

Groundwater samples were collected on April 30, May 7, and 11, 2020. Samples were collected in accordance with the procedures in the USEPA's low-flow groundwater sampling procedure ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EQASOP-GW 001, January 19, 2010) to allow for collection of a representative sample. Monitoring wells were purged and physical and chemical parameters (e.g., temperature, dissolved oxygen, oxygen reduction potential, and turbidity) were allowed to stabilize to ranges specified in the USEPA guidance before they were sampled. Due to poor recharge, stability was not achieved in monitoring well MW-08. Monitoring wells were not gauged for static water levels or drawdown during purging due to PFAS sample collection.

Wells were sampled using a peristaltic pump with dedicated high density polyethylene (HDPE) tubing. Purge water was containerized into labeled 55-gallon drums for off-site disposal. Groundwater sampling logs are included in Appendix F.

Nine groundwater samples (one sample from each well) were collected into laboratory-supplied glassware, packed with ice to maintain a temperature of 4°C, and transported via courier service to York Analytical Laboratories under chain-of-custody protocol. In addition, four QA/QC samples (including one duplicate, one MS/MSD sample, and one field blank) were collected. Groundwater samples were analyzed for Part 375/TCL VOCs, SVOCs, and PCBs, Part 375/TAL total and dissolved metals, pesticides, and emerging contaminants (1,4-dioxane and PFAS). A dedicated pair of nitrile gloves were donned to collect each PFAS sample in order to limit cross-contamination.

4.3.3 Hydraulic Pit Aqueous Sampling

During the June 2021 SRI, Langan field personnel collected one water sample from each of the three concrete-lined hydraulic pits identified during the February 2020 Phase I ESA for a total of three samples. Sediment was not observed in the three pits. Samples were collected using a dedicated bailer for each pit. Three aqueous samples (one sample from each pit) were collected

into laboratory-supplied glassware, packed with ice to maintain a temperature of 4°C, and transported via courier service to York Analytical Laboratories under chain-of-custody protocol. In addition, one field blank and one trip blank were also collected for QA/QC purposes. Aqueous samples were analyzed for Part 375/TCL VOCs, SVOCs, and PCBs, Part 375/TAL total metals, pesticides, and emerging contaminants (1,4-dioxane and PFAS). A dedicated pair of nitrile gloves were donned to collect each PFAS sample in order to limit cross-contamination

4.4 Soil Vapor Investigation

NYSDEC DER-10 requires an assessment of soil vapor for contaminated sites to evaluate the health risk associated with potential exposure to VOCs through vapor intrusion into occupied spaces. Two sub-slab samples (SS-08 and SS-09) and co-located indoor air samples (IA-08 and IA-09) were installed and collected inside the vacant building on Lot 164 to identify impacts potentially associated with former use as an auto body shop. Nine soil vapor points (SV-1 through SV-4, SV-07, SV-11, SV-13, SV-15, and SV-16) were installed throughout the property to identify potential impacts associated with historic site use. AOC 2 was investigated by the installation of soil vapor points SV-1, SV-02, SV-03, SV-11, SV-13, SV-15, and SV-16. AOC 3 was investigated by the installation of soil vapor points SV-04 and SV-07 and sub-slab samples SS-08 and SS-09. Two ambient air samples were collected for QA/QC purposes. Soil vapor sample locations are presented on Figure 5A.

4.4.1 Sub-Slab Vapor Point Installation

The sub-slab vapor points were installed by AARCO using a hammer drill to 2 inches below the bottom of existing building slab, in general accordance with the NYSDOH's Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006) (hereafter referred to as NYSDOH Guidance). Sub-slab sample points consisted of dedicated polyethylene tubing. The annular space around the tubing was backfilled with filter sand followed by bentonite seal to grade. The sub-slab soil vapor-point construction and sampling logs are provided in Appendix G.

4.4.2 Soil Vapor Point Installation

Soil vapor points were installed by AARCO using a Geoprobe® 7822DT drill rig and were advanced to about 2 feet above groundwater, ranging from 2 to 3.5 feet bgs. A polyethylene vapor implant (approximately 2 inches in length) was threaded to Teflon-lined, polyethylene tubing (1/4-inch diameter) and lowered to the bottom of the hole in accordance with the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. A sand filter pack was installed around the screen implant by pouring No. 2 sand into the annulus. The remainder of the annulus was filled to grade surface with a hydrated bentonite seal. Soil vapor construction/sampling logs are provided in Appendix G.

4.4.3 Soil Vapor Sampling and Analysis

As a QA/QC measure, an inert tracer gas (helium) was introduced into an above-grade sampling chamber to ensure that the soil vapor and sub-slab vapor sampling points were properly sealed above the target sampling depth, thereby preventing subsurface infiltration of ambient air. Direct readings of less than 10 percent helium in the sampling tube were considered sufficient to verify a tight seal at each sample point.

Each soil vapor point was purged using a MultiRAE meter at a rate less than 0.2 liters per minute (L/min) to evacuate a minimum of three sample tubing volumes prior to sample collection. The purged soil vapor was also monitored for VOCs and the values were recorded. After purging was completed, the soil vapor and sub-slab samples were collected into laboratory-supplied, batch-certified Summa® canisters. Soil vapor and sub-slab/co-located indoor air samples were collected into laboratory-supplied, batch-certified, 6-Liter Summa® canisters calibrated for 120 or 480 minutes of sampling, respectively. Soil vapor and sub-slab construction/sampling logs are provided in Appendix G.

Summa® canisters were labeled and transported via courier to York in Stratford, Connecticut, a NYSDOH ELAP-certified laboratory (ELAP ID #10854), under standard chain-of-custody protocol. Soil vapor air samples were analyzed for VOCs by USEPA Method TO-15.

4.4.4 Ambient Air Sampling and Analysis

Two ambient air samples (AA01_043020 and AA02_050520) were collected concurrently with sub-slab and soil vapor sampling, respectively, elevated at about 3 to 4 feet above the ground to evaluate external influences on soil vapor quality.

Ambient air sampling was conducted in general accordance with the NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion in New York. Prior to sample collection, the areas were screened using a MultiRAE meter to identify potential sources of organic vapors that may interfere with sampling. The ambient air samples were collected into laboratory-supplied, batch-certified, 6-liter Summa® canisters calibrated for 120 minutes (AA01_043020) or 480 minutes (AA01_050520) of sampling.

Summa® canisters were labeled and transported via courier to York in Stratford, Connecticut, a NYSDOH ELAP-certified laboratory (ELAP ID #10854), under standard chain-of-custody protocol. Ambient air samples were analyzed for VOCs by USEPA Method TO-15.

4.5 Quality Control Sampling

Field blanks, trip blanks, field duplicate samples, and MS/MSD samples were collected and submitted for laboratory analysis for QA/QC purposes. QA/QC samples are detailed in Table 1 and are summarized below:

4.5.1 Soil QA/QC Samples

- Eight field duplicate samples
- Eleven MS/MSD samples
- Eleven field rinsate blanks

4.5.2 Groundwater and Aqueous QA/QC Samples

- Two field duplicate samples
- One MS/MSD sample
- Two field rinsate blank
- Five trip blanks

4.5.3 Soil Vapor QA/QC Samples

- Two ambient air samples

Field rinsate blanks were collected to determine the effectiveness of the decontamination procedures for the groundwater sampling equipment and the cleanliness of unused neoprene gloves and acetate liners used to collect soil samples. Field rinsate blank samples consisted of deionized, distilled water provided by the laboratory that has passed through the sampling apparatus. Field rinsate blank samples were analyzed for the same list of analytes as the corresponding sampling event and sample matrix.

MS/MSD samples were collected to assess the effect of the sample matrix on the recovery of target compounds or target analytes. MS/MSD samples were collected from the same material as the primary sample by splitting the volume of the homogenized sample collected in the field into three sample containers.

The field duplicates were collected to assess the precision of the analytical methods relative to the sample matrix. The duplicates were collected from the same material as the primary sample by splitting the volume of homogenized sample collected in the field into two sample containers.

The trip blank samples were collected to assess the potential for contamination of the sample containers and samples during the trip from the laboratory, to the field, and back to the laboratory for analysis. Trip blanks contain about 40 milliliters of acidic water (doped with hydrochloric acid) that is sealed by the laboratory when the empty sample containers are shipped to the field, and

unsealed and analyzed by the laboratory when the sample shipment is received from the field. The trip blank samples were analyzed for VOCs.

4.6 Data Validation

Analytical data was submitted to a Langan validator for review in accordance with USEPA and NYSDEC validation protocols. Data usability summary reports (DUSR) and the data validator's credentials are provided in Appendix H.

4.6.1 Data Usability Summary Report Preparation

A DUSR was prepared for each delivery group following data validation. The DUSR presents the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. For each of the organic analytical methods, the following was assessed:

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

For each of the inorganic compounds, the following was assessed:

- Holding times
- Calibrations
- Blank results
- Interference check sample
- Laboratory check samples

- Duplicates
- Matrix Spike
- Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) QC
- ICP serial dilutions
- Results verification and reported detection limits

Based on the results of data validation, the following qualifiers may be assigned to the data in accordance with the USEPA guidelines and best professional judgment:

R – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

UU – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.

U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

After data validation was complete, validated data was used to prepare the tables and figures included in this report.

4.7 Field Equipment Decontamination

A peristaltic pump with dedicated tubing was used to sample each groundwater monitoring well. The groundwater sampling equipment, including a water quality meter, were cleaned with Alconox and rinsed with deionized water between sampling locations during groundwater sample collection. Decontamination occurred at the sampling locations and all liquids were temporarily contained in a 5 gallon bucket. Decontamination wastewater was placed in 55-gallon Department of Transportation (DOT)-approved drums for future off-site disposal at a permitted facility.

4.8 Investigation-Derived Waste Management

Groundwater investigation-derived wastes (IDW) were containerized in 55-gallon, DOT-approved drums. Decontamination and well development/purging fluids were placed in DOT-approved fluid drums with closed tops. All drums were properly labeled, sealed, and staged in a secured area on-site. IDW will be sampled and removed by a licensed waste hauler for disposal at an approved facility prior to the start of remediation.

5.0 FIELD OBSERVATIONS AND ANALYTICAL RESULTS

5.1 Geophysical Investigation Findings

Geophysical anomalies consistent with utilities (i.e., gas and electric lines) were identified throughout the site. No anomalies resembling USTs were identified. A copy of the April 28, 2020 Geophysical Engineering Survey Report is included in Appendix C.

5.2 Geology and Hydrogeology

Provided below is a description of the geological and hydrogeological observations made during the RI. A groundwater contour map is provided as Figure 4, and cross-sectional diagrams showing inferred soil profiles are shown on Figures 6A through 6C. Boring logs are provided in Appendix D.

5.2.1 Historic Fill

The asphalt and concrete-paved and gravel surfaces across the site are underlain by a historic fill layer that extends from surface grade to between about 2 to 16 feet bgs. The depth of the fill layer varies across the site, but was generally the most shallow in the southwestern part of the site (SB-108R_W1) and deepest in the southeastern part of the site (SB-04R). The historic fill predominantly consists of brown and dark gray, fine- to medium-grained sand with varying amounts of gravel, silt, asphalt, brick, coal, coal ash, slag, glass, ceramics, plastic, wood, incinerated material and/or concrete.

5.2.2 Native Soil Layers

On the northern half of the site, the fill layer is underlain by native soil that predominantly consists of light gray to reddish brown, silty fine sand with varying amounts of fine gravel and clay lenses and extends to the termination depth of each boring. The fill layer within the southeastern part of the site is underlain by a dark reddish-brown fine sand with varying amounts of silt and fine gravel. A dark grayish-brown silt layer was observed beneath the sand layer in SB-04 through SB-06 and SB-12, which extended to boring termination depth.

5.2.3 Bedrock

Bedrock was not encountered during this RI. Based on "Plate 2 Bedrock Geology of Staten Island and Configuration of Bedrock Surface", prepared by United States Department of the Interior Geological Survey in cooperation with the NYSDEC and dated 1986, the ground moraine is underlain by Staten Island Serpentine at the site. According to the April 2020 Geotechnical Memorandum prepared by GeoDesign, competent bedrock was encountered at about 75 to 84 feet bgs.

5.2.4 Hydrogeology

Synoptic groundwater level measurements were collected for monitoring wells on May 11, 2020. Depth to groundwater was measured between about 3.56 and 4.32 feet bgs, with corresponding groundwater elevations (el.) ranging from about el 5.12 to el 6.31 NAVD88. A second round of synoptic groundwater level measurements was collected on August 6, 2021 and the depth to groundwater was measured between 3.78 and 5.14 feet bgs. The groundwater elevation is highest in the central region of the site and appears to flow outwards to the northeast, east, southeast, and west; however, based on the general topography of the area regional groundwater is expected to flow to the east towards the Narrows. The cause of the apparent groundwater flow pattern at the site is unknown but may be related to tidal influence or local utilities or unidentified subsurface obstructions in the area. A desktop study to investigate dewatering activities in the area will be conducted. Groundwater elevations are summarized in Table 3, and a groundwater contour map is presented as Figure 4.

5.2.5 Surface Water and Drainage

The proposed BCP site is primarily improved with asphalt or concrete-paved surfaces or a gravel layer and drywells. Areas of discontinuous asphalt were observed throughout the site which are subject to rainwater infiltration during storm events. Runoff from the surrounding area typically drains through catch basins into city sewers.

5.3 Soil Findings

5.3.1 Soil Boring Field Observations

Petroleum-like impacts, as evidenced by odors, staining, and/or PID readings above background were observed in two RI borings, and five SRI soil borings. Boring locations, depth intervals, and maximum PID measurements where petroleum-like impacts were apparent are summarized in the following table.

Soil Boring	Depth Interval (feet bgs)	Maximum PID (ppm)	Observations
SB-06	6 to 7	8.0	None
SB-110	9 to 10	4.6	Petroleum-like odors and staining present
SB-05R	0 to 3	3.1	None
SB-109R	0.5 to 4	10.7	None
SB-108R_E1	1 to 3	7.9	Petroleum-like odors

SB-108R_I	0 to 7.5	102.6	Petroleum-like odors
SB-108R_S1	0.5 to 5	101.2	Petroleum-like odors

Petroleum-nuisance conditions were identified during the SRI within surficial soil just outside of the former auto repair facility in borings SB-108R_I, SB-108R_E1 and SB-108R_S1 and covered an area of about 20 square feet, ranging in depth from surface grade to 3 to 7.5 feet bgs. Petroleum-related VOCs and SVOCs were not detected at concentrations greater than the UU SCOs in soil SB-108 and were not detected in groundwater in downgradient monitoring wells MW05, MW06 and MW08. Because petroleum-nuisance conditions were limited to the surface, the source appears to be incidental spills originating from the auto-repair facility.

5.3.2 Analytical Results

Fifty-one grab soil samples, including three field duplicates, were collected and analyzed for Part 375/TCL VOCs and SVOCs, PCBs, pesticides, and herbicides, Part 375/TAL metals including hexavalent chromium, and trivalent chromium, and emerging contaminants (1,4-dioxane and PFAS) as part of the RI. An additional twelve grab soil samples, including one field duplicate, were collected and analyzed for Part 375/TCL VOCs and SVOCs, PCBs, Part 375/TAL metals including hexavalent chromium and trivalent chromium were collected in May 2020. Fifty-seven grab samples, including three field duplicates, were collected and analyzed for Part 375/TCL SVOCs, pesticides, and/or Part 375/TAL metals as part of the SRI. Thirty-six grab soil samples, including one field duplicate, were collected and analyzed for lead, barium or mercury as part of a metals hot spot delineation during the SRI. A summary of laboratory detections for soil samples collected during the RI and SRI are provided in Tables 4A through 4D (VOCs, SVOCs, pesticides, herbicides, PCBs and inorganics) with comparisons to NYSDEC Part 375 UU SCOs and RURR SCOs and PFAS comparisons to published NYSDEC guidance values. Full laboratory reports are included in Appendix I. Soil sample results collected during the RI and SRI are shown on Figures 7A through Figure 7E.

The following contaminants were detected at concentrations exceeding NYSDEC Part 375 UU (normal text) and/or RURR (bolded):

VOCs

Acetone was detected at concentrations exceeding the UU in the samples from soil borings SB-01, SB-02, and SB-111 at depths ranging from 6 to 20 feet bgs. Acetone was identified in a batch

blank and is a common laboratory contaminant; therefore, its presence is not likely indicative of a release. The following table provides a summary of VOCs that were detected above UU SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR	Frequency of Detection above SCO
Acetone	0.058 mg/kg in SB02_6-8	0.066 mg/kg in SB01_6-8	UU: 0.05 mg/kg RURR: 100 mg/kg	3 of 63

1. Presented concentrations exceed UU SCOs.

2. Mg/kg = milligrams per kilogram

SVOCs

Fifteen SVOCs, including thirteen Polycyclic Aromatic Hydrocarbons (PAH), were detected at concentrations exceeding the UU and/or RURR SCOs in five samples from soil borings SB-01, SB-05, SB-101, SB-107, and SB-109 collected at depths ranging from 0 to 5.5 feet bgs. PAH impacted material is confined within the historic fill layer. The compound 3 & 4 methylphenol and 2-methylphenol were only detected in the sample collected from soil boring SB-101 from 3 to 4 feet bgs. The following table provides a summary of PAHs that were detected above UU and/or RURR SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above SCO
2-Methylphenol (o-Cresol)	0.546 mg/kg in SB101_3-4		UU: 0.33 mg/kg RURR: 100 mg/kg	1 of 64
3 & 4 Methylphenol (m&p Cresol)	1.47 mg/kg in SB101_3-4		UU: 0.33 mg/kg RURR: 100 mg/kg	1 of 64
Benzo(a)anthracene	1.49 mg/kg in SB109_4-5	34.7 mg/kg in SB101_3-4	UU: 1 mg/kg RURR: 1 mg/kg	4 of 67
Benzo(a)pyrene	2.04 mg/kg in SB109_4-5	46.1 mg/kg in SB101_3-4	UU: 1 mg/kg RURR: 1 mg/kg	4 of 67
Benzo(b)fluoranthene	1.74 mg/kg in SB109_4-5	38 mg/kg in SB101_3-4	UU: 1 mg/kg RURR: 1 mg/kg	4 of 67
Benzo(k)fluoranthene	1.56 mg/kg in SB109_4-5	35.2 mg/kg in SB-101_3-4	UU: 0.8 mg/kg RURR: 3.9 mg/kg	4 of 67
Chrysene	2.19 mg/kg in SB01_0-2	43.2 mg/kg in SB101_3-4	UU: 1 mg/kg RURR: 3.9 mg/kg	4 of 67
Dibenzo(a,h)anthracene	0.53 mg/kg in SB109_4-5	7.34 mg/kg in SB101_3-4	UU: 0.33 mg/kg RURR: 0.33 mg/kg	4 of 67
Dibenzofuran	13.5 mg/kg in SB101_3-4		UU: 7 mg/kg RURR: 59 mg/kg	1 of 63
Fluoranthene	135 mg/kg in SB101_3-4		UU: 100 mg/kg RURR: 100 mg/kg	1 of 63
Indeno(1,2,3-cd)pyrene	0.559 mg/kg in SB05_0-2	26.1 mg/kg in SB101_3-4	UU: 0.5 mg/kg RURR: 0.5 mg/kg	5 of 63
Naphthalene	15.3 mg/kg in SB101_3-4		UU: 12 mg/kg RURR: 100 mg/kg	1 of 63

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above SCO
Phenanthrene	152 mg/kg in SB101_3-4		UU: 100 mg/kg RURR: 100 mg/kg	1 of 63
Phenol	1.25 mg/kg in SB101_3-4		UU: 0.33 mg/kg RURR: 100 mg/kg	1 of 63
Pyrene	107 mg/kg in SB101_3-4		UU: 100 mg/kg RURR: 100 mg/kg	1 of 63

1. Concentrations in standard font exceed UU SCOs.

2. Concentrations in bold exceed RURR SCOs.

Pesticides

Four pesticides were detected at concentrations exceeding the UU SCO in nine samples from soil borings SB-02, SB-03, SB-04, SB-05, SB-11, SB-12, and SB-15 collected at depths ranging from 0 to 8 feet bgs. No pesticides were detected above RURR SCOs. The following table provides a summary of the pesticides that were detected above the UU SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above SCO
4,4'-DDD	0.017 mg/kg in SB02_0-2		UU: 0.0033 mg/kg RURR: 13 mg/kg	1 of 51
4,4'-DDE	0.0059 mg/kg in SB15_0-2	0.0206 mg/kg in SB02_0-2	UU: 0.0033 mg/kg RURR: 8.9 mg/kg	5 of 51
4,4'-DDT	0.00426 mg/kg in SB05_0-2	0.0293 mg/kg in SB02_0-2	UU: 0.0033 mg/kg RURR: 7.9 mg/kg	4 of 51
Alpha BHC (Alpha Hexachlorocyclohexane)	0.0256 mg/kg in SB02_6-8		UU: 0.02 mg/kg RURR: 0.48 mg/kg	1 of 52

1. Presented concentrations face exceed UU SCOs.

Herbicides

No herbicides were detected at concentrations exceeding the UU and/or RURR SCOs.

PCBs

Total PCBs were detected at concentrations exceeding the UU SCO in one sample from soil boring SB-12 collected at a depth of 0 to 2 feet bgs. No PCBs were detected above RURR SCOs. The following table provides a summary of the PCB that was detected above the UU SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above UU SCO
Total PCBs	0.203 mg/kg		UU: 0.1 mg/kg	1 of 63

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above UU SCO
	in SB12_0-2		RURR: 1 mg/kg	

1. Presented concentration exceeds UU SCOs.

Inorganics

Eleven metals were detected at concentrations exceeding the UU and/or RURR SCOs in 119 samples from all soil borings with the exception of SB-105, collected at depths ranging from 0 to 21 feet bgs. The following table provides a summary of metals that were detected above UU

and/or RURR SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU and RURR SCOs	Frequency of Detection above UU SCO
Arsenic	17.9 mg/kg in SB02_0-2	18.8 mg/kg in SB106_4.5-5.5	UU: 13 mg/kg RURR: 16 mg/kg	2 of 65
Barium	411 mg/kg in duplicate of SB108_7-9.5	453 mg/kg in SB14_0-2	UU: 350 mg/kg RURR: 400 mg/kg	4 of 67
Cadmium	3.23 mg/kg in SB103_2.5-3.5	3.79 mg/kg in SB106_4.5-5.5	UU: 2.5 mg/kg RURR: 4.3 mg/kg	2 of 63
Chromium, Hexavalent	1.07 mg/kg In SB03_0-2	3.35 mg/kg in SB16_0-2	UU: 1 mg/kg RURR: 110 mg/kg	2 of 63
Chromium, Trivalent	30.6 mg/kg in SB03_18-20	195 mg/kg in SB12_18-20	UU: 30 mg/kg RURR: 180 mg/kg	29 of 86
Copper	50.4 mg/kg in SB02_6-8	118 mg/kg in duplicate of SB108_7-9.5	UU: 50 mg/kg RURR: 270 mg/kg	12 of 74
Lead	64.4 mg/kg in SB15_0-2	2,530 mg/kg in duplicate of SB108_7-9.5	UU: 63 mg/kg RURR: 400 mg/kg	49 of 82
Mercury	0.194 mg/kg in SB08R_10-11	5.76 mg/kg in SB111_8-9	UU: 0.18 mg/kg RURR: 0.81 mg/kg	37 of 82
Nickel	31.2 mg/kg in SB14_0-2	1,660 mg/kg in SB16_18-20	UU: 30 mg/kg RURR: 310 mg/kg	112 of 118
Selenium	4.08 mg/kg in SB08_4-6	12.6 mg/kg in SB04_0-2	UU: 3.9 mg/kg RURR: 180 mg/kg	5 of 63
Zinc	111 mg/kg in SB106R_7-8	890 mg/kg in SB106_4.5-5.5	UU: 109 mg/kg RURR: 10,000 mg/kg	22 of 78

1. Reported concentrations in standard font exceed UU SCOs.

2. Concentrations in bold exceed RURR SCOs.

Metal Hot Spot Delineation

Samples were compared to NYSDEC Part 375 UU and RURR SCOs for lead, barium or mercury based on the hot spot location. A summary of the analytical results for additional delineation samples is provided in Table 4C and Figure 7E. Full laboratory reports are included in Appendix I.

SB-08 – Lead and Barium

Barium was not detected above UU SCOs in any delineation samples collected from this hot spot location.

Lead was not detected at concentrations above the UU SCO in samples collected from delineation borings to the east, south, and west of the original boring location and in the sample collected beneath the impacted interval (15 to 16 feet bgs) initially identified during the RI.

Lead was detected above the RURR SCO in the following samples:

- SB-08R_N1_12-13 (1,230 mg/kg)
- SB-08R_N1_13-15 (500 mg/kg)

The hot spot location at RI boring SB-08 is defined by soil borings SB-08R_E1, SB-08R_W1, SB-08R_S1, and SB-08R_N2 and extends to 13 to 15 feet bgs.

SB-108 – Lead and Barium

Lead and barium were not detected at concentrations greater than the UU SCOs at 10 to 11 feet bgs near the original SB-108 boring location. The lateral extent of barium and lead was not defined by the offset borings. The extent of the SB-108 hot spot is defined by SB107_7-8 to the north, SB106_9-10 to the northeast, SB06_0-2 to the east, SB109_9-10 to the south and SB09_11-12 to the west.

SB-111 - Mercury

Mercury was not detected above RURR SCOs in delineation samples to the north and west and in the sample collected from beneath the impacted interval (8 to 9 feet bgs) initially identified during the RI.

Mercury exceeded RURR SCOs in the following samples:

- SB111R_E1_8-9 (8.44 mg/kg)
- SB111R_E1_9-10 (3.51 mg/kg)
- SB111R_S1_8-9 (2.75 mg/kg)
- SB111R__S2_8-9 (1.64 mg/kg)

The hot spot location at RI boring SB-111 is defined by soil borings SB-111R_E2 to the east, SB-111R_W1 to the west, SB-111R_N2 to the north and the property line to the south, and extends to 8 to 11 feet bgs.

Assessment of Metals Distribution in Soil

Copper and trivalent chromium were detected in native soil at concentrations above the UU SCOs at depths ranging from about 5 to 20 feet bgs. During the SRI, samples were collected from the native soil layer throughout the site to assess metals contamination distribution in soil and to define the depth at which metals in native soil meet the RURR SCOs. Trivalent chromium and copper were not identified in native soil samples collected during the SRI. Based on the results of the SRI, trivalent chromium and copper identified in native soil during the RI were likely the

result of interference from historic fill during sampling and are not representative of the site conditions.

Nickel was detected in native soil at concentrations above the UU SCO at depths ranging from about 4 to 21 feet bgs in 55 of 59 samples. The depth at which nickel concentrations meet the Track 2 SCOs ranges from 2 feet in borings SB03, SB04-SB07, and SB13 to 15 feet in boring SB01, SB11, and SB16, which defines the extent to which excavation would be required to achieve a Track 2 remedy.

Emerging Contaminants (PFAS: 21-Compound List)

PFAS concentrations in soil were compared to the January 2021 Guidelines for Sampling, Analysis and Assessment of PFAS. Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) were not detected above the unrestricted use screening levels of 0.88 parts per billion (ppb) and 0.66 ppb, respectively. 1,4-Dioxane was not detected in soil samples. Analytical results are shown in Table 4D.

5.4 Groundwater Findings

5.4.1 Field Observations

Monitoring wells were gauged for non-aqueous phase liquid (NAPL) with an oil-water interface probe. NAPL was not encountered in monitoring wells. PID headspace readings ranged from 0.0 ppm to 5.0 ppm (highest reading in monitoring well MW-10) during groundwater sampling. Depth to groundwater was measured between about 3.56 to 4.32 feet bgs, with corresponding groundwater elevations ranging from about el 5.12 to el 6.31 NAVD88. Groundwater generally flows to the east towards the Narrows.

5.4.2 Analytical Data

Ten groundwater samples, including one QA/QC duplicate, were collected and analyzed for Part 375/TCL VOCs, SVOCs, pesticides, herbicides, and PCBs, Part 375/TAL total and dissolved metals, and emerging contaminants (1,4-dioxane and PFAS). A summary of the groundwater sample laboratory detections compared to NYSDEC Title 6 NYCRR Part 703.5 and the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA water (collectively known as NYSDEC SGVs) is presented in Table 5. Emerging contaminant data, including PFAS results, are presented in Table 6. Groundwater sample locations, and results that exceed the NYSDEC SGVs and NYSDEC guidance values are presented on Figures 8A and 8B, respectively.

The following contaminants were detected at concentrations exceeding the NYSDEC SGVs:

VOCs

VOCs were not detected above the NYSDEC SGVs in any groundwater sample.

SVOCs

Groundwater samples collected from the monitoring well MW-01 contained concentrations of two PAHs above the NYSDEC SGVs, as shown in the following table:

Parameter	Minimum Detected Concentration above SGVs	Maximum Detected Concentration above SGVs	SGVs	Frequency of Detection above SGVs
Benzo(a)anthracene	0.0649 µg/L in MW01_050720		0.002 µg/L	1 of 10
Chrysene	0.0757 µg/L in MW01_050720		0.002 µg/L	1 of 10

1. µg/L = micrograms per liter.

Pesticides

Pesticides were not detected above the NYSDEC SGVs in any groundwater samples.

Herbicides

Herbicides were not detected above the NYSDEC SGVs in any groundwater samples.

PCBs

PCBs were not detected above the NYSDEC SGVs in any groundwater samples.

Total Metals

Groundwater samples collected from monitoring wells MW-01, MW-02, MW-05, MW-06, MW-08, MW-10, MW-11, MW-13, and MW-16 contained concentrations of one or more of four total metals that exceeded the NYSDEC SGVs in groundwater samples as shown in the following table:

Parameter	Minimum Detected Concentration above NYSDEC SGVs	Maximum Detected Concentration above NYSDEC SGVs	NYSDEC SGVs	Frequency of Detection above NYSDEC SGVs
Iron	684 µg/L in MW11_051120	36,100 mg/kg in MW01_050720	300 µg/L	8 of 10
Lead	53.9 µg/L in MW02_021920	184 µg/L in MW08_043020	25 µg/L	2 of 10
Manganese	334 µg/L in MW10_050720	2,900 µg/L in MW05_043020	300 µg/L	7 of 10
Sodium	23,000 µg/L in MW02_050720	96,000 µg/L in MW05_043020	20,000 µg/L	9 of 10

Dissolved Metals

Groundwater samples collected from monitoring wells MW-01, MW-02, MW-05, MW-06, MW-08, MW-10, MW-11, and MW-13 contained concentrations of one or more of three dissolved metals that exceeded the NYSDEC SGVs as shown in the following table:

Parameter	Minimum Detected Concentration above NYSDEC SGVs	Maximum Detected Concentration above NYSDEC SGVs	NYSDEC SGVs	Frequency of Detection above NYSDEC SGVs
Iron	498 µg/L in MW10_050720	35,400 µg/L in MW01_050720	300 µg/L	7 of 10
Manganese	544 µg/L in MW11_051120	2,700 µg/L in MW05_043020	300 µg/L	6 of 10
Sodium	23,300 µg/L in MW02_050720	90,900 µg/L in MW05_043020	20,000 µg/L	9 of 10

Emerging Contaminants (PFAS: 21-Compound List)

PFAS concentrations in groundwater were compared to the January 2021 Guidelines for Sampling, Analysis and Assessment of PFAS. The guidance states that further assessment or evaluation may be warranted should the following screening levels be exceeded:

- Concentrations of PFOA or PFOS above 10 parts per trillion (ppt) (0.01 ppb)
- Total concentration of PFAS (excluding PFOA and PFOS) above 100 ppt (0.1 ppb) or
- Total PFAS concentrations above 500 ppt (0.5 ppt)

PFOA was detected in groundwater samples above the screening level in eight of 10 monitoring wells at concentrations ranging from 27.3 ppt (0.0237 ppb) in MW-11 to 178 ppt (0.178 ppb) in MW-06. PFOS was detected in groundwater samples above the screening level in four of the 10 monitoring wells at concentrations ranging from 10.9 ppt (0.019 ppb) in MW-08 to 130 ppt (0.130 ppb) in MW-06. Total PFAS ranged from 47 ppt (0.47 ppb) in MW-02 to 401 ppb (0.401 ppb) in MW-06.

Analytical results are shown in Table 6.

5.5 Hydraulic Pit Aqueous Sample Results

5.5.1 Field Observations

Standing water was identified in three hydraulic pits associated with the former auto detailing operation on Lot 164, located on the southern part of the site. The hydraulic pits were lined with concrete and there was a hole in the cover above the pits. One pit was about 15 feet long by 8 feet wide and the remaining two were about 3 feet long by 3 feet wide, all three pits were about 2 to 3 feet deep. Sediment was not identified in any of the pits. Neither a sheen nor odors were not apparent during sampling.

5.5.2 Analytical Data

Three samples were collected from the hydraulic pit, plus one QA/QC duplicate sample, were collected and analyzed for Part 375/TCL VOCs, SVOCs, pesticides, and PCBs, Part 375/TAL total and dissolved metals, and emerging contaminants (1,4-dioxane and PFAS). A summary of the hydraulic pit sample compared to NYSDEC SGVs is presented in Table 5. Emerging contaminant data, including PFAS results, are presented in Table 6. Aqueous sample locations, and results that exceed the NYSDEC SGVs are presented on Figures 8A and 8B, respectively.

Contaminants were not detected at concentrations exceeding the NYSDEC SGVs. PFOS and PFOA were detected in each of the 3 hydraulic pits at concentrations greater than the guidance value of 10 ppt. The following is a summary of PFOS and PFOA concentrations in aqueous samples collected from the hydraulic pits:

- PFOA was detected in all three aqueous samples above the screening level at concentrations ranging from 18 ppt (0.018 ppb) in SW-01 to 22.5 ppt (0.0225 ppb) in SW-02.
- PFOS was detected in all three aqueous samples above the screening level at concentrations ranging from 12.5 ppt (0.0125 ppb) in SW-01 and SW-03 to 15.9 ppt (0.0159 ppb) in SW-02. Total PFAS ranged from 89 ppt (0.089 ppb) in SW-01 and SW-03 to 90 ppb (0.090 ppb) in SW-02.

Analytical results are shown in Table 6.

5.6 Soil Vapor Findings

Nine soil vapor samples, two co-located sub-slab/indoor air samples and two ambient air samples were collected and submitted for laboratory analysis for USEPA TO-15 VOCs. No standard currently exists for sub-slab and soil vapor samples in New York State. For reference, soil vapor sample results were compared to the NYSDOH Soil Vapor Guidance for Evaluating Soil Vapor Intrusion Decision Matrices. Sub-slab samples were compared to indoor air sample results using the NYSDOH Soil Vapor Guidance for Evaluating Soil Vapor Intrusion Decision Matrices. Sub-slab and indoor air samples results are summarized in Table 7 and soil vapor sample results are summarized in Table 8. The sub-slab and soil vapor sample results are shown on Figure 9, and the laboratory analytical reports can be found in Appendix I.

5.5.1 Sub-Slab Analytical Data

Total VOCs in sub-slab soil vapor samples ranged from 243 $\mu\text{g}/\text{m}^3$ in SS08 to 287 $\mu\text{g}/\text{m}^3$ in SS09. Total VOCs in indoor air ranged from 17 $\mu\text{g}/\text{m}^3$ in IA09 to 33 $\mu\text{g}/\text{m}^3$ in IA08 and in the outdoor ambient air sample at 51.1 $\mu\text{g}/\text{m}^3$. VOCs detected in sub-slab and indoor air samples include:

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 4-Ethyltoluene

-
• Acetone	• Benzene	• Chloromethane
• Carbon Tetrachloride	• Chloroform	• Ethylbenzene
• Cyclohexane	• Dichlorodifluoromethane	• Methyl Ethyl Ketone (2-Butanone)
• n-Heptane	• m,p-Xylene	• Styrene
• Isopropanol	• Methylene Chloride	• Toluene
• Methyl Methacrylate	• o-Xylene	
• n-Hexane	• Tetrachloroethene (PCE)	
• Tert-Butyl Methyl Ether	• Trichlorofluoromethane	

Sub-slab soil vapor samples were compared to the NYSDOH Guidance for Evaluating Soil Vapor Intrusion.

PCE was detected in both sub-slab samples at concentrations ranging from 20 $\mu\text{g}/\text{m}^3$ in SS-09 to 35 $\mu\text{g}/\text{m}^3$ in SS-08. PCE was not detected in co-located indoor air samples. A comparison of the maximum concentration of PCE to the Decision Matrices recommends "no further action".

Carbon tetrachloride was detected in co-located sub-slab and indoor air samples at concentrations ranging from 0.42 $\mu\text{g}/\text{m}^3$ in SS-08 to 0.51 $\mu\text{g}/\text{m}^3$ in IA-08. Carbon tetrachloride was detected in one ambient air sample AA-01, at a concentration of 0.5 $\mu\text{g}/\text{m}^3$. A comparison of the maximum concentration of carbon tetrachloride to the Decision Matrices recommends "no further action".

Petroleum-related compounds including benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at concentrations in sub-slab/co-located indoor air samples ranging from about 8.03 $\mu\text{g}/\text{m}^3$ in IA-08 to 166.4 $\mu\text{g}/\text{m}^3$ in SS-09. Although there is no direct comparison in New York State, these do not suggest mitigation is warranted.

5.5.2 Soil Vapor Analytical Data

Total VOCs in soil vapor samples ranged from 220 $\mu\text{g}/\text{m}^3$ in SV-07 to 3,050 $\mu\text{g}/\text{m}^3$ in SV-16. Total VOCs in the outdoor ambient air sample was detected at 69 $\mu\text{g}/\text{m}^3$. VOCs detected in soil vapor samples include:

• 1,2,4-Trimethylbenzene	• 1,3,5-Trimethylbenzene	• 1,3-Butadiene
• 2-Hexanone	• 4-Ethyltoluene	• Acetone

- Acrylonitrile
- Benzene
- Carbon Disulfide
- Carbon Tetrachloride
- Chloroethane
- Chloroform
- Chloromethane
- cis-1,2-Dichloroethene
- Cyclohexane
- Dichlorodifluoromethane
- Ethyl Acetate
- Ethylbenzene
- Isopropanol
- m,p-Xylene
- Methyl Ethyl Ketone (2-Butanone)
- Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)
- Methyl Methacrylate
- n-Heptane
- n-Hexane
- o-Xylene
- Propylene
- Styrene
- Tert-Butyl Methyl Ether
- PCE
- Toluene
- Trichloroethene (TCE)
- Trichlorofluoromethane

Soil vapor samples were compared to the NYSDOH Guidance for Evaluating Soil Vapor Intrusion. Full evaluation using the Decision Matrices requires both soil vapor and indoor air data. Indoor air samples were not collected on Lots 9,157, and 162 as they do not contain any structures. However, the Decision Matrices can still provide guidance based on soil vapor concentrations as they relate to ranges of possible indoor air concentrations.

PCE was detected in four soil vapor samples at concentrations ranged from 3.1 $\mu\text{g}/\text{m}^3$ in SV-15 to 13 $\mu\text{g}/\text{m}^3$ at SV-04 and SV-07. PCE's daughter products were also detected in select locations: TCE at 0.38 $\mu\text{g}/\text{m}^3$ in SV-16 and cis-1,2-DCE from 0.21 $\mu\text{g}/\text{m}^3$ in SV-16 to 1.1 $\mu\text{g}/\text{m}^3$ in SV-15. PCE, TCE, and cis-1,2-DCE were not detected in the ambient air samples. A comparison of the maximum concentration of PCE, TCE, and cis-1,2-DCE to the Decision Matrices recommends "no further action".

Carbon tetrachloride was detected in five soil vapor samples at concentrations ranging from 0.3 $\mu\text{g}/\text{m}^3$ in SV-15 to 0.78 $\mu\text{g}/\text{m}^3$ in SV-16. A conservative comparison of the maximum concentration of carbon tetrachloride to the Decision Matrices recommends actions ranging from "no further action" to "identify source(s) and resample or mitigate".

Petroleum-related compounds including BTEX were detected at concentrations in soil vapor samples at concentrations ranging from 33.4 $\mu\text{g}/\text{m}^3$ in SV-04 to 2,430 $\mu\text{g}/\text{m}^3$ in SV-16.

5.7 Quality Control Results

Duplicates, MS/MSDs, field rinsate blanks, and trip blanks were collected during the RI and SRI are detailed in Table 1. The duplicates, field blanks, and MS/MSD sample pairs for soil and

groundwater were collected at a frequency of 1 per 20 primary samples. Quality control sample results were evaluated during data validation, and the laboratory analytical reports are provided in Appendix I.

5.8 Data Usability

Category B laboratory reports for soil, groundwater, soil vapor, and air samples were provided by York and were forwarded to Langan's data validator. DUSRs are provided in Appendix H. The results of the data validation review are summarized below.

The data were determined to be acceptable. Completeness, defined as the percentage of analytical results that are judged to be valid, is 100 percent. No major deficiencies were identified. All data is considered useable as qualified.

5.9 Evaluation of Potential Areas of Concern

This section discusses the results of the RI and SRI with respect to the potential AOCs described in detail in Section 3.4. AOC locations are shown on Figure 5.

5.9.1 AOC 1: Historic Fill

Historic fill material located throughout the site contains SVOCs (including PAHs), metals, PCBs, and pesticides at concentrations above the Part 375 UU and/or RURR SCOs. The historic fill layer, which was identified during the RI to depths ranging from about 2 to 16 feet bgs, was most shallow in the southwestern part of the site (SB-108R_W1) and deepest in the southeastern part of the site (SB-04R). The historic fill predominantly consists of brown and dark gray, fine- to medium-grained sand with varying amounts of gravel, silt, asphalt, brick, coal, coal ash, slag, glass, ceramics, plastic, wood, incinerated material and/or concrete. A summary of the analytical results from historic fill for AOC 1 is summarized as follows:

AOC 1 - Soil

- Fifteen SVOCs (3 & 4 methylphenol, 2-Methylphenol, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, phenol, and pyrene) were detected above the Part 375 UU and/or RURR SCOs in samples collected from the historic fill layer in soil borings SB-01, SB-05, SB-107, SB-109, and SB-101.
- Metals, including arsenic, barium, cadmium, hexavalent/trivalent chromium, copper, lead, mercury, nickel, selenium, and zinc were detected above the UU and/or RURR SCOs in samples collected from the historic fill layer in all soil borings except for SB-105.
- Pesticides, including 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and alpha BHC were detected above UU SCOs in samples collected from the historic fill layer in soil borings SB-02, SB-03, SB-

04, SB-11, SB-12, and SB-15.

- Total PCBs were detected above the UU SCO historic fill in soil boring SB-12.
- Herbicides were not detected above UU and/or RURR SCOs in soil samples collected.
- PFAS were not detected at concentrations above unrestricted use screening levels in soil samples collected.

AOC 1 - Groundwater

- Two PAHs, benzo(a)anthracene and chrysene, were detected above the SGVs in groundwater samples. Benzo(a)anthracene and chrysene was also detected in soil at this location, which may be the source of SVOCs in groundwater.
- Metals (including iron, lead, manganese, and sodium) were detected at concentrations above the NYSDEC SGVs in groundwater samples. Iron, manganese, and sodium were detected in dissolved groundwater samples above SGVs and are characteristic of naturally-occurring groundwater conditions.
- PFAS (PFOA and PFOS) were detected at concentrations above the screening levels in groundwater samples MW-01, MW-02, MW-05, MW-06, MW-08, MW-11, and/or MW-13.

AOC 1 – Soil Vapor

- Four VOCs, carbon tetrachloride, cis-1,2-dichloroethene, PCE, and TCE were detected at concentrations in samples when applied to the NYSDOH Decision Matrices, recommended actions range between “no further action” and “identify source(s) and resample or mitigate” for occupied structures.
- Toluene was detected in sample SV-16 at a concentration two orders of magnitude greater than other samples in this AOC. A source of toluene was not identified.

AOC 1 - Conclusions

Historic fill, which is ubiquitous across the site footprint, was encountered to depths ranging from 2 to 16 feet bgs during the RI and SRI. SVOCs, metals, PCBs and pesticides were detected at concentrations above the Part 375 UU and/or RURR SCOs in samples within the historic fill layer and below, with the deepest exceedance identified at 13 feet bgs. Concentrations of PAHs and metals are likely associated with the general quality of the fill placed at the site or historical industrial uses of the site.

SVOCs, metals, and pesticides detected at concentrations above the Part 375 UU and/or RURR SCOs attributed to historic fill material were generally observed from 3 to 13 feet bgs.

SVOCs, benzo(a)anthracene and chrysene, detected in soil were also identified in groundwater at concentrations above NYSDEC SGVs. The source of SVOCs in groundwater is historic fill material. Iron, manganese, and sodium are likely associated with brackish conditions, due to the

site's proximity to the Narrows. Concentrations of petroleum- and chlorinated- VOCs in soil vapor were not identified. PFAS compounds were detected in groundwater at concentrations exceeding the screening levels, but were not detected in soil at concentrations exceeding the unrestricted use screening levels; therefore, the site soil is not considered a source of PFAS in groundwater.

5.9.2 AOC 2: Historical Coal Yard and Filling Station on Lot 9

Releases of petroleum products, solvents, and/or other hazardous materials associated with the historical coal yard and filling station operations may have adversely affected soil, groundwater and/or soil vapor. A summary of the findings for AOC 2 is provided below:

AOC 2 - Soil

- Petroleum-related VOCs were not detected at concentrations above the UU SCOs. Petroleum impacts, including PID readings above background, odors, or staining, were not identified in AOC 2.
- Concentrations of PAHs identified in shallow samples collected from soil borings SB-101 and SB-107 were one to two orders of magnitude greater than other samples within the AOC and may be the result of a release related to the former use. SVOC concentrations in the remaining samples are more likely associated with historic fill.
- Concentrations of several metals (barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, and/or zinc) were identified in samples collected from soil borings SB-01, SB-02, SB-11 through SB-16, and SB-101 through SB-103 at concentrations exceeding Part 375 UU SCOs and/or RURR SCOs but at concentrations generally more representative of historic fill material than at concentrations representative of a release associated with historical operations.
- Total PCBs was detected above its Part 375 UU SCO in the sample collected from soil boring SB-12 from 0 to 2 feet bgs, and is likely associated with historic fill.
- Concentrations of several pesticides (4'4-DDD, 4'4-DDE, 4'4-DDT) were identified in samples collected from soil borings SB-02, SB-11, SB-12, and SB-15 at concentrations exceeding Part 375 UU SCOs but below Part 375 RURR SCOs at concentrations generally more representative of historic fill material than at concentrations representative of a release associated with historical operations.

AOC 2 - Groundwater

- VOCs were not detected at concentrations above the SGVs.
- Two SVOCs, benzo[a]anthracene and chrysene, were detected at concentrations above the SGVs in MW-01.

- Four metals iron, lead, manganese, and sodium, were detected at concentrations above the SGVs in samples collected from monitoring wells MW01, MW02, MW10, MW11, and MW-13. Iron, manganese, and sodium were also detected in dissolved groundwater samples above the SGVs and are characteristic of naturally-occurring groundwater conditions.
- One PFAS, PFOA, was detected at a concentration above the screening level in samples collected from monitoring wells MW-01, MW-02, MW-11, and MW-13.

AOC 2 – Soil Vapor

- Total VOCs ranged from 259 $\mu\text{g}/\text{m}^3$ in SV-02 to 3,050 $\mu\text{g}/\text{m}^3$ in SV-16. Petroleum based VOCs and one CVOC, carbon disulfide, were detected in samples collected from soil vapor points SV-01 and SV-16 at concentrations one to two orders of magnitude greater than other samples within this AOC. A source of VOCs in soil vapor was not identified in AOC 2.

AOC 2 Conclusions

Concentrations of PAHs, PCBs, pesticides, and metals in soil and/or groundwater are likely associated with the general quality of the historic fill material, however, concentrations of PAHs in samples collected from soil borings SB-101 and SB-107 were one to two orders of magnitude greater than other samples in this AOC and may be the result of a release related to the former use. PFAS was not detected in soil above screening levels; therefore, a source of PFAS in groundwater was not identified. A source of chlorinated-VOC in soil vapor was not identified. Petroleum-related VOCs in soil vapor may be attributed to former site operations (AOC 3) or an unknown off-site source.

5.9.3 AOC 3: Historical Automobile Repair Shop and Manufacturing

Releases of petroleum products, solvents, and/or other hazardous materials associated with the historical manufacturing and automobile repair operations may have adversely affected soil, groundwater and/or soil vapor. A summary of the findings for AOC 3 is provided below:

AOC 3 - Soil

- VOCs were not detected at concentrations above the UU SCOs. Petroleum impacts, including PID readings above background, odors, and/or staining, were observed from 6 to 7 feet in SB-06 and from 9 to 10 feet bgs in SB-110.
- Concentrations of SVOCs in soil were detected at concentrations exceeding the UU and/or RURR, but at concentrations generally more representative of historic fill material than at concentrations representative of a release associated with historical operations.
- Metals in soil were identified above UU and/or RURR SCOs; however, concentrations of lead and mercury were detected within the extents of the former automobile repair shop

and manufacturing (SB-08, SB-108, and SB-109) at concentrations one order of magnitude greater than other samples in this AOC and may be the result of a release related to the former use. Metal concentrations in the remaining samples are more likely associated with historic fill.

- PFAS were not detected at concentrations above unrestricted use screening levels in soil samples.

AOC 3 - Groundwater

- VOCs were not detected at concentrations above the SGVs.
- Metals (including iron, lead, manganese, and sodium) were detected at concentrations above the SGVs in samples collected from monitoring wells MW-06 and MW-08. Iron, manganese, and sodium were also detected in dissolved groundwater samples above the SGVs and are characteristic of naturally-occurring groundwater conditions. The presence of total lead in groundwater above the SGV in the sample collected from monitoring well MW-08, within the former auto repair shop, is likely the result of historic fill entrainment.
- PFAS (PFOA and PFOS) were detected at concentrations above the screening levels in groundwater samples MW-06 and MW-08.

AOC 3 – Soil Vapor

- Historical operations do not appear to have impacted soil vapor.

AOC 3 Conclusions

Concentrations of several SVOCs and metals are likely associated with the general quality of the historic fill material, with the exception of metals in samples collected from soil borings SB-08, SB-108, SB-109, and SB-111, which may be related to historical site uses.

Petroleum-like impacts including odor, staining and PID readings above background were not observed in soil or groundwater, with the exception of soil boring SB-110 from 9 to 10 feet bgs. PID readings above background were also recorded in soil boring SB-06 from 6 to 7 feet bgs; however, associated odors or staining were not observed. VOCs were not detected above the UU or RURR SCOs in soil or SGVs in groundwater within AOC 3. PFAS was not detected in soil above screening levels; therefore, a source of PFAS in groundwater was not identified. Detections of BTEX and CVOC have been identified in soil vapor that are not indicative of a release from the former automobile repair shop.

5.9.4 AOC 4: Metals-Impacted Hot Spots

Concentrations of lead, barium and/or mercury were identified in borings SB-08, SB-108 and SB-111, respectively, above NYSDEC Part 375 CU SCOs during the April/May 2020 RI. Additional sampling was conducted during the SRI to delineate these hot spots. Concentrations of lead,

barium and mercury above CU SCOs may be attributed to on-site historic operations and/or quality of historic fill.

AOC-4 Findings

This AOC includes lead (SB-08/SB-08R), barium (SB-08/SB-08R and lead (SB-108/SB-108R), and mercury (SB-111/SB-111R hot spots identified during the RI). Findings are summarized below:

Mercury Hot Spot (SB-111/SB-111R)

- This hot spot is centered on RI boring SB-111, which had a mercury concentration of 5.76 mg/kg, exceeding the RURR SCO. Total mercury was detected above the Industrial Use (IU) SCO in one sample to the east collected between 8 and 9 feet bgs, above the CU SCO in one sample to the east collected between 9 and 10 feet bgs, and above the RURR SCO in two samples to the south collected between 8 and 9 feet during the SRI. The hot spot location at RI boring SB-111 is defined by soil borings SB-111R_E2 to the east, SB-111R_W1 to the west, SB-111R_N2 to the north and the property line to the south, and extends to 11 feet bgs.

Lead and Barium Hot Spot (SB-108/SB-108R)

- This hot spot is centered on RI boring SB-108, which had a lead concentration of 1,930 mg/kg (duplicate 2,530 mg/kg) at 7 to 9.5 feet bgs and a barium concentration of 411 mg/kg at 4 to 6 feet bgs, exceeding the RURR/CU SCO of 400 mg/kg. Neither Lead nor barium were detected at concentrations greater than the UU SCOs at 10 to 11 feet bgs near the original SB-108 boring location. The lateral extent of barium and lead was not defined by the offset borings. The extent of the SB-108 hot spot is defined by SB107_7-8 to the north, SB106_9-10 to the northeast, SB06_0-2 to the east, SB109_9-10 to the south and SB109_11-12 to the west to a depth of 10 feet bgs.

Lead and Barium (SB-08/SB-08R)

- This hot spot is centered on RI boring SB-08, which had a lead concentration of 2,080 mg/kg and a barium concentration of 442 mg/kg at 13 to 15 feet bgs, exceeding the RURR SCOs of 400 mg/kg. Total lead was detected above the CU SCO in one sample collected between 12 and 13 feet bgs and above the RURR SCO in one sample collected between 13 and 15 feet bgs, both samples were collected north of the original boring during the SRI delineation. Lead was not identified above UU SCOs in the sample beneath or original impacted interval (15 to 16 feet bgs).
- Total barium was detected in SB-08 above the RURR SCO in one sample collected from 13 to 15 feet bgs during the RI; however barium was not detected above UU SCOs during the SRI.

- This hot spot location is defined by soil borings SB-08R_E1, SB-08R_W1, SB-08R_S1, and SB-08R_N2 and extends to 15 feet bgs. In addition, this hot spot is bound vertically by native soil, which was encountered at depths of 5 to 15 feet bgs.

AOC-4 Conclusions

- Metals-impacted hot spots identified during the RI may be associated with historical on-site operations or quality of historic fill. The following is a summary of the delineated extents of the metal hot spots:
 - The extent of the mercury hot spot centered on RI boring SB-111 has been vertically delineated to the north, south, east, and west of the initial finding. The hot spot location at RI boring SB-111 is defined by soil borings SB-111R_E2 to the east, SB-111R_W1 to the west, SB-111R_N2 to the north and the property line to the south, and extends to 11 feet bgs.
 - The extent of the lead and barium hot spot centered on RI boring SB-108 has been vertically and horizontally delineated to the south, east, and west of the initial finding. Neither Lead nor barium were detected at concentrations greater than the UU SCOs at 10 to 11 feet bgs near the original SB-108 boring location. The lateral extent of barium and lead was not defined by the offset borings. The extent of the SB-108 hot spot is defined by SB107_7-8 to the north, SB106_9-10 to the northeast, SB06_0-2 to the east, SB109_9-10 to the south and SB109_11-12 to the west to a depth of 10 feet bgs.
 - The extent of the lead hot spot centered on RI boring SB-08 has been horizontally delineated to the north, south, east, and west and vertically delineated to the south, east, and west. While a sample could not be collected beneath SB08_N1_13-15 due to poor recovery, lead concentrations from the 15 to 16 foot interval beneath the original boring location were below UU SCOs. This hot spot location is defined by soil borings SB-08R_E1, SB-08R_W1, SB-08R_S1, and SB-08R_N2 and extends to 15 feet bgs. In addition, this hot spot is bound vertically by native soil, which was encountered at depths of 5 to 15 feet bgs.

6.0 QUALITATIVE HUMAN AND FISH/WILDLIFE EXPOSURE ASSESSMENT

Human health exposure risk was evaluated for both current and future site and off-site conditions, in accordance with the May 2010 NYSDEC Final DER-10 Technical Guidance for Site Investigation and Remediation. The assessment includes an evaluation of potential sources and migration pathways of site contamination, potential receptors, exposure media, and receptor intake routes and exposure pathways.

In addition to the human health exposure assessment, NYSDEC DER-10 requires an on-site and off-site Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, a FWRIA is not required.

6.1 Current Conditions

The site is located at 475 Bay Street and 31 Wave Street in the Stapleton Heights neighborhood of Staten Island, New York and is identified on the Borough of Staten Island Tax Map as Block 488, Lots 9, 157, 162, and 164. A site location map is provided as Figure 1. The site is currently comprised of three vacant asphalt and gravel-paved lots (Lots 9, 157, and 162) and a vacant one-story slab-on-grade building (Lot 164), and encompasses an area of about 66,800 square-feet (1.53 acres). The site is bound by a two-story commercial building and a one-story industrial building to the north; NYCT elevated Staten Island Rail structure to the east; Wave Street and a two-story McDonalds restaurant to the south; and Bay Street to the west.

6.2 Proposed Conditions

Current plans call for the merger of Lots 157, 162 and 164 into one lot, designated Lot 164, and the development of a new 14,000 square-foot 3-story community facility on Lots 157, 162, and 164, and an about 57,000-square-foot 12-story mixed use commercial and residential building with 116 parking spaces on Lot 9. The ground floor of both buildings will consist of commercial space. Floors 2 through 12 of the residential building will consist of studio, one-bedroom, two-bedroom, and three-bedroom affordable residential units. Floors 2 and 3 of the community space building will consist of community space. A site-wide cellar level is not being considered; however, excavation will be required for installation of foundation elements and a below grade utility room.

6.3 Summary of Environmental Conditions

AOCs include historic fill as well as PAH and metal impacts in soil associated with historical site use. Contaminants of Concern (COC) associated with the AOCs include SVOCs, pesticides, PCBs, and metals.

SVOCs, metals, PCBs, and pesticides were detected at concentrations above the Part 375 UU and/or RURR SCOs in samples collected from historic fill. PAHs and metals were detected at concentrations that are typical of historic fill material in New York City throughout the site.

In addition, lead, mercury, and barium were detected in soil at concentrations above the RURR SCOs in the southern part of the site, and PAHs were detected at concentrations above the Part 375 RURR SCOs in the northern and western parts of the site. Concentrations of metals and PAHs were detected at one to two orders of magnitude higher in these locations, relative to other areas of the site. These impacts are likely associated with the former auto repair on Lots 162 and 164, respectively.

Dissolved iron, manganese and sodium were detected in groundwater at concentrations greater than the SGVs. These metals are representative of regional groundwater conditions.

Petroleum-related and chlorinated VOCs were detected in soil vapor, but at concentrations below which mitigation is recommended. A site source of VOCs in soil vapor was not identified.

6.4 Conceptual Site Model

A conceptual site model (CSM) was developed based on the findings of the RI and previous investigations to produce a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways.

6.4.1 Potential Sources of Contamination

Potential sources of contamination have been identified and include historic fill and historical site usage as a coal yard, filling station, automobile repair and manufacturing.

Historic fill material encountered beneath surface cover to depths ranging from about 2 to 16 feet bgs originated from unidentified source areas and was placed as backfill at an unknown time. SVOCs, metals, PCBs, and pesticides detected at concentrations above the Part 375 UU and/or RURR SCOs attributed to historic fill material were generally observed from 3 to 13 feet bgs.

Petroleum-nuisance conditions were identified during the SRI within surficial soil just outside of the former auto repair facility in borings SB-108R_I, SB-108R_E1 and SB-108R_S1 and covered an area of about 20 square feet, ranging in depth from surface grade to 3 to 7.5 feet bgs. Petroleum-related VOCs and SVOCs were not detected at concentrations greater than the UU SCOs in soil SB-108 and were not detected in groundwater in downgradient monitoring wells MW05, MW06 and MW08. Because petroleum-nuisance conditions were limited to the surface, the source appears to be incidental spills originating from the auto-repair facility.

Copper and trivalent chromium were detected in native soil at concentrations above the UU SCOs at depths ranging from about 5 to 20 feet bgs. During the SRI, samples were collected from the native soil layer throughout the site to assess metals contamination distribution in soils. Trivalent chromium and copper were not identified in native soil samples collected during the SRI. Based

on the results of the SRI, trivalent chromium and copper identified in native soil during the RI were likely the result of interference from historic fill during sampling and are not representative of the site conditions. Nickel was detected in native soil at concentrations above the UU SCO at depths ranging from about 4 to 21 feet bgs.

PAHs, including benzo(a)anthracene and chrysene, were detected in groundwater at one location near the northwestern part of the site. These PAHs were also detected in historic fill material, which is the likely source of PAHs in groundwater. The metals iron, manganese and sodium were detected in groundwater above the SGVs. These metals are attributed to regional groundwater conditions. None of the other metals detected in soil above applicable SCOs were detected in dissolved phase in groundwater. PFAS compounds were detected in groundwater at concentrations exceeding the screening levels, but were not detected in soil at concentrations exceeding the unrestricted use screening levels; therefore, the site soil is not considered a source of PFAS in groundwater.

Petroleum-related and chlorinated VOCs were detected in soil vapor at concentrations below which mitigation is recommended. A site source of VOCs was not identified.

6.4.2 Exposure Media

Impacted media include soil and groundwater. Analytical data suggests that historic fill material contains SVOCs, metals, PCBs, and pesticides up to about 13 feet bgs and metals in native soil up to about 20 feet bgs in exceedance of UU and/or RURR SCOs. Historic fill-related PAHs, metals, and pesticides were detected across the site. Groundwater was observed at depths ranging from 3.51 to 4.92 feet bgs, and impacts include SVOCs and metals. Groundwater is not a potable source of water.

6.4.3 Receptor Populations

The site is currently an asphalt-paved and/or gravel lot on the northern and southeastern parts of the site, and a vacant one-story slab-on-grade building located on the southwestern part of the site. Under future conditions, human receptors may include construction and remediation workers, authorized guests visiting the site, and the public adjacent to the site, as well as potential future building occupants.

6.5 Potential Exposure Pathways – On-Site

6.5.1 Current Conditions

Human exposure to contaminated soil is prevented by an impermeable asphalt cover, a gravel layer, or the foundation of the one-story building that overlies the site. Site access is restricted by a metal fence and/or locked gates; therefore, human exposure to contaminated soil is limited. There is a potential pathway through dermal absorption, inhalation and ingestion for investigation

workers that handle soil beneath the surface cover materials, but is controlled by implementation of a site-specific HASP.

Groundwater in this area of New York City is not used as a potable water source. There is a potential exposure pathway during groundwater sampling associated with site investigation. The potential pathway for site investigation workers is through dermal absorption and ingestion, but is controlled by implementation of a site-specific HASP.

Soil vapor does not contain VOCs at concentrations that warrant vapor mitigation. Any potential exposure to soil vapor is limited as Lots 9, 157 and 162 are open-air lots and Lot 164 contains a one-story slab-on-grade structure with concrete building slab.

6.5.2 Construction/Remediation Conditions

Construction and remediation may result in potential exposures to site contaminants in the absence of a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP). Construction and remedial activities will likely include excavation and off-site disposal of impacted soil, and construction of foundation components. In the absence of a HASP and CAMP, this scenario presents the potential for exposure of soil contaminants to construction and remediation workers via dermal absorption, ingestion, and inhalation of vapors and particulate matter. This exposure pathway will be marginalized through the implementation of the HASP, CAMP, and vapor and dust suppression techniques.

6.5.3 Proposed Future Conditions

The proposed redevelopment project includes a mixed-use community facility with residential and commercial development. The site is anticipated to undergo a Track 2 cleanup and new development will incorporate a cover system across the site, installation of a waterproofing membrane/vapor barrier, and implementation of a Site Management Plan (SMP), which will prevent human exposure to any residual soil.

There is no pathway for ingesting groundwater COCs, since the site and surrounding areas obtain their drinking water supply from surface water reservoirs located upstate and not from groundwater. If a Track 2 cleanup is achieved an environmental easement (EE) will be placed on the site and groundwater use will be restricted to prevent exposure to residual contamination.

Institutional controls will require maintenance of engineering controls and will serve to further mitigate exposure under future conditions.

6.6 Potential Exposure Pathways – Off-Site

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

- The site is located in an urban area and predominantly covered with continuous relatively impervious surface covering.
- During site remediation and construction, the following protective measures will be implemented:
 - A site-specific HASP, including a CAMP, will be implemented to protect on-site personnel and to monitor the perimeter of the site to mitigate off-site migration of particulates and VOCs during construction.
 - Air monitoring will be conducted for particulates (i.e., dust) and VOCs during intrusive activities as part of a CAMP. Dust and/or vapor suppression techniques will be employed to limit potential for off-site migration of soil and vapors.
 - Vehicle tires and undercarriages will be washed prior to leaving the site to prevent tracking material off-site.
 - A soil erosion/sediment control plan will be implemented during construction to control off-site migration of soil.

There is no pathway for ingesting groundwater COCs, since the site and surrounding areas obtain their drinking water supply from surface water reservoirs located upstate and not from groundwater.

6.7 Evaluation of Human Health Exposure

Based upon the CSM and the review of environmental data, partial on-site exposure pathways appear to be present under current conditions, and in the absence of institutional and engineering controls, complete on-site exposure pathways could potentially exist in construction/remediation and future conditions.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population.

6.7.1 Current Conditions

Contaminant sources include historic fill with varying concentrations of SVOCs, metals, PCBs, and pesticides.

Contaminant release and transport mechanisms include contaminated soil transported as dust (dermal, ingestion, inhalation), and existing soil vapor contaminants (inhalation). Under current conditions, the likelihood of human exposure is limited, as 1) the site is covered by asphalt, gravel or a one-story building and site access is restricted to employees, ownership and authorized

visitors; 2) the site is not a source of drinking water; and 3) soil vapor does not appear to be impacted and the majority of the site is an open-air parking lot.

6.7.2 Construction/Remediation Activities

During development and remediation, the contaminant sources are the same as for current conditions. Points of exposure include disturbed and exposed soil during excavation, dust and organic vapors generated during excavation, and groundwater that may be encountered during excavation. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of organic vapors arising from contaminated soil and groundwater, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers and, to a lesser extent, the public adjacent to the site.

The potential for completed exposure pathways is present since all five elements exist; however, the risk will be minimized by the implementation of appropriate health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, cleaning truck undercarriages before they leave the site to prevent off-site soil tracking, maintaining site security, and wearing the appropriate personal protective equipment (PPE).

6.7.3 Proposed Future Conditions

For the proposed future conditions, residual contaminants will remain on-site at concentrations greater than the RURR SCOs, but at depths greater than 15 feet bgs. If residual impacts exist and engineering/institutional controls (EC/IC) are not implemented, points of exposure could include potential cracks in the foundation of the proposed development, exposure during any future ground-intrusive work, or inhalation of vapors entering the building. The receptor population includes residential and commercial use occupants, employees, and the nearby community, including children. The possible routes of exposure can be avoided or mitigated by removal of contaminated soil and implementation of a Site Management Plan (SMP), if necessary depending on the remedy).

6.7.4 Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion and inhalation of soil, soil vapor, or groundwater by authorized site visitors in instances where the integrity of the impermeable site cover is compromised or during site investigation. The exposure risks can be avoided or minimized by following the appropriate HASP and vapor and dust suppression measures, and by implementing a CAMP during intrusive activities.
2. In the absence of engineering controls, there is a moderate risk of exposure during the construction and remediation activities. The primary exposure pathways are:

- a. Dermal contact, ingestion and inhalation of contaminated soil, groundwater or soil vapor by construction workers.
- b. Dermal contact, ingestion and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site.

These can be avoided or minimized by performing community air monitoring and by following the appropriate health and safety, vapor and dust suppression, and site security measures outlined in a site-specific HASP.

3. The existence of a complete exposure pathway for site contaminants to human receptors under future conditions is unlikely, as contaminant sources will likely be removed during site development, and if any residual soil remains, the impermeable foundation cover would serve as an engineering control preventing exposure. Regional groundwater is not used as a potable water source in New York City, so exposure to regional groundwater contaminants is unlikely. VOCs are not present in soil vapor at concentrations that warrant mitigation so exposure to soil vapor is unlikely during future site conditions.
4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during remediation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and, if necessary, engineering controls may be implemented (e.g. site-wide cap and a waterproofing/ vapor barrier) to prevent completion of this pathway.

7.0 NATURE AND EXTENT OF CONTAMINATION

This section evaluates the nature and extent of soil, groundwater and soil vapor contamination. The nature and extent of the contamination is derived from a combination of field observations and analytical data that were discussed in Section 5.0.

7.1 Soil Contamination

Historic fill predominantly consisting of brown and dark gray, fine- to medium-grained sand with varying amounts of gravel, silt, asphalt, brick, coal, coal ash, slag, glass, ceramics, plastic, wood, incinerated material and/or concrete was encountered at depths ranging from surface grade to between about 2 to 16 feet bgs. SVOCs, metals, PCBs and pesticides detected at concentrations above the Part 375 UU and/or RURR SCOs are likely related to the quality of historic fill, with the exception of SVOCs and/or metals in SB-08, SB-101, SB-107, SB-108, SB-109, and SB-111, which may be related to the former operations at the site including a gasoline filling station, coal yard, auto repair and manufacturing operations.

Petroleum-nuisance conditions were identified during the SRI within surficial soil just outside of the former auto repair facility in borings SB-108R_I, SB-108R_E1 and SB-108R_S1 and covered an area of about 20 square feet, ranging in depth from surface grade to 3 to 7.5 feet bgs. Petroleum-related VOCs and SVOCs were not detected at concentrations greater than the UU SCOs in soil SB-108 and were not detected in groundwater in downgradient monitoring wells MW05, MW06 and MW08. Because petroleum-nuisance conditions were limited to the surface, the source appears to be incidental spills originating from the auto-repair facility.

7.2 Groundwater Contamination

Evaluation of the groundwater analytical results identified SVOCs and naturally occurring metals above the SGVs. Total lead was detected in two groundwater samples at concentrations greater than the SGV, but was not detected in dissolved groundwater; therefore, lead is not considered a groundwater contaminant of concern. SVOCs were detected in the northeastern part of the site at concentrations above TOGS SGVs; the source of SVOCs is historic fill material. Metals, including iron, manganese, and sodium were also detected across the site but are naturally occurring and present in groundwater throughout New York City.

7.3 Soil Vapor Contamination

Soil vapor did not appear to be impacted at the site. According to a conservative comparison of chlorinated-VOCs to their respective decision matrices, action ranging from “no further action” to ‘identify source(s) and resample or mitigate’ is recommended and does not warrant remediation.

8.0 CONCLUSIONS

1. Stratigraphy: The stratigraphy observed during the RI consists of a historic fill layer that extends from surface grade to depths ranging from 2 to 16 feet below grade surface (bgs). The historic fill predominantly consists of brown and dark gray, fine- to medium-grained sand with varying amounts of gravel, silt, asphalt, brick, coal, coal ash, slag, glass, ceramics, plastic, wood, incinerated material and/or concrete. On the northern half of the site, the fill layer is underlain by native soil that predominantly consists of gray to reddish brown silty fine sand with varying amounts of fine gravel and clay lenses that extend to the termination depth of each boring. Towards the southeastern part of the site, the fill layer is underlain by a dark reddish brown fine sand with varying amounts of silt and fine gravel followed by dark grayish brown silt layer. Bedrock was not encountered in any of the RI soil borings, but was encountered between 75 and 84 feet bgs during a geotechnical investigation.
2. Hydrogeology: Depth to groundwater was measured between about 3.56 to 4.32 feet bgs, with corresponding groundwater elevations ranging from about el 5.12 to el 6.31 NAVD88. The groundwater elevation is highest in the central region of the site and appears to flow outwards in all directions. The general topography of the area surrounding the site suggests that regional groundwater flow is to the east towards the Narrows.
3. Historic Fill: Historic fill material was identified below surface cover to depths ranging from 2 to 16 feet bgs. Contaminants related to historic fill material were identified up to 13 feet bgs and include SVOCs, metals, PCBs, and pesticides, which were detected at concentrations above UU and/or RURR SCOs within this layer. The detected concentrations are generally typical of historic fill material in New York City, with the exception of SVOCs and/or metals in SB-08, SB-101, SB-107, SB-108, SB-109, and SB-111, which may be related to the former site use in this location. Petroleum-nuisance conditions were identified during the SRI within surficial soil just outside of the former auto repair facility. The source appears to be incidental spills originating from the auto-repair facility.
4. Nickel was detected in native soil at depths ranging from about 5 to 21 feet bgs during the RI and SRI. Excavation ranging from 2 to 15 feet would be required to achieve Track 2 SCOs.
5. Mercury, barium and lead hot spots were identified on Lots 157, 162 and 164, respectively, during the RI. Additional sampling was conducted during the SRI to delineate these hot spots.
 - a. The extent of the mercury hot spot centered on RI boring SB-111 is defined by soil borings SB-111R_E2 to the east, SB-111R_W1 to the west, SB-

111R_N2 to the north and the property line to the south, and extends to 11 feet bgs.

- b. The extent of the lead and barium hot spot centered on RI boring SB-108 is defined by SB107_7-8 to the north, SB106_9-10 to the northeast, SB06_0-2 to the east, SB109_9-10 to the south and SB09_11-12 to the west to a depth of 10 feet bgs.
 - c. The extent of the lead and barium hot spot centered on RI boring SB-08 is defined by SB-08R_N2 to the north, SB-08R_E1 to the east, SB-08R_S1 to the south, and SB-08R_W1 to the west to a depth of 15 feet bgs.
6. Groundwater: Concentrations of SVOCs identified above the SGVs are attributed to historic fill material. Dissolved metals in groundwater samples above SGVs and are characteristic of regional groundwater conditions. Total lead in groundwater is attributed to historical fill entrainment and is not representative of groundwater quality. PFOA and PFOS were detected in groundwater at concentrations greater than the NYSDEC screening value of 10 ppt, but were not detected in soil at concentrations greater than the unrestricted use screening levels; therefore, the site is not a source of PFAS.
7. Soil Vapor: Petroleum-related and chlorinated VOCs were detected in soil vapor, but at concentrations below those which mitigation is recommended. A site source of VOCs in soil vapor was not identified.
8. Sufficient analytical data were gathered during the RI and SRI, together with previous studies, to establish soil cleanup levels and to develop a remedy for the site. The final remedy will be detailed in the forthcoming Remedial Action Work Plan (RAWP) to be prepared in accordance with NYS BCP guidelines. The remedy will need to address historic fill, soil impacted with metals, SVOCs, PCBs and pesticides.

9.0 REFERENCES

1. Phase I ESA for 475 Bay Street, Staten Island, New York, dated January 12, 2000, prepared by AVT
2. Phase I ESA for 475 Bay Street Staten Island, New York, dated April 2013, prepared by URS
3. Subsurface (Phase II) Investigation for 475 Bay Street, Staten Island, New York, September 2013, prepared by AKRF Engineering, P.C. (AKRF)
4. Remedial Action Plan for 475 Bay Street, Staten Island, New York, April 2016, prepared by AKRF
5. Phase I ESA, prepared by Langan, Dated March 20, 2020
6. Phase II Environmental Site Investigation, prepared by Langan, Dated May 15, 2020
7. Preliminary Geotechnical Evaluation Report, prepared by GeoDesign, Inc, P.C., Dated April 2020
8. New York State Department of Health, Final Guidance for the Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006, revised May 2017
9. New York State Department of Environmental Conservation, Division of Environmental Remediation, Draft Brownfield Cleanup Program Guide, dated May 2004
10. New York State Department of Environmental Conservation, DER-10 Technical Guidance for Site Investigation and Remediation, issued May 3, 2010; effective June 18, 2010
11. New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) dated June 1998
12. United States Environmental Protection Agency, Low Flow Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001, January 19, 2010
13. New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006
14. Baskerville, Charles A. United States Geological Survey. "Bedrock and Engineering Geologic Maps of Bronx County and Parts of New York and Queens Counties, New York." 1992.
15. Federal Emergency Management Agency Flood Insurance Rate Map, (Map Number 3604970189F), effective September 5, 2007.
16. New York State Department of Environmental Conservation, Sampling, Analysis, and Assessment for Per- and Polyfluoroalkyl Substances, dated January 2021.

TABLES

Table 1
Sample Summary
Remedial Investigation Report
475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No. 170610601

No.	Sample Location	Sample Name	Sample Date	Sample Collection Depth (feet bgs)	Sampling Rationale	Analysis
RI - SOIL						
1	SB01	SB01_0-2	5/5/2020	0 to 2	Upper 2 feet of historic fill	TCL / Part 375-list ² of VOCs & SVOCs, Part 375 PCBs, pesticides, and herbicides, TAL / Part 375 metals including cyanide and hexavalent and trivalent chromium, PFAS, and 1,4-dioxane
2		SB01_6-8	5/5/2020	6 to 8	Bottom of the historic fill layer	
3		SB01_18-20	5/5/2020	18 to 20	Boring termination depth	
4	SB02	SB02_0-2	5/5/2020	0 to 2	Upper 2 feet of historic fill	
5		SB02_6-8	5/5/2020	6 to 8	Bottom of the historic fill layer	
6		SB02_18-20	5/5/2020	18 to 20	Boring termination depth	
7	SB03	SB03_0-2	5/5/2020	0 to 2	Upper 2 feet of historic fill	
8		SB03_6-8	5/5/2020	6 to 8	Bottom of the historic fill layer	
9		SB03_18-20	5/5/2020	18 to 20	Boring termination depth	
10	SB04	SB04_0-2	4/29/2020	0 to 2	Upper 2 feet of historic fill	
11		SB04_14-16	4/29/2020	14 to 16	Evidence of greatest impacts	
12		SB04_18-20	4/29/2020	18 to 20	Clean interval below impacts	
13	SB05	SB05_0-2	4/28/2020	0 to 2	Upper 2 feet of historic fill	
14		SB05_6-8	4/28/2020	6 to 8	Groundwater interface	
15		SB05_18-20	4/28/2020	18 to 20	Boring termination depth	
16	SB06	SB06_0-2	4/29/2020	0 to 2	Upper 2 feet of historic fill	
17		SB06_5-7	4/29/2020	5 to 7	Evidence of greatest impacts	
18		SB06_12-14	4/29/2020	12 to 14	Clean interval below impacts	
19	SB07	SB07_0-2	4/29/2020	0 to 2	Upper 2 feet of historic fill	
20		SB07_8-10	4/29/2020	8 to 10	Five feet below the groundwater table	
21		SB07_18-20	4/29/2020	18 to 20	Boring termination depth	
22	SB08	SB08_0-2	4/28/2020	0 to 2	Upper 2 feet of historic fill	
23		SB08_4-6	4/28/2020	4 to 6	Groundwater interface	
24		SB08_13-15	4/28/2020	13 to 15	Boring termination depth	
25	SB09	SB09_0-2	4/28/2020	0 to 2	Upper 2 feet of historic fill	
26		SB09_4-6	4/28/2020	4 to 6	Groundwater interface	
27		SB09_13-15	4/28/2020	13 to 15	Boring termination depth	
28	SB10	SB10_0-2	5/6/2020	0 to 2	Upper 2 feet of historic fill	
29		SB10_6-8	5/6/2020	6 to 8	Bottom of the historic fill layer	
30		SB10_18-20	5/6/2020	18 to 20	Boring termination depth	
31	SB11	SB11_0-2	4/30/2020	0 to 2	Upper 2 feet of historic fill	
32		SB11_10-12	4/30/2020	10 to 12	Bottom of the historic fill layer	
33		SB11_14-16	4/30/2020	14 to 16	Boring termination depth	
34	SB12	SB12_0-2	4/30/2020	0 to 2	Upper 2 feet of historic fill	TCL / Part 375-list ² of VOCs & SVOCs, Part 375 PCBs, pesticides, and herbicides, TAL / Part 375 metals including cyanide and hexavalent and trivalent chromium, PFAS, and 1,4-dioxane
35		SB12_8-10	4/30/2020	8 to 10	Bottom of the historic fill layer	
36		SB12_18-20	4/30/2020	18 to 20	Boring termination depth	
37	SB13	SB13_0-2	5/4/2020	0 to 2	Upper 2 feet of historic fill	
38		SB13_5-7	5/4/2020	5 to 7	Bottom of the historic fill layer	
39		SB13_18-20	5/4/2020	18 to 20	Boring termination depth	
40	SB14	SB14_0-2	5/6/2020	0 to 2	Upper 2 feet of historic fill	
41		SB14_6-8	5/6/2020	6 to 8	Bottom of the historic fill layer	
42		SB14_18-20	5/6/2020	18 to 20	Boring termination depth	
43	SB15	SB15_0-2	5/4/2020	0 to 2	Upper 2 feet of historic fill	
44		SB15_5-7	5/4/2020	5 to 7	Bottom of the historic fill layer	
45		SB15_18-20	5/4/2020	18 to 20	Boring termination depth	
46	SB16	SB16_0-2	4/30/2020	0 to 2	Upper 2 feet of historic fill	
47		SB16_14-16	4/30/2020	14 to 16	Bottom of the historic fill layer	
48		SB016_18-20	4/30/2020	18 to 20	Boring termination depth	
49	SB0101	SB0101_3-4	5/22/2020	3 to 4	Interval exhibiting the greatest impact based on field screening and/or visual observations	Part 375/TCL VOCs, SVOCs, PCBs, TAL metals (hex/tri chromium)
50	SB0102	SB0102_4-5		4 to 5		
51	SB0103	SB0103_2.5-3.5		2.5 to 3.5		
52	SB0104	SB0104_4.5-5.5		4.5 to 5.5		
53	SB0105	SB0105_4-5		4 to 5		
54	SB0106	SB0106_4.5-5.5		4.5 to 5.5		
55	SB0107	SB0107_4.5-5.5		4.5 to 5.5		
56	SB0108	SB0108_7-9.5		7 to 9.5		
57	SB0109	SB0109_4-5		4 to 5		
58	SB0110	SB0110_9-10		9 to 10		
59	SB0111	SB0111_8-9		8 to 9		

Table 1
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No.	Sample Location	Sample Name	Sample Date	Sample Collection Depth (feet bgs)	Sampling Rationale	Analysis	
RI - SOIL QA/QC							
N/A	SB04_0-2	SODUP01_042920	4/29/2020		Duplicate	TCL / Part 375-list² of VOCs & SVOCs, Part 375 PCBs, pesticides, and herbicides, TAL / Part 375 metals including cyanide and hexavalent and trivalent chromium, PFAS, and 1,4-dioxane	
	SB13_5-7	SODUP02_050420	5/4/2020		Duplicate		
	SB14_6-8	SODUP03_050620	5/6/2020		Duplicate		
	N/A	SOFB01_042820	4/28/2020		Field Blank		
		SOFB02_043020	4/30/2020				
		SOFB03_050620	5/6/2020				
	SB12_0-2	MS/MSD-SO01_043020	4/30/2020		Matrix Spike/Matrix Spike Duplicate	Part 375/TCL VOCs, SVOCs, PCBs, TAL Metals (hex/tri chromium)	
	SB03_0-2	MS/MSD-SO02_050520	5/5/2020		Matrix Spike/Matrix Spike Duplicate		
	SB10_6-8	MS/MSD-SO03_050620	5/6/2020		Matrix Spike/Matrix Spike Duplicate		
SB0108_7-9	SODUP04_052220	5/22/2020	Duplicate				
N/A	SOFB04_052220	5/22/2020	Field Blank				
RI - GROUNDWATER							
1	MW01	MW01_050720	5/7/2020	Center of water column	Groundwater	Part 375 VOCs, SVOCs, PCBs, pesticides and herbicides, TAL metals (total and dissolved [field filtered]), PFAS, and 1,4-dioxane	
2	MW02	MW02_050720	5/7/2020				
3	MW05	MW05_043020	4/30/2020				
4	MW06	MW06_043020	4/30/2020				
5	MW08	MW08_043020	4/30/2020				
6	MW10	MW10_050720	5/7/2020				
7	MW11	MW11_051120	5/11/2020				
8	MW13	MW13_051120	5/11/2020				
9	MW16	MW16_050720	5/7/2020				
RI - AIR							
1	SV01	SV01_050520	5/5/2020	2 feet above water table (2-hours)	Sub-surface	TO-15 VOCs	
2	SV02	SV02_050520	5/5/2020				
3	SV03	SV03_050520	5/5/2020				
4	SV04	SV04_043020	4/30/2020				
5	SV07	SV07_043020	4/30/2020				
6	SV10	SV11_050520	5/5/2020				
7	SV13	SV13_050520	5/5/2020				
8	SV15	SV15_050520	5/5/2020				
9	SV16	SV16_050520	5/5/2020				
10	SS08	SS08_043020	4/30/2020	2 inches below slab (8-hours)	Sub-slab		
11	SS09	SS09_043020	4/30/2020	Adjacent sub-slab sample location (8-hours)	Indoor Air		
12	IA08	IA08_043020	4/30/2020				
13	IA09	IA09_043020	4/30/2020				
RI - GROUNDWATER AND AIR QA/QC							
NA	MW08	GWDUP01_043020	4/30/2020	N/A	Duplicate	TCL VOCs, SVOCs, PCBs, pesticides, and herbicides, TAL metals (total and dissolved [field filtered]), PFAS, and 1,4-dioxane	
	N/A	GWFB01_043020	4/30/2020		Field Blank		
	MW13	GWMS/MSD01_051120	5/11/2020		Matrix Spike/Matrix Spike Duplicate		
	N/A	GWTB01_043020	4/30/2020		Trip Blank	Part 375 VOCs	
		TB01_050720	5/7/2020				
		Trip Blank	5/6/2020				
		Trip Blank	5/11/2020		Breathing Height Ambient Air (8-hours)	TO-15 VOCs	
		AA01_043020	4/30/2020				
		AA02_050520	5/5/2020				Breathing Height Ambient Air (2-hours)
No.	Sample Location	Sample Name	Sample Date	Sample Collection Depth (feet bgs)	Sampling Rationale	Analysis	
SRI - SOIL							
1	SB01	SB01R_8-9	6/14/2021	8 to 9	Below the historic fill layer	Chromium, and nickel	
2		SB01R_18-20	6/14/2021	18 to 20	Boring termination depth		
3	SB02R	SB02R_8-9	6/15/2021	8 to 9	Below the historic fill layer	Chromium and nickel	
4		SB02R_18-20	6/15/2021	18 to 20	Boring termination depth		
5		SB02R_7-8	6/15/2021	7 to 8	Native soil/historic fill interface	Pesticides (alpha BHC), TAL metals (copper, lead, mercury and nickel)	
6	SB03R	SB03R_9-10	6/17/2021	9 to 10	Below the historic fill layer	Chromium and nickel	
7		SB03R_18-20	6/17/2021	18 to 20	Boring termination depth		
8	SB04R	SB04R_11-12	6/18/2021	11 to 12	Below the historic fill layer	Chromium and nickel	
9		SB04R_20-21	6/18/2021	20 to 21	Boring termination depth		
10	SB05R	SB05R_4-5	6/18/2021	4 to 5	Below the historic fill layer	Nickel	
11		SB05R_18-20	6/18/2021	18 to 20	Boring termination depth		

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No.	Sample Location	Sample Name	Sample Date	Sample Collection Depth (feet bgs)	Sampling Rationale	Analysis
12	SB06R	SB06R_10-11	6/18/2021	10 to 11	Below the historic fill layer	Nickel
13		SB06R_18-20	6/18/2021	18 to 20	Boring termination depth	
14		SB06R_9-10	6/18/2021	9 to 10	Native soil/historic fill interface	
15	SB07R	SB07R_7-8	6/17/2021	7 to 8	Below the historic fill layer	Nickel
16		SB07R_18-20	6/17/2021	18 to 20	Boring termination depth	
17	SB08R	SB08R_10-11	6/18/2021	10 to 11	Below the historic fill layer	Nickel
18		SB08R_18-20	6/18/2021	18 to 20	Boring termination depth	
19		SB08R_10-11	6/18/2021	10 to 11	Native soil/historic fill interface	
20		SB08R_11-12	6/18/2021	11 to 12	Native Soil	Barium, lead, mercury, nickel and zinc
21		SB08R_12-13	6/18/2021	12 to 13	Deeper native Soil	
22	SB09R	SB09R_10-11	6/18/2021	10 to 11	Below the historic fill layer	Chromium and nickel
23		SB09R_18-20	6/18/2021	18 to 20	Boring termination depth	
24		SB09R_11-12	6/18/2021	11 to 12	Native soil/historic fill interface	
25	SB10R	SB10R_7-8	6/16/2021	7 to 8	Below the historic fill layer	Copper and nickel
26		SB10R_18-20	6/16/2021	18 to 20	Boring termination depth	
27	SB11R	SB11R_11-12	6/17/2021	11 to 12	Below the historic fill layer	Chromium and nickel
28		SB11R_18-20	6/17/2021	18 to 20	Boring termination depth	
29	SB12R	SB12R_8-9	6/16/2021	8 to 9	Below the historic fill layer	Chromium and nickel
30		SB12R_18-20	6/16/2021	18 to 20	Boring termination depth	
31	SB13R	SB13R_7-8	6/16/2021	7 to 8	Below the historic fill layer	Copper and nickel
32		SB13R_18-20	6/16/2021	18 to 20	Boring termination depth	
33		SB13R_7-8	6/16/2021	7 to 8	Native soil/historic fill interface	
34	SB14R	SB14R_7-8	6/15/2021	7 to 8	Below the historic fill layer	Chromium and nickel
35		SB14R_18-20	6/15/2021	18 to 20	Boring termination depth	
36	SB15R	SB15R_6-7	6/14/2021	6 to 7	Below the historic fill layer	Nickel
37		SB15R_18-20	6/14/2021	18 to 20	Boring termination depth	
38	SB16R	SB16R_7-8	6/14/2021	7 to 8	Below the historic fill layer	Chromium and nickel
39		SB16R_18-20	6/14/2021	18 to 20	Boring termination depth	
40	SB101R	SB101R_7-8	6/16/2021	7 to 8	Native soil/historic fill interface	TCL SVOCs (2-methylphenol, 3,4-dimethylphenol, Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, naphthalene, phenanthrene, phenol, pyrene), TAL metals (copper, lead, mercury, zinc and nickel)
41	SB102R	SB102R_7-8	6/16/2021	7 to 8	Native soil/historic fill interface	Chromium, lead and nickel
42	SB103R	SB103R_7-8	6/15/2021	7 to 8	Native soil/historic fill interface	Cadmium, chromium, lead, mercury, nickel and zinc
43	SB104R	SB104R_7-8	6/17/2021	7 to 8	Native soil/historic fill interface	Mercury and nickel
44		SB104R_8-9	6/17/2021	8 to 9	Native Soil	
45	SB106R	SB106R_7-8	6/17/2021	7 to 8	Native soil/historic fill interface	Arsenic, cadmium, copper, lead, mercury, nickel and zinc
46		SB106R_8-9	6/17/2021	8 to 9	Native Soil	
47	SB107R	SB107R_7-8	6/16/2021	7 to 8	Native soil/historic fill interface	TCL SVOCs (Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene), TAL metals (lead, mercury, zinc and nickel)
48	SB108R	SB108R_10-11	6/21/2021	10 to 11	Native soil/historic fill interface	Barium, chromium, copper, lead, mercury, nickel and zinc
49	SB109R	SB109R_7-8	6/18/2021	7 to 8	Native soil/historic fill interface	TCL SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene), TAL metals (barium, copper, lead, mercury, zinc and nickel)
50		SB109R_8-9	6/18/2021	8 to 9	Native Soil	
51		SB109R_9-10	6/18/2021	9 to 10	Deeper native Soil	
52	SB110R	SB110R_7-8	6/17/2021	7 to 8	Native soil/historic fill interface	Lead, mercury, nickel and zinc
53		SB110R_8-9	6/17/2021	8 to 9	Native Soil	
54	SB111R	SB111R_10-11	6/21/2021	10 to 11	Native soil/historic fill interface	Lead, mercury, nickel and zinc
SRI - SOIL QA/QC						
78	SB14R_7-8	SODUP01_20210615	6/15/2021	7 to 8	Duplicate	Chromium and nickel
79	SB109R_7-8	SODUP02_061821	6/18/2021	7 to 8	Duplicate	Barium, copper, lead, mercury, zinc, and nickel
80	SB05R_4-5	SODUP03_061821	6/18/2021	4 to 5	Duplicate	Nickel
81	N/A	SOFB01_061621	6/16/2021	N/A	Field Blank	Part 375 and TCL SVOCs and TAL metals
82		SOFB02_061721	6/17/2021			Part 375 and TCL SVOCs and TAL metals
83		SOFB04_062121	6/21/2021			Part 375 and TCL SVOCs and TAL metals
84	SB14R_7-8	MS/MSD-SO01_20210615	6/15/2021	7 to 8	Matrix Spike/Matrix Spike Duplicate	Chromium and nickel
85	SB05R_4-5	MS/MSD-SO02_061821	6/18/2021	4 to 5	Matrix Spike/Matrix Spike Duplicate	Nickel
86	SB111R_10-11	MS/MSD-SO03_062121	6/21/2021	10 to 11	Matrix Spike/Matrix Spike Duplicate	Mercury

Table 1
Sample Summary
Remedial Investigation Report
475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No. 170610601

No.	Sample Location	Sample Name	Sample Date	Sample Collection Depth (feet bgs)	Sampling Rationale	Analysis
SRI - SOIL METAL HOT SPOTS DELINEATION						
1	SB08R_I	SB08R_I_13-15	6/21/2021	13 to 15	Delineation of Metals-Impacted Fill in RI Boring SB08	Lead and barium
2	SB08R_N1	SB08R_N1_12-13	6/22/2021	12 to 13		
3		SB08R_N1_13-15	6/22/2021	13 to 15		
4	SB08R_E1	SB08R_E1_13-15	6/22/2021	13 to 15		
5	SB08R_S1	SB08R_S1_13-15	6/22/2021	13 to 15		
6	SB-08R_W1	SB08R_W1_13-15	6/22/2021	13 to 15		
7	SB108R_I	SB108R_I_3-4	6/22/2021	3 to 4	Delineation of Metals-Impacted Fill in RI Boring SB108	Barium
8		SB108R_I_4-5	6/22/2021	4 to 5		
9		SB108R_I_5-6	6/22/2021	5 to 6		
10	SB108R_N1	SB108R_N1_3-4	6/22/2021	3 to 4		
11		SB108R_N1_4-5	6/22/2021	4 to 5		
12		SB108R_N1_5-6	6/22/2021	5 to 6		
13	SB108R_N2	SB108R_N2_3-4	6/22/2021	3 to 4		
14		SB108R_N2_4-5	6/22/2021	4 to 5		
15		SB108R_N2_5-6	6/22/2021	5 to 6		
16	SB108R_E1	SB108R_E1_4-5	6/22/2021	4 to 5		
17	SB108R_S1	SB108R_S1_4-5	6/22/2021	4 to 5		
18	SB108R_W1	SB108R_W1_4-5	6/22/2021	4 to 5		
19	SB111R_I	SB111R_I_8-9	6/22/2021	8 to 9	Delineation of Metals-Impacted Fill in RI Boring SB111	Mercury
20	SB111R_N1	SB111R_N1_7-8	6/22/2021	7 to 8		
21		SB111R_N1_8-9	6/22/2021	8 to 9		
22		SB111R_N1_9-10	6/22/2021	9 to 10		
23	SB111R_N2	SB111R_N2_8-9	6/22/2021	8 to 9		
24	SB111R_E1	SB111R_E1_7-8	6/22/2021	7 to 8		
25		SB111R_E1_8-9	6/22/2021	8 to 9		
26		SB111R_E1_9-10	6/22/2021	9 to 10		
27		SB111R_E1_10-11	6/22/2021	10 to 11		
28	SB111R_E2	SB111R_E2_8-9	6/22/2021	8 to 9		
29	SB111R_S1	SB111R_S1_7-8	6/22/2021	7 to 8		
30		SB111R_S1_8-9	6/22/2021	8 to 9		
31		SB111R_S1_9-10	6/22/2021	9 to 10		
32	SB111R_S2	SB111R_S2_7-8	6/22/2021	7 to 8		
33		SB111R_S2_8-9	6/22/2021	8 to 9		
34		SB111R_S2_9-10	6/22/2021	9 to 10		
35	SB111R_W1	SB111R_W1_8-9	6/22/2021	8 to 9		
SRI - SOIL HOTSPOT DELINEATION QA/QC						
122	SB08R_I_13-15	SODUP01_062121	6/21/2021	13 to 15	Duplicate	Lead and barium
123	N/A	SOFB01_062121	6/21/2021	N/A	Field Blank	Lead, barium and mercury
126		SOFB04_062221	6/21/2021			Lead and barium
127		SOFB05_062221	6/21/2021			Lead and barium
128	SB108R_E2_4-5	MS/MSD-SO01_062121	6/21/2021	4 to 5	Matrix Spike/Matrix Spike Duplicate	Barium
129	SB111R_I_8-9	MS/MSD-SO02_062121	6/21/2021	8 to 9	Matrix Spike/Matrix Spike Duplicate	Mercury
130	SB111R_N2_10-11	MS/MSD-SO04_062121	6/21/2021	10 to 11	Matrix Spike/Matrix Spike Duplicate	Mercury
131	SB08R_W2_11-12	MS/MSD-SO04_062221	6/22/2021	11 to 12	Matrix Spike/Matrix Spike Duplicate	Lead and barium
132	SB08R_E1_16-17	MS/MSD-SO05_062221	6/22/2021	16 to 17	Matrix Spike/Matrix Spike Duplicate	Lead and barium
SRI - SURFACE WATER						
133	North Pit	SW01_062121	6/21/2021	N/A	Former Hydraulic Pits	Part 375 and TCL VOCs, SVOCs, TAL metals, PCBs, pesticides, PFAS and 1,4-dioxane
134	Southwest Pit	SW02_062121	6/21/2021			
135	Southeast Pit	SW03_062121	6/21/2021			
136	N/A	SOFB05_062121	6/21/2021	N/A	Field Blank	Part 375 and TCL VOCs, SVOCs, TAL metals, PCBs, pesticides, PFAS and 1,4-dioxane

Notes:

- Sample depth intervals were determined in the field.
- Soil samples to be analyzed for New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules and Regulations (6 NYCRR) Part 375-list compounds.
- VOC = volatile organic compound
- SVOC = semivolatile organic compound
- PCB = polychlorinated biphenyl
- N/A = Not Applicable
- TCL = Target Compound List
- TAL = Target Analyte List
- QA/QC = quality assurance/quality control
- PFAS = per- and polyfluoroalkyl substances
- TO-15 = United States Environmental Protection Agency (USEPA) Method TO-15

Table 2
Remedial Investigation Report
Monitoring Well Construction Summary

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No. 170610601

Monitoring Well ID	Associated Soil Boring	Date Installed	Equipment Used	Inner Well Diameter (inches)	Total Depth (feet bgs)	Screened Interval (feet bgs)	Screen Length (feet)	Screen Material	Riser Interval (feet bgs)	Riser Material
MW-01	SB-01	5/5/2020	Geoprobe® 7822 DT	2	12	2-12	10	0.010-inch slotted PVC	0-2	PVC
MW-02	SB-02			2	12	2-12		0.010-inch slotted PVC	0-2	
MW-05	SB-05	4/28/2020		2	14	4-14		0.010-inch slotted PVC	0-2	
MW-06	SB-06	4/29/2020		2	12	2-12		0.010-inch slotted PVC	0-2	
MW-08	SB-08		Geoprobe® 420M	1	11	1-11		0.010-inch slotted PVC	0-1	
MW-10	SB-10	5/6/2020	Geoprobe® 7822 DT	2	13	3-13		0.010-inch slotted PVC	0-2	
MW-11	SB-11	5/4/2020		2	12	2-12		0.010-inch slotted PVC	0-2	
MW-13	SB-13			2	13	3-13		0.010-inch slotted PVC	0-3	
MW-16	SB-16			2	12	2-12		0.010-inch slotted PVC	0-2	

Notes:

1. PVC = Polyvinyl chloride
2. bgs = Below ground surface
3. NAVD88 = North American Vertical Datum of 1988

Table 3
Remedial Investigation Report
Groundwater Elevation Data

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Well ID	Well Elevation (NAVD88)	Top of Casing (NAVD88)	Depth to Water (feet bTOC)	Groundwater Elevation (NAVD88)	PID reading (ppm)
MW-01	10.02	9.78	4.04	5.74	1.8
MW-02	9.75	9.51	3.51	6.00	0.0
MW-05	9.29	8.79	10.24	-1.45	0.0
MW-06	9.71	9.44	3.56	5.88	0.0
MW-08	10.12	9.82	3.73	6.09	0.0
MW-10	10.27	10.09	3.78	6.31	5.0
MW-11	10.28	10.04	4.92	5.12	0.0
MW-13	10.66	10.37	4.32	6.05	0.0
MW-16	10.24	10.02	4.09	5.93	0.0

Notes:

1. PID = Photoionization Detection
2. Well elevations are based on a survey performed by Langan on 11 May 2020.
3. All elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).
4. Well elevations and depth to water readings were measured to a marked location at the top of each well casing.
5. Depth to water readings are measured in feet below top of the well casing (feet bTOC).
6. Depth to water readings were taken on 4/30/2020 and 5/6/2020.
7. PID readings were taken during groundwater sample collection between 30 April 2020 and 11 May 2020.

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	SB01 SB01_0-2 20E0108-01 5/5/2020 0-2	SB01 SB01_6-8 20E0108-02 5/5/2020 6-8	SB01 SB01_18-20 20E0108-03 5/5/2020 18-20	SB02 SB02_0-2 20E0108-04 5/5/2020 0-2	SB02 SB02_6-8 20E0108-05 5/5/2020 6-8	SB02 SB02_18-20 20E0108-06 5/5/2020 18-20	SB02R SB02R_7-8 21F0731-04 6/15/2021 7-8	SB03 SB03_0-2 20E0108-07 5/5/2020 0-2	SB03 SB03_6-8 20E0108-08 5/5/2020 6-8	SB03 SB03_18-20 20E0108-09 5/5/2020 18-20	SB04 SB04_0-2 20D0818-01 4/29/2020 0-2	SB04 SODUP01_042920 20D0818-12 4/29/2020 0-2	SB04 SB04_14-16 20D0818-03 4/29/2020 14-16	
Sample ID	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Residential SCOs	Sample Date	Sample Depth (feet bgs)	Sample ID	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Residential SCOs	Sample Date	Sample Depth (feet bgs)	Sample ID	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Residential SCOs	Sample Date	Sample Depth (feet bgs)
Volatile Organic Compounds (mg/kg)														
Acetone	0.05	100	0.0078	U	0.066	0.0063	J	0.0066	U	0.058	0.064	NA	0.0052	U
Benzene	0.06	4.8	0.0039	U	0.0026	U	0.0021	U	0.0033	U	0.0023	U	0.0019	U
Carbon Disulfide	~	~	0.0039	U	0.0026	U	0.0021	U	0.0033	U	0.0023	U	0.0019	U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.0039	U	0.018	0.0021	U	0.0033	U	0.014	0.017	NA	0.0026	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.0039	U	0.0026	U	0.0021	U	0.0033	U	0.0023	U	0.0019	U
Semivolatile Organic Compounds (mg/kg)														
2,4-Dimethylphenol	~	~	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
2-Methylnaphthalene	~	~	0.576	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
2-Methylphenol (o-Cresol)	0.33	100	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
3 & 4 Methylphenol (m&p Cresol)	0.33	100	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Acenaphthene	20	100	0.983	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Acenaphthylene	100	100	2.17	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Anthracene	100	100	1.41	D	0.0536	U	0.0769	JD	0.0478	U	0.0515	U	0.0621	U
Benzo(a)anthracene	1	1	2.16	D	0.0615	JD	0.0619	JD	0.111	D	0.0706	JD	0.0621	U
Benzo(a)pyrene	1	1	2.84	D	0.0536	U	0.0473	U	0.123	D	0.0665	JD	0.0621	U
Benzo(b)fluoranthene	1	1	NA	0.0536	U	0.0473	U	0.117	D	0.0515	U	0.0621	U	NA
Benzo(g,h,i)Perylene	100	100	2.96	D	0.0536	U	0.0473	U	0.107	D	0.0515	U	0.0621	U
Benzo(k)fluoranthene	0.8	3.9	2.2	D	0.0547	JD	0.0473	U	0.105	D	0.0599	JD	0.0621	U
Benzyl Butyl Phthalate	~	~	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Biphenyl (Diphenyl)	~	~	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Bis(2-ethylhexyl) phthalate	~	~	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Carbazole	~	~	0.63	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Chrysene	1	3.9	2.19	D	0.0589	JD	0.0473	U	0.117	D	0.0673	JD	0.0621	U
Dibenz(a,h)anthracene	0.33	0.33	1.15	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Dibenzofuran	7	59	0.0522	U	0.0536	U	0.052	JD	0.0478	U	0.0515	U	0.0621	U
Fluoranthene	100	100	2.91	D	0.0923	JD	0.131	D	0.16	D	0.122	D	0.0621	U
Fluorene	30	100	1.17	D	0.0536	U	0.0837	JD	0.0478	U	0.0515	U	0.0621	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	2.59	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Naphthalene	12	100	1.9	D	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Phenanthrene	100	100	1.81	D	0.0536	U	0.247	D	0.0478	U	0.0515	U	0.0621	U
Phenol	0.33	100	0.0522	U	0.0536	U	0.0473	U	0.0478	U	0.0515	U	0.0621	U
Pyrene	100	100	2.58	D	0.0837	JD	0.0792	JD	0.172	D	0.107	D	0.0621	U
Pesticides (mg/kg)														
4,4'-DDD	0.0033	13	0.00205	U	0.00213	UJ	0.00187	U	0.017	D	0.00204	U	0.00244	U
4,4'-DDE	0.0033	8.9	0.00205	U	0.00213	UJ	0.00187	U	0.0206	D	0.00204	U	0.00244	U
4,4'-DDT	0.0033	7.9	0.00205	U	0.00213	UJ	0.00187	U	0.0293	D	0.00204	U	0.00244	U
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	0.00205	U	0.00213	UJ	0.00187	U	0.00187	U	0.0256	D	0.00244	U
Alpha Chlordane	0.094	4.2	0.00205	U	0.00213	UJ	0.00187	U	0.00187	U	0.00204	U	0.00244	U
Chlordane (alpha and gamma)	~	~	0.0411	U	0.0426	UJ	0.0375	U	0.0374	U	0.0408	U	0.0487	U
Gamma-Chlordane	~	~	0.00205	U	0.00213	UJ	0.00187	U	0.00187	U	0.00204	U	0.00244	U
Heptachlor	0.042	2.1	0.00205	U	0.00213	UJ	0.00187	U	0.00187	U	0.0155	D	0.00244	U
Herbicides (mg/kg)														
ND														
Polychlorinated Biphenyls (mg/kg)														
PCB-1254 (Aroclor 1254)	~	~	0.0207	U	0.0215	UJ	0.0189	U	0.0189	U	0.0206	U	0.0246	U
PCB-1260 (Aroclor 1260)	~	~	0.0207	U	0.0215	UJ	0.0189	U	0.0189	U	0.0206	U	0.0246	U
Total PCBs	0.1	1	0.0207	U	0.0215	UJ	0.0189	U	0.0189	U	0.0206	U	0.0246	U
Inorganics (mg/kg)														
Aluminum	~	~	3,670		12,400		7,240		3,190		6,630		7,020	NA
Antimony	~	~	3.14	U	3.24	U	2.85	U	2.87	U	3.12	U	3.73	NA
Arsenic	13	16	5.22		6.86		1.71	U	17.9		4.13		2.28	NA
Barium	350	400	47.5		119		34.6		75.9		53.9		46.8	NA
Cadmium	2.5	4.3	0.377	U	0.388	U	0.342	U	0.474	U	0.374	U	0.447	NA
Calcium	~	~	2,550		5,580		1,070		30,300		2,940		1,350	NA
Chromium, Hexavalent	1	110	0.629	U	0.647	U	0.569	U	0.574	U	0.624	U	0.746	NA
Chromium, Total	~	~	10.9		85.5		47.4		27.3		60.5		36.9	NA
Chromium, Trivalent	30	180	10.9		85.5		47.4		27.3		60.5		36.9	NA
Cobalt	~	~	4.95		36.9		16.1		9.08		31.7		17.2	NA
Copper	50	270	68.3		69.1		23.6		72.1		50.4		35.8	24
Iron	~	~	9,860		26,800		18,200		12,200		21,100		17,600	NA
Lead	63	400	95.2		166		9.48		98.5		77.8		15.2	6.53
Magnesium	~	~	1,100		22,700		10,500		21,600		28,200		11,900	NA
Manganese	1,600	2,000	22.3		529		340		110		350		605	NA
Mercury	0.18	0.81	0.207		1.05		0.0342	U	0.199		0.589		0.0447	U
Nickel	30	310	21.9		503		284		147		545		244	53.5
Potassium	~	~	376		2,230		933		443		776		1,480	NA
Selenium	3.9	180	3.14	U	3.24	U	2.85	U	7.12		3.52		3.73	NA
Silver	2	180	0.629	U	0.647	U	0.569	U	0.574	U	0.624	U	0.746	NA
Sodium	~	~	245		259		98.4		128		192		135	NA
Vanadium	~	~	14.7		32.1		22.5		16.8		18.7		24.9	NA
Zinc	109	10,000	84.3		139		27		159		58.1		33.2	NA
General Chemistry (%)														
Solids, Percent	~	~	79.5		77.3		87.8		87.1		80.1		67	91.2

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Residential SCOs	SB04 SB04_18-20 20D0818-04 4/29/2020 18-20	SB05 SB05_0-2 20D0776-04 4/28/2020 0-2	SB05 SB05_6-8 20D0776-05 4/28/2020 6-8	SB05 SB05_18-20 20D0776-06 4/28/2020 18-20	SB06 SB06_0-2 20D0818-05 4/29/2020 0-2	SB06 SB06_5-7 20D0818-06 4/29/2020 5-7	SB06 SB06_12-14 20D0818-07 4/29/2020 12-14	SB06R SB06R_9-10 21F0893-14 6/18/2021 9-10	SB07 SB07_0-2 20D0818-09 4/29/2020 0-2	SB07 SB07_8-10 20D0818-10 4/29/2020 8-10	SB07 SB07_18-20 20D0818-11 4/29/2020 18-20	SB08 SB08_0-2 20D0776-07 4/28/2020 0-2	SB08 SB08_4-6 20D0776-08 4/28/2020 4-6
Volatile Organic Compounds (mg/kg)															
Acetone	0.05	100	0.033	0.0051 UJ	0.0067 J	0.009 J	0.0044 U	0.02 J	0.0039 U	NA	0.0044 UJ	0.0047 J	0.0067 J	0.01 J	0.005 UJ
Benzene	0.06	4.8	0.0043 U	0.0025 U	0.0024 U	0.0022 U	0.0022 U	0.0037 U	0.0019 U	NA	0.0022 U	0.0021 U	0.0024 U	0.0027 U	0.0025 U
Carbon Disulfide	~	~	0.0043 U	0.0025 U	0.0024 U	0.0022 U	0.0022 U	0.0037 U	0.0019 U	NA	0.0022 U	0.0021 U	0.0024 U	0.0027 U	0.0025 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.0043 U	0.0025 UJ	0.0024 UJ	0.0022 UJ	0.0022 U	0.0037 U	0.0019 U	NA	0.0022 U	0.0021 U	0.0024 U	0.0027 UJ	0.0025 UJ
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.0043 U	0.0025 U	0.0024 U	0.0022 U	0.0022 U	0.0037 U	0.0019 U	NA	0.0022 U	0.0021 U	0.0024 U	0.0027 U	0.0025 U
Semivolatile Organic Compounds (mg/kg)															
2,4-Dimethylphenol	~	~	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
2-Methylnaphthalene	~	~	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
2-Methylphenol (o-Cresol)	0.33	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
3 & 4 Methylphenol (m&p Cresol)	0.33	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 UJ
Acenaphthene	20	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Acenaphthylene	100	100	0.0712 U	0.0834 JD	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Anthracene	100	100	0.0712 U	0.077 JD	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0701 JD	0.0461 U
Benzo(a)anthracene	1	1	0.0712 U	0.65 D	0.0471 U	0.0472 U	0.112 D	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.249 D	0.0537 JD
Benzo(a)pyrene	1	1	0.0712 U	0.637 D	0.0471 U	0.0472 U	0.104 D	0.0518 U	0.0482 U	NA	0.0549 JD	0.0477 U	0.0535 U	0.264 D	0.0581 JD
Benzo(b)fluoranthene	1	1	0.0712 U	0.635 D	0.0471 U	0.0472 U	0.0791 JD	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.201 D	0.0478 JD
Benzo(g,h,i)Perylene	100	100	0.0712 U	0.512 D	0.0471 U	0.0472 U	0.0589 JD	0.0518 U	0.0482 U	NA	0.0475 JD	0.0477 U	0.0535 U	0.162 D	0.0461 U
Benzo(k)fluoranthene	0.8	3.9	0.0712 U	0.553 D	0.0471 U	0.0472 U	0.0843 JD	0.0518 U	0.0482 U	NA	0.0483 JD	0.0477 U	0.0535 U	0.186 D	0.0461 U
Benzyl Butyl Phthalate	~	~	0.0712 U	0.142 D	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.169 D	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Biphenyl (Diphenyl)	~	~	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Bis(2-ethylhexyl) phthalate	~	~	0.0712 U	0.0445 J	0.0471 UJ	0.0472 UJ	0.0468 U	0.0518 U	0.0482 U	NA	0.0658 JD	0.0477 U	0.0535 U	0.24 J	0.0461 U
Carbazole	~	~	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 UJ
Chrysene	1	3.9	0.0712 U	0.765 D	0.0471 U	0.0472 U	0.0984 D	0.0518 U	0.0482 U	NA	0.0483 JD	0.0477 U	0.0535 U	0.222 D	0.05 JD
Dibenz(a,h)anthracene	0.33	0.33	0.0712 U	0.121 D	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Dibenzofuran	7	59	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Fluoranthene	100	100	0.0712 U	0.974 D	0.0471 U	0.0472 U	0.166 D	0.0518 U	0.0482 U	NA	0.0614 JD	0.0477 U	0.0535 U	0.522 D	0.0758 JD
Fluorene	30	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.0712 U	0.559 D	0.0471 U	0.0472 U	0.0679 JD	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.189 D	0.0461 U
Naphthalene	12	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Phenanthrene	100	100	0.0712 U	0.278 D	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.283 D	0.0461 U
Phenol	0.33	100	0.0712 U	0.0443 U	0.0471 U	0.0472 U	0.0468 U	0.0518 U	0.0482 U	NA	0.0459 U	0.0477 U	0.0535 U	0.0439 U	0.0461 U
Pyrene	100	100	0.0712 U	1.03 D	0.0471 U	0.0472 U	0.151 D	0.0518 U	0.0482 U	NA	0.0556 JD	0.0477 U	0.0535 U	0.457 D	0.0728 JD
Pesticides (mg/kg)															
4,4'-DDD	0.0033	13	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
4,4'-DDE	0.0033	8.9	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
4,4'-DDT	0.0033	7.9	0.00281 U	0.00426 DP	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
Alpha Chlordane	0.094	4.2	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
Chlordane (alpha and gamma)	~	~	0.0562 U	0.035 U	0.0377 U	0.0371 U	0.0366 U	0.0408 U	0.0372 U	NA	0.036 U	0.0369 U	0.0421 U	0.0343 U	0.0365 U
Gamma-Chlordane	~	~	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
Heptachlor	0.042	2.1	0.00281 U	0.00175 U	0.00189 U	0.00186 U	0.00183 U	0.00204 U	0.00186 U	NA	0.0018 U	0.00185 U	0.00211 U	0.00172 U	0.00183 U
Herbicides (mg/kg)															
Polychlorinated Biphenyls (mg/kg)															
PCB-1254 (Aroclor 1254)	~	~	0.0284 U	0.0177 U	0.019 U	0.0187 U	0.0185 U	0.0206 U	0.0188 U	NA	0.0182 U	0.0186 U	0.0213 U	0.0173 U	0.0184 U
PCB-1260 (Aroclor 1260)	~	~	0.0284 U	0.0177 U	0.019 U	0.0187 U	0.0185 U	0.0206 U	0.0188 U	NA	0.0182 U	0.0186 U	0.0213 U	0.0173 U	0.0184 U
Total PCBs	0.1	1	0.0284 U	0.0177 U	0.019 U	0.0187 U	0.0185 U	0.0206 U	0.0188 U	NA	0.0182 U	0.0186 U	0.0213 U	0.0173 U	0.0184 U
Inorganics (mg/kg)															
Aluminum	~	~	13,800	4,430	3,670	5,060	5,720	7,940	6,560	NA	3,740	5,660	10,000	7,770	4,070
Antimony	~	~	4.28	2.68 U	2.88 U	2.83 U	2.81 U	3.11 U	2.9 U	NA	2.75 U	2.88 U	3.23 U	2.64 U	2.79 U
Arsenic	13	16	6.15	6.02	1.73 U	1.7 U	1.68 U	7.02	1.74 U	NA	2.83	2.11	2.13	2.99	4.44
Barium	350	400	37.8	207	33.8	32	46	69.1	39	NA	32.7	34.2	24.6	90.2	106
Cadmium	2.5	4.3	0.514 U	0.705	0.345 U	0.34 U	0.337 U	0.373 U	0.348 U	NA	0.348	0.346 U	0.388 U	0.316 U	0.334 U
Calcium	~	~	2,290	15,100	1,230	1,190	25,900	4,820	1,030	NA	26,100	924	584	19,600	33,600
Chromium, Hexavalent	1	110	0.857 U	0.535 U	0.575 U	0.566 U	0.561 U	0.622 U	0.581 U	NA	0.55 U	0.576 U	0.647 U	0.527 U	0.557 U
Chromium, Total	~	~	36.6	21.7	17.5	22	11.7	27.1	24.2	NA	7.68	24.2	24.2	31	33.6
Chromium, Trivalent	30	180	36.6	21.7	17.5	22	11.7	27.1	24.2	NA	7.68	24.2	24.2	31	33.6
Cobalt	~	~	13.9	7.71	8.57	8.63	5.13	17.7	12.9	NA	4.95	10.5	12.8	12.8	16.6
Copper	50	270	12.8	60	18.3	18.5	13.4	31.9	22.4	NA	20.6	26.3	16.5	48.1	28.8
Iron	~	~	23,200	15,600	11,400	12,300	8,810	24,100	13,400	NA	9,200	14,300	15,100	14,900	14,200
Lead	63	400	17.8	387	60.2	7.04	89.9	274	7.43	NA	100	6.88	8.63	296	441
Magnesium	~	~	6,460	8,280	2,750	3,700	9,190	6,660	3,240	NA	13,900	6,640	5,150	11,300	22,100
Manganese	1,600	2,000	255	153	120	210	101	202	231	NA	126	269	125	245	247
Mercury	0.18	0.81	0.0514 U	1.33	0.653	0.034 U	0.0337 U	0.0479	0.0348 U	NA	0.143	0.0346 U	0.0388 U	0.771	1.28
Nickel	30	310	86.2	74.5	84.3	109	29.4	133	128	NA	17.7	155	86.2	154	325
Potassium	~	~	1,790	686	709	887	848	747	882	NA	393	829	916	1,020	856
Selenium	3.9	180	4.28	2.68 U	2.88 U	2.83 U	2.81 U	3.11 U	2.9 U	NA	5.01	2.88 U	3.23 U	2.64 U	4.08
Silver	2	180	0.857 U	0.535 U	0.575 U	0.566 U	1.72	0.622 U	0.581 U	NA	0.55 U	0.576 U	0.647 U	0.527 U	0.557 U
Sodium	~	~	171	279	109	86.7	95.9	127	127	NA	222	72	92.8	768	2

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	NYSDEC Part 375	NYSDEC Part 375	SB08	SB08R	SB08R	SB08R	SB09	SB09	SB09	SB09R	SB10	SB10	SB10	SB11
Sample ID	Unrestricted Use	Restricted Use	SB08_13-15	SB08R_10-11	SB08R_11-12	SB08R_12-13	SB09_0-2	SB09_4-6	SB09_13-15	SB09R_11-12	SB10_0-2	SB10_6-8	SB10_18-20	SB11_0-2
Laboratory ID	SCOs	Residential SCOs	20D0776-09	21F0893-20	21F0893-21	21F0893-22	20D0776-01	20D0776-02	20D0776-03	21F0893-17	20E0134-01	20E0134-02	20E0134-03	20D0850-07
Sample Date			4/28/2020	6/18/2021	6/18/2021	6/18/2021	4/28/2020	4/28/2020	4/28/2020	6/18/2021	5/6/2020	5/6/2020	5/6/2020	4/30/2020
Sample Depth (feet bgs)			13-15	10-11	11-12	12-13	0-2	4-6	13-15	11-12	0-2	6-8	18-20	0-2
Volatile Organic Compounds (mg/kg)														
Acetone	0.05	100	0.0054 UJ	NA	NA	NA	0.0046 UJ	0.0037 UJ	0.03 J	NA	0.015 U	0.019 U	0.008 U	0.0048 UJ
Benzene	0.06	4.8	0.0027 U	NA	NA	NA	0.0023 U	0.0018 U	0.0024 U	NA	0.0036 U	0.0026 U	0.002 U	0.0024 U
Carbon Disulfide	~	~	0.0027 U	NA	NA	NA	0.0023 U	0.0018 U	0.0024 U	NA	0.0036 U	0.0026 U	0.002 U	0.0024 UJ
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.0027 UJ	NA	NA	NA	0.0023 UJ	0.0018 UJ	0.0086 J	NA	0.0036 U	0.0026 U	0.002 U	0.0024 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.0027 U	NA	NA	NA	0.0023 U	0.0018 U	0.0024 U	NA	0.0036 U	0.0026 U	0.002 U	0.0024 U
Semivolatile Organic Compounds (mg/kg)														
2,4-Dimethylphenol	~	~	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
2-Methylnaphthalene	~	~	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
2-Methylphenol (o-Cresol)	0.33	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
3 & 4 Methylphenol (m&p Cresol)	0.33	100	0.0601 UJ	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Acenaphthene	20	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Acenaphthylene	100	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Anthracene	100	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0601 JD	0.0483 U	0.0474 U	0.221 U
Benzo[a]anthracene	1	1	0.321 D	NA	NA	NA	0.0773 JD	0.0441 U	0.0469 U	NA	0.204 D	0.0483 U	0.0474 U	0.314 JD
Benzo[a]pyrene	1	1	0.322 D	NA	NA	NA	0.0906 D	0.0441 U	0.0469 U	NA	0.187 D	0.0483 U	0.0474 U	0.307 JD
Benzo[b]fluoranthene	1	1	0.326 D	NA	NA	NA	0.0794 JD	0.0441 U	0.0469 U	NA	0.191 D	0.0483 U	0.0474 U	0.289 JD
Benzo[g,h,i]Perylene	100	100	0.226 D	NA	NA	NA	0.0604 JD	0.0441 U	0.0469 U	NA	0.125 D	0.0483 U	0.0474 U	0.221 U
Benzo[k]fluoranthene	0.8	3.9	0.257 D	NA	NA	NA	0.0625 JD	0.0441 U	0.0469 U	NA	0.165 D	0.0483 U	0.0474 U	0.236 JD
Benzyl Butyl Phthalate	~	~	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Biphenyl (Diphenyl)	~	~	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Bis(2-ethylhexyl) phthalate	~	~	0.0601 U	NA	NA	NA	0.044 UJ	0.0441 UJ	0.0469 UJ	NA	0.102 D	0.0483 U	0.0474 U	0.221 U
Carbazole	~	~	0.0601 UJ	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Chrysene	1	3.9	0.305 D	NA	NA	NA	0.0843 JD	0.0441 U	0.0469 U	NA	0.229 D	0.0483 U	0.0474 U	0.36 JD
Dibenz[a,h]anthracene	0.33	0.33	0.0662 JD	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Dibenzofuran	7	59	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Fluoranthene	100	100	0.585 D	NA	NA	NA	0.162 D	0.0457 JD	0.0469 U	NA	0.484 D	0.0483 U	0.0474 U	0.67 D
Fluorene	30	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.202 D	NA	NA	NA	0.0667 JD	0.0441 U	0.0469 U	NA	0.113 D	0.0483 U	0.0474 U	0.221 U
Naphthalene	12	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Phenanthrene	100	100	0.244 D	NA	NA	NA	0.0878 JD	0.0441 U	0.0469 U	NA	0.181 D	0.0483 U	0.0474 U	0.392 JD
Phenol	0.33	100	0.0601 U	NA	NA	NA	0.044 U	0.0441 U	0.0469 U	NA	0.0465 U	0.0483 U	0.0474 U	0.221 U
Pyrene	100	100	0.494 D	NA	NA	NA	0.139 D	0.0441 U	0.0469 U	NA	0.374 D	0.0483 U	0.0474 U	0.596 D
Pesticides (mg/kg)														
4,4'-DDD	0.0033	13	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.00182 U	0.00189 UJ	0.00191 U	0.00178 U
4,4'-DDE	0.0033	8.9	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.00182 U	0.00189 UJ	0.00191 U	0.00745 D
4,4'-DDT	0.0033	7.9	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.00182 U	0.00189 UJ	0.00191 U	0.00178 U
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.00182 U	0.00189 UJ	0.00191 U	0.00178 U
Alpha Chlordane	0.094	4.2	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.0175 DP	0.00189 UJ	0.00191 U	0.0148 DP
Chlordane (alpha and gamma)	~	~	0.0471 U	NA	NA	NA	0.0347 U	0.0351 U	0.0374 U	NA	0.0998 D	0.0377 UJ	0.0382 U	0.0356 U
Gamma-Chlordane	~	~	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.0123 D	0.00189 UJ	0.00191 U	0.0107 D
Heptachlor	0.042	2.1	0.00236 U	NA	NA	NA	0.00173 U	0.00175 U	0.00187 U	NA	0.00182 U	0.00189 UJ	0.00191 U	0.00178 U
Herbicides (mg/kg)														
~	~	~	ND	NA	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND
Polychlorinated Biphenyls (mg/kg)														
PCB-1254 (Aroclor 1254)	~	~	0.0238 U	NA	NA	NA	0.0175 U	0.0177 U	0.0189 U	NA	0.0184 U	0.019 U	0.0193 U	0.018 U
PCB-1260 (Aroclor 1260)	~	~	0.0238 U	NA	NA	NA	0.0175 U	0.0177 U	0.0189 U	NA	0.0184 U	0.019 U	0.0193 U	0.018 U
Total PCBs	0.1	1	0.0238 U	NA	NA	NA	0.0175 U	0.0177 U	0.0189 U	NA	0.0184 U	0.019 U	0.0193 U	0.018 U
Inorganics (mg/kg)														
Aluminum	~	~	3,910	NA	NA	NA	6,170	4,400	6,110	NA	8,150	6,940	5,760	6,550
Antimony	~	~	3.61 UJ	NA	NA	NA	2.64 U	2.67 U	2.87 U	NA	2.8	2.94 UJ	2.92 U	2.73 U
Arsenic	13	16	4.9 J	NA	NA	NA	1.59 U	1.6 U	1.72 U	NA	3.84	1.79	1.75 U	2.86
Barium	350	400	442	146	NA	NA	35.7	33.6	37.7	NA	76.3	61.9	40.9	58.1
Cadmium	2.5	4.3	0.433 U	NA	NA	NA	0.317 U	0.321 U	0.345 U	NA	0.336 U	0.353 U	0.351 U	0.327 U
Calcium	~	~	29,400	NA	NA	NA	1,830	2,060	2,040	NA	54,800	3,390	1,630	36,000
Chromium, Hexavalent	1	110	0.722 U	NA	NA	NA	0.529 U	0.535 U	0.574 U	NA	0.56 U	0.589 U	0.584 U	0.545 U
Chromium, Total	~	~	20	NA	NA	NA	17.4	15.2	39.5	47.9	28.6	32.2	16.5	19.2
Chromium, Trivalent	30	180	20	NA	NA	NA	17.4	15.2	39.5	NA	28.6	32.2	16.5	19.2
Cobalt	~	~	8.18	NA	NA	NA	8.92	7.21	14.7	NA	7.87	13.5	8.24	8.21
Copper	50	270	26.5	NA	NA	NA	20	21.9	19.4	NA	32.4	49	58.6	24.1
Iron	~	~	10,700	NA	NA	NA	12,600	11,600	15,000	NA	13,300	15,000	14,700	14,600
Lead	63	400	2,080	158 J	256 J	11.1	13.8	29.1	66	11.4 J	34	74	8.74	44.7
Magnesium	~	~	8,090	NA	NA	NA	3,760	3,930	6,890	NA	10,700	7,370	3,100	11,100
Manganese	1,600	2,000	217	NA	NA	NA	265	200	286	NA	275	158	273	235
Mercury	0.18	0.81	0.54	0.194	0.068	NA	0.032	0.226	0.0827	NA	0.04	0.401	0.0351 U	0.15
Nickel	30	310	114 J	152	263	152	71.3	69.9	209	429	52.5	182 J	47.6	57.3
Potassium	~	~	765	NA	NA	NA	907	872	745	NA	871 B	1,140 B	1,140 B	940
Selenium	3.9	180	3.61 U	NA	NA	NA	2.64 U	2.67 U	2.87 U	NA	2.8 U	2.94 U	2.92 U	2.73 U
Silver	2	180	0.722 UJ	NA	NA	NA	0.529 U	0.535 U	0.574 U	NA	0.56 U	0.589 U	0.584 U	0.545 U
Sodium	~	~	205	NA	NA	NA	175	169	139	NA	219	298 J	148	280
Vanadium	~	~	18.1	NA	NA	NA	17.6	17.9	22.1	NA	32.9	24.7	27.5	42.3
Zinc	109	10,000	291 J	105 J	NA	NA	28.4	30.1	24.2	NA	76.7	49.1	27.9	68.8
General Chemistry (%)														
Solids, Percent	~	~	69.3	87.9	87.5	89.2	94.6	93.5	87	83.2	89.3	84.9	85.6	NA

Notes provided on Page 8.

Concentrations above Unrestricted Use SCOs are bolded.

Concentrations above Restricted Use Residential SCOs are shaded.

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	SB11	SB11	SB12	SB12	SB12	SB12	SB12	SB13	SB13	SB13	SB13	SB13	SB13R	SB14	SB14	SB14												
Sample ID	SB11_10-12	SB11_14-16	SB12_0-2	SB12_8-10	SB12_18-20	SB13_0-2	SB13_5-7	SODUP02_050420	SB13_18-20	SB13R_7-8_HG	SB14_0-2	SB14_6-8	SODUP03_050620															
Laboratory ID	20D0850-08	20D0850-09	20D0850-04	20D0850-05	20D0850-06	20E0055-04	20E0055-05	20E0055-07	20E0055-06	21F0784-10	20E0134-04	20E0134-05	20E0134-07															
Sample Date	4/30/2020	4/30/2020	4/30/2020	4/30/2020	4/30/2020	5/4/2020	5/4/2020	5/4/2020	5/4/2020	6/16/2021	5/6/2020	5/6/2020	5/6/2020															
Sample Depth (feet bgs)	10-12	14-16	0-2	8-10	18-20	0-2	5-7	5-7	18-20	7-8	0-2	6-8	6-8															
Volatile Organic Compounds (mg/kg)																												
Acetone	0.05	100	0.011	J	0.012		0.017	J	0.0041	UJ	0.015	U	0.069	U	0.12	U	0.021	U	NA		0.012	U	0.023	U	0.018	U		
Benzene	0.06	4.8	0.0022	U	0.0028	U	0.0029	U	0.0024	U	0.002	U	0.0023	U	0.0022	U	0.0032	U	NA		0.0029	U	0.0025	U	0.0026	U		
Carbon Disulfide	~	~	0.0022	UJ	0.0028	U	0.0029	U	0.0024	UJ	0.002	UJ	0.0023	U	0.0022	U	0.0032	U	NA		0.0029	U	0.0025	U	0.0026	U		
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.0022	U	0.0028	U	0.0029	U	0.0024	U	0.002	U	0.0023	UJ	0.019	J	0.0058	J	NA		0.0029	U	0.0057		0.0053			
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.0022	U	0.0065		0.0029	U	0.0024	U	0.002	U	0.0023	U	0.0022	U	0.0024	U	0.0032	U	NA		0.0029	U	0.0025	U	0.0026	U
Semivolatile Organic Compounds (mg/kg)																												
2,4-Dimethylphenol	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
2-Methylnaphthalene	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
2-Methylphenol (o-Cresol)	0.33	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
3 & 4 Methylphenol (m&p Cresol)	0.33	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Acenaphthene	20	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Acenaphthylene	100	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.165	D	0.051	U	0.0513	U
Anthracene	100	100	0.0549	U	0.0557	U	0.274	JD	0.119	D	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.326	D	0.051	U	0.0513	U
Benzo(a)anthracene	1	1	0.0549	U	0.0557	U	0.815	D	0.154	D	0.0508	U	0.0497	JD	0.0795	JD	0.0472	U	0.0597	U	NA		0.729	D	0.12	D	0.12	D
Benzo(a)pyrene	1	1	0.0549	U	0.0557	U	0.743	D	0.12	D	0.0508	U	0.0662	JD	0.0735	JD	0.0472	U	0.0597	U	NA		0.735	D	0.12	D	0.112	D
Benzo(b)fluoranthene	1	1	0.0549	U	0.0557	U	0.642	D	0.102	D	0.0508	U	0.0655	JD	0.0637	JD	0.0472	U	0.0597	U	NA		0.574	D	0.0903	JD	0.0867	JD
Benzo(g,h,i)Perylene	100	100	0.0549	U	0.0557	U	0.483	D	0.059	JD	0.0508	U	0.0519	JD	0.047	U	0.0472	U	0.0597	U	NA		0.379	D	0.0562	JD	0.0638	JD
Benzo(k)fluoranthene	0.8	3.9	0.0549	U	0.0557	U	0.559	D	0.0868	JD	0.0508	U	0.0542	JD	0.0682	JD	0.0472	U	0.0597	U	NA		0.583	D	0.0928	JD	0.0965	JD
Benzyl Butyl Phthalate	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Biphenyl (Diphenyl)	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Bis(2-ethylhexyl) phthalate	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Carbazole	~	~	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0603	JD	0.051	U	0.0513	U
Chrysene	1	3.9	0.0549	U	0.0557	U	0.739	D	0.125	D	0.0508	U	0.0527	JD	0.084	JD	0.0472	U	0.0597	U	NA		0.749	D	0.114	D	0.104	D
Dibenz(a,h)anthracene	0.33	0.33	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.116	D	0.051	U	0.0513	U
Dibenzofuran	7	59	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Fluoranthene	100	100	0.0622	JD	0.0557	U	1.67	D	0.36	D	0.0508	U	0.0519	JD	0.139	D	0.0472	U	0.0597	U	NA		1.72	D	0.234	D	0.197	D
Fluorene	30	100	0.0549	U	0.0557	U	0.226	U	0.0729	JD	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0916	JD	0.051	U	0.0513	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.0549	U	0.0557	U	0.415	JD	0.0541	JD	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.381	D	0.0643	JD	0.0638	JD
Naphthalene	12	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Phenanthrene	100	100	0.071	JD	0.0557	U	1.03	D	0.435	D	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		1.13	D	0.0969	JD	0.072	JD
Phenol	0.33	100	0.0549	U	0.0557	U	0.226	U	0.0514	U	0.0508	U	0.0472	U	0.047	U	0.0472	U	0.0597	U	NA		0.0518	U	0.051	U	0.0513	U
Pyrene	100	100	0.0675	JD	0.0557	U	1.51	D	0.297	D	0.0508	U	0.0527	JD	0.112	D	0.0472	U	0.0597	U	NA		1.36	D	0.177	D	0.148	D
Pesticides (mg/kg)																												
4,4'-DDD	0.0033	13	0.00218	U	0.00224	U	0.00182	U	0.00201	U	0.00201	U	0.00186	U	0.00183	U	0.00186	U	0.00354	U	NA		0.00203	U	0.00202	U	0.00202	U
4,4'-DDE	0.0033	8.9	0.00218	U	0.00224	U	0.00686	D	0.00201	U	0.00201	U	0.00186	U	0.00183	U	0.00186	U	0.00354	U	NA		0.00203	U	0.00202	U	0.00202	U
4,4'-DDT	0.0033	7.9	0.00218	U	0.00224	U	0.00182	U	0.00201	U	0.00201	U	0.00186	U	0.00183	U	0.00186	U	0.00354	U	NA		0.00203	U	0.00202	U	0.00202	U
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	0.00218	U	0.00224	U	0.00182	U	0.00201	U	0.00201	U	0.00186	U	0.00183	U	0.00186	U	0.00354	U	NA		0.00203	U	0.00202	U	0.00202	U
Alpha Chlordane	0.094	4.2	0.00218	U	0.00224	U	0.0182	DP	0.00201	U	0.00201	U	0.00186	U	0.00183	U	0.00186	U	0.00354	U	NA		0.00203	U	0.00202	U	0.00202	U
Chlordane (alpha and gamma)	~	~	0.0435	U	0.0447	U	0.0364	U	0.0401	U	0.0402	U	0.0373	U	0.0365	U	0.0372	U	0.0709	U	NA		0.0406	U	0.0404	U	0.0405	U
Gamma-Chlordane	~	~	0.00218	U	0.00224	U	0.014	D																				

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

			SB14		SB15		SB15		SB15		SB16		SB16		SB101		SB101R		SB102		SB102R		SB103		SB103R		SB104		SB104R	
Sample ID	NYSDEC Part 375	NYSDEC Part 375	SB14 18-20		SB15 0-2		SB15 5-7		SB15 18-20		SB16 0-2		SB16 14-16		SB16 18-20		SB101 3-4		SB102 4-5		SB102R 7-8		SB103 2.5-3.5		SB103R 7-8		SB104 4.5-5.5		SB104R 7-8	
Laboratory ID	Unrestricted Use	Restricted Use	20E0134-06		20E0055-01		20E0055-02		20E0055-03		20D0850-01		20D0850-02		20D0850-03		20E0734-01		20E0734-02		21F0784-13		20E0734-03		21F0731-01		20E0734-04		21F0838-09	
Sample Date	SCOs	Residential SCOs	5/6/2020		5/4/2020		5/4/2020		5/4/2020		4/30/2020		4/30/2020		4/30/2020		5/22/2020		5/22/2020		6/16/2021		5/22/2020		6/15/2021		5/22/2020		6/17/2021	
Sample Depth (feet bgs)			18-20		0-2		5-7		18-20		0-2		14-16		18-20		3-4		4-5		7-8		2.5-3.5		7-8		4.5-5.5		7-8	
Volatile Organic Compounds (mg/kg)																														
Acetone	0.05	100	0.022	U	0.01	U	0.13	U	0.033	U	0.013	U	0.0074	U	0.0076	J	0.0061	U	NA	0.0058	U	NA	0.012	U	NA	0.018	U	NA		
Benzene	0.06	4.8	0.003	U	0.0026	U	0.0025	U	0.0028	U	0.0026	U	0.0019	U	0.0026	U	0.0031	U	NA	0.0029	U	NA	0.003	U	NA	0.0025	U	NA		
Carbon Disulfide	~	~	0.0057	J	~	U	0.0025	U	0.0044	J	0.0026	U	0.0019	UJ	0.0026	U	0.0031	U	NA	0.0029	U	NA	0.003	U	NA	0.0025	U	NA		
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.003	U	0.0026	UJ	0.038	J	0.0083	J	0.0026	U	0.0019	U	0.0026	U	0.0031	U	NA	0.0029	U	NA	0.003	U	NA	0.0025	U	NA		
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.003	U	0.0026	U	0.0025	U	0.0028	U	0.0026	U	0.0019	U	0.0026	U	0.0031	UJ	NA	0.0029	UJ	NA	0.003	UJ	NA	0.0025	U	NA		
Semivolatile Organic Compounds (mg/kg)																														
2,4-Dimethylphenol	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	0.725	D	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
2-Methylnaphthalene	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	0.0464	U	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
2-Methylphenol (o-Cresol)	0.33	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	0.546	D	0.0464	U	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA	
3 & 4 Methylphenol (m&p Cresol)	0.33	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	1.47	D	0.0464	U	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA	
Acenaphthene	20	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0611	JD	0.0491	U	0.0521	U	2.76	D	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
Acenaphthylene	100	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	NA	0.0695	JD	NA	0.0641	JD	NA	0.0863	JD	NA			
Anthracene	100	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.169	D	0.0491	U	0.0521	U	NA	NA	0.0479	U	NA	0.111	D	NA	0.067	JD	NA			
Benzo(a)anthracene	1	1	0.0547	U	0.117	D	0.0583	JD	0.0546	U	0.412	D	0.0491	U	0.0521	U	NA	0.0464	U	0.166	D	NA	0.453	D	NA	0.197	D	NA		
Benzo(a)pyrene	1	1	0.0547	U	0.123	D	0.053	U	0.0546	U	0.356	D	0.0491	U	0.0521	U	NA	0.0464	U	0.172	D	NA	0.434	D	NA	0.211	D	NA		
Benzo(b)fluoranthene	1	1	0.0547	U	0.126	D	0.053	U	0.0546	U	0.373	D	0.0491	U	0.0521	U	NA	0.0464	U	0.16	D	NA	0.385	D	NA	0.183	D	NA		
Benzo(g,h,i)Perylene	100	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.233	D	0.0491	U	0.0521	U	NA	NA	0.107	D	NA	0.233	D	NA	0.121	D	NA			
Benzo(k)fluoranthene	0.8	3.9	0.0547	U	0.0963	D	0.053	U	0.0546	U	0.298	D	0.0491	U	0.0521	U	NA	0.0464	U	0.137	D	NA	0.351	D	NA	0.156	D	NA		
Benzyl Butyl Phthalate	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	0.0505	U	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
Biphenyl (Diphenyl)	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	2.15	D	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
Bis(2-ethylhexyl) phthalate	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0529	JD	0.0491	U	0.0521	U	0.0505	U	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
Carbazole	~	~	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.107	D	0.0491	U	0.0521	U	NA	NA	0.0479	U	NA	0.0757	JD	NA	0.0467	U	NA			
Chrysene	1	3.9	0.0547	U	0.16	D	0.053	U	0.0546	U	0.401	D	0.0491	U	0.0521	U	NA	0.0464	U	0.187	D	NA	0.472	D	NA	0.22	D	NA		
Dibenz(a,h)anthracene	0.33	0.33	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0902	JD	0.0491	U	0.0521	U	NA	0.464	U	0.0479	U	NA	0.0764	JD	NA	0.0467	U	NA		
Dibenzofuran	7	59	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA			
Fluoranthene	100	100	0.0547	U	0.235	D	0.0659	JD	0.0546	U	1.02	D	0.0491	U	0.0521	U	NA	NA	0.337	D	NA	1.05	D	NA	0.341	D	NA			
Fluorene	30	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	NA	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA			
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.0547	U	0.0703	JD	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	NA	0.103	D	NA	0.241	D	NA	0.126	D	NA			
Naphthalene	12	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	NA	0.0464	U	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA		
Phenanthrene	100	100	0.0547	U	0.0977	D	0.053	U	0.0546	U	0.737	D	0.0491	U	0.0521	U	NA	0.0464	U	0.14	D	NA	0.552	D	NA	0.234	D	NA		
Phenol	0.33	100	0.0547	U	0.0464	U	0.053	U	0.0546	U	0.0468	U	0.0491	U	0.0521	U	1.25	D	0.0464	U	0.0479	U	NA	0.0484	U	NA	0.0467	U	NA	
Pyrene	100	100	0.0547	U	0.241	D	0.0591	JD	0.0546	U	0.89	D	0.0491	U	0.0521	U	NA	0.0464	U	0.295	D	NA	0.826	D	NA	0.345	D	NA		
Pesticides (mg/kg)																														
4,4'-DDD	0.0033	13	0.00214	UJ	0.00181	U	0.00206	U	0.00322	U	0.00186	U	0.00194	U	0.00206	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
4,4'-DDE	0.0033	8.9	0.00214	UJ	0.0059	D	0.00206	U	0.00322	U	0.00186	U	0.00194	U	0.00206	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
4,4'-DDT	0.0033	7.9	0.00214	UJ	0.00181	U	0.00206	U	0.00322	U	0.00186	U	0.00194	U	0.00206	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	0.00214	UJ	0.00181	U	0.00206	U	0.00322	U	0.00186	U	0.00194	U	0.00206	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Alpha Chlordane	0.094	4.2																												

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	NYSDEC Part 375	NYSDEC Part 375	SB104R	SB105	SB106	SB106R	SB106R	SB106R	SB107	SB107R	SB108	SB108	SB108R_1	SB108R_1	SB108R_1	SB109
Sample ID	Unrestricted Use	Restricted Use	SB104R_8-9	SB105_4-5	SB106_4.5-5.5	SB106R_7-8	SB106R_8-9	SB106R_9-10	SB107_4.5-5.5	SB107R_7-8	SB108_7-9.5	SODUP04_052220	SB108R_1_3-4	SB108R_1_4-5	SB108R_1_5-6	SB109_4-5
Laboratory ID	SCOs	Residential-SCOs	21F0838-10	20E0734-05	20E0734-06	21F0838-12	21F0838-13	21F0838-14	20E0734-07	21F0784-16	20E0734-08	20E0734-13	21F0985-12	21F0985-13	21F0985-14	20E0734-09
Sample Date			6/17/2021	5/22/2020	5/22/2020	6/17/2021	6/17/2021	6/17/2021	5/22/2020	6/16/2021	5/22/2020	5/22/2020	6/21/2021	6/21/2021	6/21/2021	5/22/2020
Sample Depth (feet bgs)			8-9	4-5	4.5-5.5	7-8	8-9	9-10	4.5-5.5	7-8	7-9.5	7-9.5	3-4	4-5	5-6	4-5
Volatile Organic Compounds (mg/kg)																
Acetone	0.05	100	NA	0.0076 U	0.0058 UJ	NA	NA	NA	0.011 U	NA	0.05 U	0.049 U	NA	NA	NA	0.0071 U
Benzene	0.06	4.8	NA	0.0038 U	0.0029 UJ	NA	NA	NA	0.0066 U	NA	0.0043 U	0.0033 U	NA	NA	NA	0.0035 U
Carbon Disulfide	~	~	NA	0.0038 U	0.0029 UJ	NA	NA	NA	0.0028 U	NA	0.0043 U	0.0033 U	NA	NA	NA	0.0035 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	NA	0.0038 U	0.0029 UJ	NA	NA	NA	0.0028 U	NA	0.011 U	0.0033 U	NA	NA	NA	0.0035 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	NA	0.0038 U	0.0029 UJ	NA	NA	NA	0.0028 UJ	NA	0.0043 U	0.0033 UJ	NA	NA	NA	0.0035 U
Semivolatile Organic Compounds (mg/kg)																
2,4-Dimethylphenol	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.0463 U	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
2-Methylnaphthalene	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.293 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.114 D
2-Methylphenol (o-Cresol)	0.33	100	NA	0.0459 U	0.048 U	NA	NA	NA	0.0463 U	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
3 & 4 Methylphenol (m&p Cresol)	0.33	100	NA	0.0459 U	0.048 U	NA	NA	NA	0.0502 JD	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
Acenaphthene	20	100	NA	0.0459 U	0.048 U	NA	NA	NA	1.32 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.0718 JD
Acenaphthylene	100	100	NA	0.0459 U	0.0674 JD	NA	NA	NA	1.54 D	NA	0.0731 JD	0.0811 JD	NA	NA	NA	0.934 D
Anthracene	100	100	NA	0.0459 U	0.0552 JD	NA	NA	NA	NA	NA	0.0587 U	0.0573 JD	NA	NA	NA	0.521 D
Benzo(a)anthracene	1	1	NA	0.0951 D	0.133 D	NA	NA	NA	NA	0.045 U	0.192 D	0.213 D	NA	NA	NA	1.49 D
Benzo(a)pyrene	1	1	NA	0.0864 JD	0.124 D	NA	NA	NA	NA	0.045 U	0.199 D	0.244 D	NA	NA	NA	2.04 D
Benzo(b)fluoranthene	1	1	NA	0.0747 JD	0.157 D	NA	NA	NA	NA	0.045 U	0.174 D	0.21 D	NA	NA	NA	1.74 D
Benzo(g,h,i)Perylene	100	100	NA	0.0527 JD	0.11 D	NA	NA	NA	NA	NA	0.144 D	0.16 D	NA	NA	NA	1.5 D
Benzo(k)fluoranthene	0.8	3.9	NA	0.0673 JD	0.113 D	NA	NA	NA	NA	0.045 U	0.176 D	0.202 D	NA	NA	NA	1.56 D
Benzyl Butyl Phthalate	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.0463 U	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
Biphenyl (Diphenyl)	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.0974 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
Bis(2-ethylhexyl) phthalate	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.0463 U	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
Carbazole	~	~	NA	0.0459 U	0.048 U	NA	NA	NA	0.926 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.496 D
Chrysene	1	3.9	NA	0.0988 D	0.175 D	NA	NA	NA	NA	0.045 U	0.203 D	0.231 D	NA	NA	NA	2.25 D
Dibenz(a,h)anthracene	0.33	0.33	NA	0.0459 U	0.0521 JD	NA	NA	NA	2.01 D	0.0450 U	0.0587 U	0.0553 U	NA	NA	NA	0.53 D
Dibenzofuran	7	59	NA	0.0459 U	0.048 U	NA	NA	NA	0.875 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.149 D
Fluoranthene	100	100	NA	0.161 D	0.184 D	NA	NA	NA	NA	NA	0.331 D	0.379 D	NA	NA	NA	NA
Fluorene	30	100	NA	0.0459 U	0.048 U	NA	NA	NA	2.16 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.24 D
Indeno(1,2,3-cd)pyrene	0.5	0.5	NA	0.0459 U	0.0973 D	NA	NA	NA	NA	0.045 U	0.123 D	0.145 D	NA	NA	NA	1.24 D
Naphthalene	12	100	NA	0.0459 U	0.048 U	NA	NA	NA	0.374 D	NA	0.0587 U	0.0553 U	NA	NA	NA	0.135 D
Phenanthrene	100	100	NA	0.127 D	0.104 D	NA	NA	NA	NA	NA	0.207 D	0.22 D	NA	NA	NA	2.92 D
Phenol	0.33	100	NA	0.0459 U	0.048 U	NA	NA	NA	0.0463 U	NA	0.0587 U	0.0553 U	NA	NA	NA	0.053 U
Pyrene	100	100	NA	0.162 D	0.178 D	NA	NA	NA	NA	NA	0.313 D	0.36 D	NA	NA	NA	NA
Pesticides (mg/kg)																
4,4'-DDD	0.0033	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	0.0033	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.0033	7.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha Chlordane	0.094	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (alpha and gamma)	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.042	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides (mg/kg)																
~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)																
PCB-1254 (Aroclor 1254)	~	~	NA	0.0184 U	0.0191 U	NA	NA	NA	0.0183 U	NA	0.0233 U	0.0218 U	NA	NA	NA	0.0211 U
PCB-1260 (Aroclor 1260)	~	~	NA	0.0184 U	0.0191 U	NA	NA	NA	0.0183 U	NA	0.0233 U	0.0218 U	NA	NA	NA	0.0211 U
Total PCBs	0.1	1	NA	0.0184 U	0.0191 U	NA	NA	NA	0.0183 U	NA	0.0233 U	0.0218 U	NA	NA	NA	0.0614 U
Inorganics (mg/kg)																
Aluminum	~	~	NA	3,190	2,600	NA	NA	NA	9,150	NA	6,620	7,950	NA	NA	NA	7,410
Antimony	~	~	NA	2.79	2.88	NA	NA	NA	2.79	NA	3.52	5.35	NA	NA	NA	3.18
Arsenic	13	16	NA	3.14	18.8	9.83	J	NA	10.7	NA	12.3	11.4	NA	NA	NA	4.94
Barium	350	400	NA	83.7	178	NA	NA	NA	104	NA	303	411	J	1,430	J	414
Cadmium	2.5	4.3	NA	0.335	3.79	0.401	U	NA	0.334	NA	0.423	0.858	NA	NA	NA	1.52
Calcium	~	~	NA	5,070	3,460	B	NA	NA	4,410	B	27,500	24,700	B	NA	NA	11,800
Chromium, Hexavalent	1	110	NA	0.558	0.576	U	NA	NA	0.557	U	0.705	0.666	UJ	NA	NA	0.636
Chromium, Total	~	~	NA	7.76	13.2	NA	NA	NA	22.4	NA	39.3	38.7	J	NA	NA	28.3
Chromium, Trivalent	30	180	NA	7.76	13.2	NA	NA	NA	22.4	NA	39.3	38.7	J	NA	NA	28.3
Cobalt	~	~	NA	6.45	6.12	NA	NA	NA	10.7	NA	15	18.4	NA	NA	NA	7.24
Copper	50	270	NA	33.9	66.2	82.8	NA	44.2	32.9	NA	83.7	118	J	NA	NA	65.1
Iron	~	~	NA	6,400	34,200	NA	NA	NA	13,300	NA	16,000	21,600	NA	NA	NA	11,000
Lead	63	400	NA	40.2	446	217	NA	4.61	258	J	1,930	2,530	NA	NA	NA	942
Magnesium	~	~	NA	1,150	959	NA	NA	NA	3,900	NA	5,570	9,460	J	NA	NA	3,070
Manganese	1,600	2,000	NA	70	78	NA	NA	NA	192	NA	250	312	NA	NA	NA	148
Mercury	0.18	0.81	0.0327	0.0648	0.822	4.6	1.1	0.034	1.43	U	1.98	1.81	NA	NA	NA	0.613
Nickel	30	310	104	23.1	37	111	58.9	65.4	64	J	145	209	NA	NA	NA	60.7
Potassium	~	~	NA	342	832	NA	NA	NA	1,320	NA	1,030	1,240	NA	NA	NA	1,210
Selenium	3.9	180	NA	2.79	2.88	U	NA	NA	2.79	U	3.52	3.33	UJ	NA	NA	3.18
Silver	2	180	NA	0.558	0.576	U	NA	NA	0.557	U	1.01	0.799	J	NA	NA	0.636
Sodium	~	~	NA	187	323	NA	NA	NA	561	NA	303	372	NA	NA	NA	439
Vanadium	~	~	NA	16.6	17	NA	NA	NA	24.4	NA	23.3	29.4	NA	NA	NA	41.1
Zinc	109	10,000	NA	61.2	890	111	64.1	NA	120	J	422	659	J	NA	NA	440
General Chemistry (%)																
Solids, Percent	~	~	91.7	89.6	86.7	74.8	77.6	88.2	89.7	92.3	70.9	75.1	74.9	76.9	88.5	78.6

Notes provided on Page 8.
Concentrations above Unrestricted Use SCOs are bolded.
Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location			SB109R	SB109R	SB109R	SB109R	SB110	SB110R	SB110R	SB111	SB111R_1
Sample ID	NYSDEC Part 375	NYSDEC Part 375	SB109R	SODUP02_061821	SB109R	SB109R	SB110	SB110R	SB110R	SB111	SB111R_1
Laboratory ID	Unrestricted Use	Restricted Use	21F0893-11	21F0893-23	21F0893-12	21F0893-13	20E0734-11	21F0838-15	21F0838-16	20E0734-12	21F0985-53
Sample Date	SCOs	Residential-SCOs	6/18/2021	6/18/2021	6/18/2021	6/18/2021	5/22/2020	6/17/2021	6/17/2021	5/22/2020	6/21/2021
Sample Depth (feet bgs)			7-8	7-8	8-9	9-10	9-10	7-8	8-9	8-9	8-9
Volatile Organic Compounds (mg/kg)											
Acetone	0.05	100	NA	NA	NA	NA	0.017 U	NA	NA	0.082	NA
Benzene	0.06	4.8	NA	NA	NA	NA	0.0026 U	NA	NA	0.0032 U	NA
Carbon Disulfide	~	~	NA	NA	NA	NA	0.0026 U	NA	NA	0.0032 U	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	100	NA	NA	NA	NA	0.0026 U	NA	NA	0.012	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	NA	NA	NA	NA	0.0026 U	NA	NA	0.0032 UJ	NA
Semivolatile Organic Compounds (mg/kg)											
2,4-Dimethylphenol	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
2-Methylnaphthalene	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
2-Methylphenol (o-Cresol)	0.33	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Acenaphthene	20	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Acenaphthylene	100	100	NA	NA	NA	NA	0.0599 JD	NA	NA	0.0649 JD	NA
Anthracene	100	100	NA	NA	NA	NA	0.0539 JD	NA	NA	0.0777 JD	NA
Benzo(a)anthracene	1	1	0.529 D	0.0918 JD	NA	NA	0.253 D	NA	NA	0.482 D	NA
Benzo(a)pyrene	1	1	0.508 D	0.0548 U	NA	NA	0.265 D	NA	NA	0.435 D	NA
Benzo(b)fluoranthene	1	1	0.49 D	0.0548 U	NA	NA	0.203 D	NA	NA	0.332 D	NA
Benzo(g,h,i)Perylene	100	100	NA	NA	NA	NA	0.142 D	NA	NA	0.161 D	NA
Benzo(k)fluoranthene	0.8	3.9	0.42 D	0.0548 U	NA	NA	0.216 D	NA	NA	0.354 D	NA
Benzyl Butyl Phthalate	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Biphenyl (Diphenyl)	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Bis(2-ethylhexyl) phthalate	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Carbazole	~	~	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Chrysene	1	3.9	0.54 D	0.0787 JD	NA	NA	0.216 D	NA	NA	0.415 D	NA
Dibenz(a,h)anthracene	0.33	0.33	0.133 D	0.0548 U	NA	NA	0.0676 JD	NA	NA	0.101 JD	NA
Dibenzofuran	7	59	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Fluoranthene	100	100	NA	NA	NA	NA	0.318 D	NA	NA	0.687 D	NA
Fluorene	30	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.412 D	0.0548 U	NA	NA	0.141 D	NA	NA	0.194 D	NA
Naphthalene	12	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Phenanthrene	100	100	NA	NA	NA	NA	0.104 JD	NA	NA	0.137 D	NA
Phenol	0.33	100	NA	NA	NA	NA	0.0536 U	NA	NA	0.0535 U	NA
Pyrene	100	100	NA	NA	NA	NA	0.297 D	NA	NA	0.648 D	NA
Pesticides (mg/kg)											
4,4'-DDD	0.0033	13	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	0.0033	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.0033	7.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.48	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha Chlordane	0.094	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (alpha and gamma)	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.042	2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides (mg/kg)											
~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)											
PCB-1254 (Aroclor 1254)	~	~	NA	NA	NA	NA	0.0211 U	NA	NA	0.0213 U	NA
PCB-1260 (Aroclor 1260)	~	~	NA	NA	NA	NA	0.0211 U	NA	NA	0.0213 U	NA
Total PCBs	0.1	1	NA	NA	NA	NA	0.0211 U	NA	NA	0.0213 U	NA
Inorganics (mg/kg)											
Aluminum	~	~	NA	NA	NA	NA	6,420	NA	NA	4,440	NA
Antimony	~	~	NA	NA	NA	NA	3.24 U	NA	NA	3.21 U	NA
Arsenic	13	16	NA	NA	NA	NA	6.61	NA	NA	1.93 U	NA
Barium	350	400	343	273	NA	NA	204	NA	NA	47.3	NA
Cadmium	2.5	4.3	NA	NA	NA	NA	0.389 U	NA	NA	0.385 U	NA
Calcium	~	~	NA	NA	NA	NA	21,100 B	NA	NA	2,790 B	NA
Chromium, Hexavalent	1	110	NA	NA	NA	NA	0.648 U	NA	NA	0.642 U	NA
Chromium, Total	~	~	NA	NA	NA	NA	13.8	NA	NA	18.6	NA
Chromium, Trivalent	30	180	NA	NA	NA	NA	13.8	NA	NA	18.6	NA
Cobalt	~	~	NA	NA	NA	NA	7.81	NA	NA	9.38	NA
Copper	50	270	28.3	49	NA	NA	38.6	NA	NA	23.4	NA
Iron	~	~	NA	NA	NA	NA	15,500	NA	NA	11,400	NA
Lead	63	400	437 J	619 J	516 J	5.31	416	108	27.7	69	NA
Magnesium	~	~	NA	NA	NA	NA	3,240	NA	NA	4,310	NA
Manganese	1,600	2,000	NA	NA	NA	NA	228	NA	NA	121	NA
Mercury	0.18	0.81	0.431	0.368	0.71	0.0336 U	1.25	0.263	0.0647	5.76	0.123 J
Nickel	30	310	36.1	228	117	90.3	47.9	53.2	73	94.1	NA
Potassium	~	~	NA	NA	NA	NA	845	NA	NA	842	NA
Selenium	3.9	180	NA	NA	NA	NA	3.24 U	NA	NA	3.21 U	NA
Silver	2	180	NA	NA	NA	NA	0.648 U	NA	NA	0.642 U	NA
Sodium	~	~	NA	NA	NA	NA	256	NA	NA	197	NA
Vanadium	~	~	NA	NA	NA	NA	17.9	NA	NA	14.7	NA
Zinc	109	10,000	488 J	324 J	732 J	25.4 J	244	39.9	NA	170	NA
General Chemistry (%)											
Solids, Percent	~	~	76.6	75.7	73.4	89.3	77.2	84.9	90.5	77.8	86.6

Notes provided on Page 8.

Concentrations above Unrestricted Use SCOs are bolded.

Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4A
Remedial Investigation
Soil Sample Analytical Results Summary - RI and SRI

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Notes:

1. Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).
2. Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and 4-methylphenol (p-cresol).
3. Only detected analytes are shown in the table.
4. Detected analytical results above Unrestricted Use SCOs are bolded.
5. Detected analytical results above Restricted Use Restricted-Residential SCOs are shaded.
6. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
7. Sample SODUP01_042920 is a duplicate sample of SB04_0-2; sample SODUP02_050420 is a duplicate sample of SB13_5-7; sample SODUP03_050620 is a duplicate sample of SB14_6-8; sample SODUP04_052220 is a duplicate sample of SB108_7-9.5; and sample SODUP02_061821 is a duplicate sample of SB109R_7-8.
8. ~ = Regulatory limit for this analyte does not exist
9. mg/kg = milligrams per kilogram
10. % = percent
11. NA = Not analyzed
12. ND = Not detected

Qualifiers:

- D = The concentration reported is a result of a diluted sample.
P = The relative percent difference (RPD) between the results for the two columns exceeds the method-specified criteria.
B = The analyte was found in the associated analysis batch blank.
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected at a level greater than or equal to the RL; however, the reported RL is approximate and may be inaccurate or imprecise.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 4B
Remedial Investigation
Soil Sample Analytical Results Summary - Deep Metals In Native Soil

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted- Residential SCOs	SB01R	SB01R	SB02R	SB02R	SB03R	SB03R	SB04R	SB04R	SB04R	SB05R	SB05R	SB06R	SB06R	SB07R	SB07R	SB08R	SB08R	
Sample ID			SB01R 8-9	SB01R 18-20	SB02R 8-9	SB02R 18-20	SB03R 9-10	SB03R 18-20	SB04R 11-12	SB04R 20-21	SB05R 4-5	SODUP03 061821	SB05R 18-20	SB06R 10-11	SB06R 18-20	SB07R 7-8	SB07R 18-20	SB08R 10-11	SB08R 18-20	
Laboratory ID			21F0730-05	21F0730-06	21F0732-03	21F0732-04	21F0838-01	21F0838-02	21F0893-03	21F0893-04	21F0893-01	21F0893-24	21F0893-02	21F0893-05	21F0893-06	21F0838-05	21F0838-06	21F0893-20	21F0893-10	
Sample Date			6/14/2021	6/14/2021	6/15/2021	6/15/2021	6/17/2021	6/17/2021	6/18/2021	6/18/2021	6/18/2021	6/18/2021	6/18/2021	6/18/2021	6/18/2021	6/18/2021	6/17/2021	6/17/2021	6/18/2021	6/18/2021
Sample Depth (feet bgs)			8-9	18-20	8-9	18-20	9-10	18-20	11-12	20-21	4-5	4-5	18-20	10-11	18-20	7-8	18-20	10-11	18-20	
Inorganics (mg/kg)																				
Chromium, Total	~	~	49.4	60.6	21.4	25.2	15.5	59.8	39.1	14.1	NA	NA	NA	NA	NA	NA	NA	NA		
Copper	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Nickel	30	310	249	476	121	149	65.6	265	234	93.6	89.4	67.7	51.1	230	86.8	66.6	122	152		
General Chemistry (%)																				
Solids, Percent	~	~	76.7	82.1	88.1	87	89.7	64.6	84.8	87.6	91.2	90.5	84.4	85.3	59.8	90.2	85	87.9		

Notes provided on Page 3.
Concentrations above Unrestricted Use SCOs are bolded.
Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4B
Remedial Investigation
Soil Sample Analytical Results Summary - Deep Metals In Native Soil

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted- Residential SCOs	SB09R SB09R 10-11 21F0893-07 6/18/2021 10-11	SB09R SB09R 18-20 21F0893-08 6/18/2021 18-20	SB10R SB10R 7-8 21F0784-05 6/16/2021 7-8	SB10R SB10R 18-20 21F0784-06 6/16/2021 18-20	SB11R SB11R 11-12 21F0838-03 6/17/2021 11-12	SB11R SB11R 18-20 21F0838-04 6/17/2021 18-20	SB12R SB12R 8-9 21F0784-01 6/16/2021 8-9	SB12R SB12R 18-20 21F0784-02 6/16/2021 18-20	SB13R SB13R 7-8 21F0784-03 6/16/2021 7-8	SB13R SB13R 18-20 21F0784-04 6/16/2021 18-20	SB14R SB14R 7-8 21F0732-01 6/15/2021 7-8	SB14R SODUP01 20210615 21F0732-05 6/15/2021 7-8	SB14R SB14R 18-20 21F0732-02 6/15/2021 18-20	SB15R SB15R 6-7 21F0730-03 6/14/2021 6-7	SB15R SB15R 18-20 21F0730-04 6/14/2021 18-20	SB16R SB16R 7-8 21F0730-01 6/14/2021 7-8	SB16R SB16R 18-20 21F0730-02 6/14/2021 18-20	
Inorganics (mg/kg)																				
Chromium, Total	~	~	45.3	122	NA	NA	45.7	147	16.4	53.6	NA	NA	18.8	25.1	24.9	NA	NA	56.9	29.5	
Copper	50	270	NA	NA	20	8.03	NA	NA	NA	NA	25.6	16	NA	NA	NA	NA	NA	NA	NA	
Nickel	30	310	318	488	63.9	163	245	880	77.9	538	60.5	219	77.1	118	79.6	318	294	317	156	
General Chemistry (%)																				
Solids, Percent	~	~	85.2	51.8	90.1	80.4	82.6	76.9	89.5	83.2	89.1	58.9	88.5	90.3	80.6	77.2	76	77.5	86.4	

Notes provided on Page 3.
Concentrations above Unrestricted Use SCOs are bolded.
Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4B
Remedial Investigation
Soil Sample Analytical Results Summary - Deep Metals In Native Soil

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Notes:

1. Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).
2. Only detected analytes are shown in the table.
3. Detected analytical results above Unrestricted Use SCOs are bolded.
4. Detected analytical results above Restricted Use Restricted-Residential SCOs are shaded.
5. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
6. Sample SODUP03_061821 is a duplicate sample of SB05R_4-5 and sample SODUP01_20210615 is a duplicate sample of SB14R_7-8.
6. ~ = Regulatory limit for this analyte does not exist
7. mg/kg = milligrams per kilogram
8. % = percent
9. NA = Not analyzed

Qualifiers:

- D = The concentration reported is a result of a diluted sample.
J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL; the value shown in the table is the RL.

Table 4C
Remedial Investigation
Soil Sample Analytical Results - Metals-Impacted Hot Spot Delineation

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted- Residential SCOs	SB08R_1	SB08R_E1	SB08R_N1	SB08R_N1	SB08R_N2	SB08R_S1	SB08R_W1	SB108R_1	SB108R_1	SB108R_1	SB108R_E1	SB108R_N1	SB108R_N1	SB108R_N1	SB108R_N2	SB108R_N2	SB108R_N2	SB108R_N2	SB108R_S1
Sample ID			SB08R_1_13-15	SB08R_E1_13-15	SB08R_N1_12-13	SB08R_N1_13-15	SB08R_N2_13-15	SB08R_S1_13-15	SB08R_W1_13-15	SB108R_1_3-4	SB108R_1_4-5	SB108R_1_5-6	SB108R_E1_4-5	SB108R_N1_3-4	SB108R_N1_4-5	SB108R_N1_5-6	SB108R_N2_3-4	SB108R_N2_4-5	SB108R_N2_5-6	SB108R_S1_4-5	
Laboratory ID			21F0985-03	21F1075-18	21F1075-24	21F1075-25	21F1075-13	21F1075-28	21F1075-03	21F0985-12	21F0985-13	21F0985-14	21F0985-43	21F0985-22	21F0985-23	21F0985-24	21F0985-27	21F0985-28	21F0985-29	21F0985-33	
Sample Date			6/21/2021	6/22/2021	6/22/2021	6/22/2021	6/22/2021	6/22/2021	6/22/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	6/21/2021	
Sample Depth (feet bgs)			13-15	13-15	12-13	13-15	13-15	13-15	13-15	13-15	13-15	3-4	4-5	5-6	4-5	3-4	4-5	5-6	3-4	4-5	5-6
Inorganics (mg/kg)																					
Barium	350	400	30.2	33.7 J	NA	174 J	NA	38.2 J	36.7 J	1,430 J	395	74.9 J	116	110 J	411	133 J	51.6	534 J	746	98.2	
Lead	63	400	3.35	5.38 J	1,230 J	500	3.84	9.77 J	9.51 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury	0.18	0.81	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 3.
Concentrations above Unrestricted Use SCOs are bolded.
Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4C
Remedial Investigation
Soil Sample Analytical Results - Metals-Impacted Hot Spot Delineation

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted- Residential SCOs	SB108R_W1 SB108R_W1_4-5 21F0985-18 6/21/2021 4-5	SB111R_1 SB111R_1_8-9 21F0985-53 6/21/2021 8-9	SB111R_E1 SB111R_E1_7-8 21F0985-82 6/21/2021 7-8	SB111R_E1 SB111R_E1_8-9 21F0985-83 6/21/2021 8-9	SB111R_E1 SB111R_E1_9-10 21F0985-84 6/21/2021 9-10	SB111R_E1_10-11 21F0985-85 6/21/2021 10-11	SB111R_E2 SB111R_E2_8-9 21F0985-78 6/21/2021 8-9	SB111R_N1 SB111R_N1_7-8 21F0985-57 6/21/2021 7-8	SB111R_N1 SB111R_N1_8-9 21F0985-58 6/21/2021 8-9	SB111R_N1 SB111R_N1_9-10 21F0985-59 6/21/2021 9-10	SB111R_N2 SB111R_N2_8-9 21F0985-63 6/21/2021 8-9	SB111R_S1 SB111R_S1_7-8 21F0985-67 6/21/2021 7-8	SB111R_S1 SB111R_S1_8-9 21F0985-68 6/21/2021 8-9	SB111R_S1 SB111R_S1_9-10 21F0985-69 6/21/2021 9-10	SB111R_S2 SB111R_S2_7-8 21F0985-72 6/21/2021 7-8	SB111R_S2 SB111R_S2_8-9 21F0985-73 6/21/2021 8-9	SB111R_S2 SB111R_S2_9-10 21F0985-74 6/21/2021 9-10	SB111R_W1 SB111R_W1_8-9 21F0985-88 6/21/2021 8-9	
Inorganics (mg/kg)																					
Barium	350	400	136	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Lead	63	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury	0.18	0.81	NA	0.123 J	0.177	8.44	3.51	0.259	0.445	0.178	0.328	0.158	0.345	0.126	2.76	0.0361 U	0.663	1.64	0.0383	0.0486	

Notes provided on Page 3.
Concentrations above Unrestricted Use SCOs are bolded.
Concentrations above Restricted Use Restricted-Residential SCOs are shaded.

Table 4C
Remedial Investigation
Soil Sample Analytical Results - Metals-Impacted Hot Spot Delineation

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Notes:

1. Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).
2. Only detected analytes are shown in the table.
3. Detected analytical results above Unrestricted Use SCOs are bolded.
4. Detected analytical results above Restricted Use Restricted-Residential SCOs are shaded.
5. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
6. ~ = Regulatory limit for this analyte does not exist
7. mg/kg = milligrams per kilogram
8. NA = Not analyzed

Qualifiers:

- J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL; the value shown in the table is the RL.

Table 4D
Remedial Investigation
Soil Sample Analytical Results - PFAS

475 Bay Street and 31 Wave Street
Staten island, New York
Langan Project No.: 170610601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use Guidance Values	NYSDEC Part 375 Restricted Use Restricted-Residential Guidance Values	SB01 SB01_ 0-2 20E0108-01 5/5/2020 0-2	SB01 SB01_ 6-8 20E0108-02 5/5/2020 6-8	SB01 SB01_ 18-20 20E0108-03 5/5/2020 18-20	SB02 SB02_ 0-2 20E0108-04 5/5/2020 0-2	SB02 SB02_ 6-8 20E0108-05 5/5/2020 6-8	SB02 SB02_ 18-20 20E0108-06 5/5/2020 18-20	SB03 SB03_ 0-2 20E0108-07 5/5/2020 0-2	SB03 SB03_ 6-8 20E0108-08 5/5/2020 6-8	SB03 SB03_ 18-20 20E0108-09 5/5/2020 18-20	SB10 SB10_ 0-2 20E0134-01 5/6/2020 0-2	SB10 SB10_ 6-8 20E0134-02 5/6/2020 6-8	SB10 SB10_ 18-20 20E0134-03 5/6/2020 18-20	SB11 SB11_ 0-2 20D0849-07 4/30/2020 0-2	SB11 SB11_ 10-12 20D0849-08 4/30/2020 10-12	SB11 SB11_ 14-16 20D0849-09 4/30/2020 14-16
Per and Polyfluoroalkyl Substances (ppb)																	
Perfluorobutanoic acid (PFBA)	~	~	0.212 U	0.283 J	0.202 U	0.208 U	0.186 U	0.26 U	0.735	0.194 U	0.182 U	0.193 U	0.185 U	0.183 U	0.188 U	0.244 U	0.2 U
Perfluorodecanoic Acid (PFDA)	~	~	0.109 J	0.0645 U	0.0566 U	0.078 J	0.052 U	0.0728 U	0.0554 U	0.0544 U	0.0511 U	0.054 U	0.0517 U	0.0513 U	0.0527 U	0.0684 U	0.056 U
Perfluoroheptanoic acid (PFHpA)	~	~	0.0615 J	0.0573 U	0.0503 U	0.0631 J	0.0462 U	0.0647 U	0.0493 U	0.0483 U	0.0454 U	0.048 U	0.0459 U	0.0456 U	0.0468 U	0.0608 U	0.0497 U
Perfluorohexanoic Acid (PFHxA)	~	~	0.0818 J	0.0831 U	0.0729 U	0.0848 J	0.067 U	0.0937 U	0.0872 J	0.07 U	0.0658 U	0.0696 U	0.0665 U	0.066 U	0.0678 U	0.088 U	0.072 U
Perfluorononanoic Acid (PFNA)	~	~	0.0761 J	0.0754 U	0.0661 U	0.0682 U	0.0608 U	0.0851 U	0.0648 U	0.0635 U	0.0597 U	0.0631 U	0.0604 U	0.0599 U	0.0615 U	0.0798 U	0.0654 U
Perfluorooctanesulfonamide (FOSA)	~	~	0.0543 U	0.0589 U	0.0516 U	0.0533 U	0.0475 U	0.0664 U	0.0506 U	0.0496 U	0.0466 U	0.0493 U	0.0472 U	0.0468 U	0.0481 U	0.0624 U	0.0511 U
Perfluorooctanesulfonic Acid (PFOS)	0.88	44	1.85	0.0552 U	0.0484 U	0.565 J	0.0445 U	0.0623 U	2.13	0.0472 J	0.0437 U	0.528 U	0.0442 U	0.0439 U	0.0451 U	0.0585 U	0.0479 U
Perfluorooctanoic Acid (PFOA)	0.66	33	0.467 J	0.124 J	0.107 J	0.188 J	0.0785 U	0.191 J	0.173 J	0.287 J	0.077 U	0.528 U	0.078 U	0.0774 U	0.0795 U	0.113 J	0.0844 U
Perfluoropentanoic Acid (PFPeA)	~	~	0.107 U	0.116 U	0.102 U	0.105 U	0.0934 U	0.131 U	0.0995 U	0.0976 U	0.0917 U	0.097 U	0.12 J	0.0921 U	0.0946 U	0.123 U	0.1 U

Notes provided on Page 3.
Concentrations above Unrestricted Use Guidance Values are bolded.
Concentrations above Restricted Use Restricted-Residential Guidance Values are shaded.

Table 4D
Remedial Investigation
Soil Sample Analytical Results - PFAS

475 Bay Street and 31 Wave Street
Staten island, New York
Langan Project No.: 170610601

Location	NYSDEC Part 375	NYSDEC Part 375	SB12	SB12	SB12	SB13	SB13	SB13	SB13	SB13	SB14	SB14	SB14	SB14	SB15	SB15	SB15	SB16	SB16	SB16
Sample ID		Restricted Use	SB12_0-2	SB12_8-10	SB12_18-20	SB13_0-2	SB13_5-7	SODUP02_050420	SB13_18-20	SB14_0-2	SB14_6-8	SODUP03_050620	SB14_18-20	SB15_0-2	SB15_5-7	SB15_18-20	SB16_0-2	SB16_14-16	SB16_18-20	
Laboratory ID	Unrestricted Use	Restricted-Residential	20D0849-04	20D0849-05	20D0849-06	20E0055-04	20E0055-05	20E0055-07	20E0055-06	20E0134-04	20E0134-05	20E0134-07	20E0134-06	20E0055-01	20E0055-02	20E0055-03	20D0849-01	20D0849-02	20D0849-03	
Sample Date	Guidance Values	Guidance Values	4/30/2020	4/30/2020	4/30/2020	5/4/2020	5/4/2020	5/4/2020	5/4/2020	5/6/2020	5/6/2020	5/6/2020	5/6/2020	5/4/2020	5/4/2020	5/4/2020	4/30/2020	4/30/2020	4/30/2020	
Sample Depth (feet bgs)			0-2	8-10	18-20	0-2	5-7	5-7	18-20	0-2	6-8	6-8	18-20	0-2	5-7	18-20	0-2	14-16	18-20	
Per and Polyfluoroalkyl Substances (ppb)																				
Perfluorobutanoic acid (PFBA)	~	~	0.185 U	0.201 U	0.193 U	0.201 U	0.557 U	0.196 U	1.43 U	0.204 U	0.204 U	0.709 U	0.203 U	0.196 U	0.226 U	0.615 U	0.185 J	0.194 U	0.233 U	
Perfluorodecanoic Acid (PFDA)	~	~	0.0519 U	0.0563 U	0.0542 U	0.0564 U	0.0571 U	0.0549 U	0.0723 U	0.057 U	0.0571 U	0.061 U	0.0569 U	0.536 U	0.0633 U	0.063 U	0.0606 J	0.0544 U	0.0653 U	
Perfluoroheptanoic acid (PFHpA)	~	~	0.0461 U	0.05 U	0.0482 U	0.551 U	0.0507 U	0.536 U	0.706 U	0.557 U	0.557 U	0.596 U	0.556 U	0.0487 U	0.0562 U	0.056 U	0.0456 U	0.0484 U	0.058 U	
Perfluorohexanoic Acid (PFHxA)	~	~	0.0668 U	0.0725 U	0.0698 U	0.551 U	0.0735 U	0.536 U	0.706 U	0.557 U	0.0735 U	0.596 U	0.0733 U	0.0706 U	0.0814 U	0.0811 U	0.066 U	0.07 U	0.0841 U	
Perfluorononanoic acid (PFNA)	~	~	0.0606 U	0.0658 U	0.0633 U	0.0659 U	0.0667 U	0.0641 U	0.0844 U	0.557 U	0.0667 U	0.0713 U	0.0665 U	0.0641 U	0.0739 U	0.0736 U	0.0599 U	0.0635 U	0.0763 U	
Perfluorooctanesulfonamide (FOSA)	~	~	0.0473 U	0.0514 U	0.0494 U	0.0514 U	0.0521 U	0.0501 U	0.706 U	0.052 U	0.0521 U	0.0557 U	0.0519 U	0.05 U	0.0577 U	0.0575 U	0.0522 J	0.0496 U	0.0596 U	
Perfluorooctanesulfonic Acid (PFOS)	0.88	44	0.292 J	0.0482 U	0.0464 U	0.0482 U	0.0488 U	0.0469 U	0.0619 U	0.557 U	0.0488 U	0.0522 U	0.0487 U	1.08 U	0.0541 U	0.0539 U	0.393 J	0.0465 U	0.0559 U	
Perfluorooctanoic Acid (PFOA)	0.66	33	0.166 J	0.0849 U	0.0894 J	1.34 U	0.0861 U	0.0827 U	0.109 U	0.557 U	0.557 U	0.596 U	0.556 U	0.536 U	0.618 U	0.095 U	0.313 J	0.082 U	0.165 J	
Perfluoropentanoic Acid (PFPeA)	~	~	0.111 J	0.101 U	0.0973 U	0.551 U	0.102 U	0.0985 U	0.13 U	0.116 J	0.102 U	0.11 U	0.102 U	0.0984 U	0.114 U	0.113 U	0.092 U	0.0977 U	0.117 U	

Notes provided on Page 3.
Concentrations above Unrestricted Use Guidance Values are bolded.
Concentrations above Restricted Use Restricted-Residential Guidance Values are shaded.

Table 4D
Remedial Investigation
Soil Sample Analytical Results - PFAS

475 Bay Street and 31 Wave Street
Staten island, New York
Langan Project No.: 170610601

Notes:

1. Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) Unrestricted Use and Restricted Use Restricted-Residential Guidance Values (January 2021).
2. Only detected analytes are shown in the table.
3. Detected analytical results above Unrestricted Use Guidance Values are bolded.
4. Detected analytical results above Restricted Use Restricted-Residential Guidance Values are shaded.
5. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
6. Sample SODUP02_050420 is a duplicate sample of SB13_5-7 and sample SODUP03_050620 is a duplicate sample of SB14_6-8.
7. ~ = Regulatory limit for this analyte does not exist
8. ppb = parts per billion

Qualifiers:

J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 5
Remedial Investigation Report
Groundwater Sample and Aqueous Sample Analytical Results Summary

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location		MW01	MW02	MW05	MW06	MW08	MW08	MW10	MW11	MW13	MW16	SW01	SW02	SW03
Sample ID	NYSDEC	MW01_050720	MW02_050720	MW05_043020	MW06_043020	MW08_043020	GWDUP01_043020	MW10_050720	MW11_051120	MW13_051120	MW16_050720	SW01_062121	SW02_062121	SW03_062121
Laboratory ID	SGVs	20E0198-02	20E0198-03	20D0850-13	20D0850-11	20D0850-12	20D0850-14	20E0198-04	20E0279-02	20E0279-01	20E0198-01	21F0985-96	21F0985-97	21F0985-98
Sample Date		5/7/2020	5/7/2020	4/30/2020	4/30/2020	4/30/2020	4/30/2020	5/7/2020	5/11/2020	5/11/2020	5/7/2020	6/21/2021	6/21/2021	6/21/2021
Volatile Organic Compounds (µg/L)														
1,2,3-Trichlorobenzene	5	1.41 J	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 U
Acetone	50	1.13 J	1 U	1.01 J	3.86 J	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1.1 J	1.37 J	1.46 J
Chloroform	7	0.2 U	0.2 U	0.2 U	0.2 U	0.57 U	0.58 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methyl Ethyl Ketone (2-Butanone)	50	0.2 U	0.2 U	0.2 U	1.63 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.27 J	0.22 J
Tert-Butyl Methyl Ether	10	0.2 UJ	0.2 UJ	1.23	1.24	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Tetrachloroethene (PCE)	5	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.51 U	0.46 J	0.2 UJ	0.2 U	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Semivolatile Organic Compounds (µg/L)														
2-Methylnaphthalene	~	4.03 J	2.78 U	2.7 U	2.78 U	2.7 U	2.7 U	2.56 U	2.56 U	2.78 U	2.78 U	2.56 U	2.5 U	2.5 U
Acenaphthene	20	3.56	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Acenaphthylene	~	0.314	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Anthracene	50	0.843	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Benzo(a)anthracene	0.002	0.0649	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Bis(2-ethylhexyl) phthalate	5	0.541 U	0.556 U	0.541 U	1.27	0.541 U	0.541 U	0.513 U	1.41	0.878	0.556 U	0.933 J	0.5 UJ	2.65 J
Chrysene	0.002	0.0757	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Dibenzofuran	~	3.18 J	2.78 U	2.7 U	2.78 U	2.7 U	2.7 U	2.56 U	2.56 U	2.78 U	2.78 U	2.56 U	2.5 U	2.5 U
Fluoranthene	50	1.2	0.0889	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 U	0.05 U	0.05 U
Fluorene	50	4.46	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.39	0.3	0.37
Naphthalene	10	7.65 D	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0821 U	0.06 U	0.08 U
Phenanthrene	50	4.36	0.0556 U	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 U	0.0513 U	0.0556 U	0.0556 U	0.0513 UJ	0.05 UJ	0.05 UJ
Pyrene	50	0.519 J	0.0556 J	0.0541 U	0.0556 U	0.0541 U	0.0541 U	0.0513 UJ	0.0821	0.0556 U	0.0667 J	0.0923 U	0.07 U	0.09 U
Pesticides (µg/L)	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Herbicides (µg/L)	~	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (µg/L)	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Inorganics (µg/L)														
Aluminum	~	1,360	3,440	270	55.6 U	3,250	99.6	3,990	88.2	110 J	177	55.6 U	57.4	55.6 U
Aluminum (Dissolved)	~	55.6 U	55.6 U	55.6 U	55.6 U	55.6 U	55.6 U	55.6 J	55.6 U	55.6 U	55.6 U	NA	NA	NA
Antimony	3	1.11 U	1.89	1.11 U	1.11 U	1.63	1.66	1.11 U	1.11 U	1.11 UJ	1.11 U	1.11 U	1.11 U	1.11 U
Antimony (Dissolved)	3	1.11 UJ	1.11 UJ	1.11 U	1.11 U	1.57	1.51	1.15 J	1.11 U	1.11 U	1.11 UJ	NA	NA	NA
Arsenic	25	6	9.99	12.5	1.68	22.2	21.1	5.02	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U
Arsenic (Dissolved)	25	6.25	3.45	11.7	1.71	20.7	20.2	4.09	1.11 U	1.69	1.11 U	NA	NA	NA
Barium	1,000	176	217	343	198	136	87.9	84	37.3	105	27.8 U	64.1	63.1	60.9
Barium (Dissolved)	1,000	179	175	307	194	83.6	82.6	45.1	41.4	102 J	27.8 U	NA	NA	NA
Calcium	~	92,300	87,600	146,000	102,000	76,600	68,600	15,500	33,700	61,200 J	15,900	18,600	20,400	19,300
Calcium (Dissolved)	~	96,800	86,800	138,000	99,100	65,100	64,400	15,300 J	37,100	63,800 J	15,900	NA	NA	NA
Chromium, Total	50	5.56	13.4	5.56 U	5.56 U	13.6	5.56 U	10.9	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Chromium, Trivalent	~	10	13.4	10 U	10 U	13.6	10 U	10.9	10 U	10 U	10 U	NA	NA	NA
Cobalt	~	4.44 U	6.22	4.73	4.44 U	4.44 U	4.44 U	5.09	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U
Copper	200	22.2 U	41.3	22.2 U	22.2 U	22.2 U	22.2 U	27	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U
Cyanide	200	10 U	10 U	10 U	10 U	10 U	10 U	24	10 U	10 U	10 U	NA	NA	NA
Iron	300	36,100	16,700	6,770	11,400	4,940	278 U	6,890	684	5,540 J	278 U	391	298	278 U
Iron (Dissolved)	300	35,400	10,100	5,510	11,000	278 U	278 U	498	602	5,030 J	278 U	NA	NA	NA
Lead	25	5.56 U	53.9	5.56 U	5.56 U	184	19.1	12.9	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Lead (Dissolved)	25	5.56 U	5.56 U	5.56 U	5.56 U	6.88	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	NA	NA	NA
Magnesium	35,000	16,600	13,500	34,500	19,200	15,500	12,900	4,200	7,510	26,200 J	2,040	941	1,070	977
Magnesium (Dissolved)	35,000	17,800	11,900	31,700	18,500	12,500	12,300	2,830	8,290	25,400 J	1,990	NA	NA	NA
Manganese	300	1,510	738	2,900	1,730	151	5.63	334	497	1,520 J	18	28.5	22.5	17.2
Manganese (Dissolved)	300	1,400	692	2,700	1,700	36.3	40.9	293	544	1,420 J	34.8	NA	NA	NA
Mercury	0.7	0.26	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.32 U	0.2 U	0.2 U	0.2 U	0.2 U
Mercury (Dissolved)	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2844	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
Nickel	100	11.7	38.7	11.1 U	11.1 U	69.7	11.1 U	33.2	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Nickel (Dissolved)	100	11.1 U	11.1 U	11.1 U	11.1 U	12.1	12.3	11.1 U	11.1 U	11.1 U	11.1 U	NA	NA	NA
Potassium	~	10,400	9,260	14,700	9,530	12,300	11,500	5,940	4,170	7,380	3,150	2,620 B	3,320 B	2,980 B
Potassium (Dissolved)	~	10,900	8,750	14,400 B	9,480 B	11,800 B	11,800 B	4,810 J	4,460 B	7,300 J	3,240	NA	NA	NA
Selenium	10	1.11 U	1.3	1.11 U	1.11 U	2.72	1.77	1.11 U	1.11 U	1.11 U	1.11 U	1.11 UJ	1.11 UJ	1.11 UJ
Selenium (Dissolved)	10	1.11 U	1.11 U	1.12	1.11 U	2.6	2.48	1.11 U	1.11 U	1.11 U	1.11 U	NA	NA	NA
Sodium	20,000	64,000	23,000	96,000	48,400	55,800	55,800	24,100	35,100	39,900 J	18,400	2,610 J	3,260 J	2,890 J
Sodium (Dissolved)	20,000	69,200	23,300	90,900	47,800	54,200	54,600	24,200 J	36,500	47,300 J	19,300	NA	NA	NA
Vanadium	~	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.9	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Zinc	2,000	27.8 U	68.2	29.3	27.8 U	144	93.8	27.8 U	27.8 U	27.8 U	27.8 U	192 J	195 J	184 J
Zinc (Dissolved)	2,000	27.8 U	27.8 U	27.8 U	27.8 U	50	52.1	27.8 U	27.8 U	27.8 U	27.8 U	NA	NA	NA

Table 5
Remedial Investigation Report
Groundwater Sample and Aqueous Sample Analytical Results Summary

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Notes:

1. Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules and Regulations (NYCRR) Part 703.5 and the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water (herein collectively referenced as "NYSDEC SGVs").
2. Only detected analytes are shown in the table.
3. Detected analytical results above NYSDEC SGVs are bolded and shaded.
4. Analytical results with reporting limits (RL) above NYSDEC SGVs are italicized.
5. Sample GWDUP01_043020 is a duplicate sample of MW08_043020.
6. ~ = Regulatory limit for this analyte does not exist
7. ug/l = micrograms per liter
7. NA = Not analyzed
8. ND = Not detected

Qualifiers:

- D = The concentration reported is a result of a diluted sample.
B = The analyte was found in the associated analysis batch blank.
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected at a level greater than or equal to the RL; however, the reported RL is approximate and may be inaccurate or imprecise.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 6
Remedial Investigation Report
Groundwater Sample and Aqueous Sample Analytical Results Summary- Emerging Contaminants

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	NYSDEC	MW01	MW02	MW05	MW06	MW08	MW08	MW10	MW11	MW13	MW16	SW01	SW02	SW03													
Sample ID	January 2021	MW01_050720	MW02_050720	MW05_043020	MW06_043020	MW08_043020	GWDUP01_043020	MW10_050720	MW11_051120	MW13_051120	MW16_050720	SW01_062121	SW02_062121	SW03_062121													
Laboratory ID	PFAS	20E0198-02	20D0198-03	20D0849-13	20D0849-11	20D0849-12	20E0279-02	20E0198-04	20E0279-02	20E0279-01	20E0198-01	21F0985-96	21F0985-97	21F0985-98													
Sample Date		5/7/2020	5/7/2020	4/30/2020	4/30/2020	4/30/2020	4/30/2020	5/7/2020	5/11/2020	5/11/2020	5/7/2020	6/21/2021	6/21/2021	6/21/2021													
Per and Polyfluoroalkyl Substances (ng/L)																											
N-ethyl perfluorooctane- sulfonamidoacetic acid (NEtFOSAA)	100	0.557	U	0.557	U	0.557	J	0.557	U	0.557	U	0.557	J	1.85	J	1.85	J	1.89	J								
N-methyl perfluorooctane- sulfonamidoacetic acid (NMeFOSAA)	100	0.529	U	0.529	U	0.529	U	0.529	U	0.529	U	0.529	J	1.85	J	1.85	J	1.89	J								
Perfluorobutanesulfonic acid (PFBS)	100	1.87	J	1.92	J	14.9		9.45	J	0.894	J	1.09	J	1.35	J	2.21		1.84	J	6.46	U	2.01		1.89	U		
Perfluorobutanoic acid (PFBA)	100	10.5	U	9.93	U	17.4	U	18.2	U	5.47	U	4.94	U	13.6	U	11.3	U	8.58	U	10.5	U	11.2	J	3.95	J	9.34	J
Perfluorodecanesulfonic acid (PFDS)	100	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	0.574	U	1.85	U	1.85	U	1.89	U
Perfluorodecanoic acid (PFDA)	100	0.524	U	1.04	J	1.28	J	2.52		0.524	UJ	0.524	U	0.674	J	0.524	U	0.524	U	0.524	U	1.85	U	2.06		1.97	
Perfluorododecanoic Acid (PFDoA)	100	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	1.85	U	1.85	U	1.89	U
Perfluoroheptanesulfonic acid (PFHpS)	100	0.415	U	0.415	U	2.42		0.894	J	0.415	U	0.415	U	0.415	U	0.415	U	0.415	U	0.415	U	1.85	U	1.85	U	1.89	J
Perfluoroheptanoic acid (PFHpA)	100	5.16	U	2.79	U	17.2		20.5		2.59		2.32		2.31	U	4.56		6.49		2.23	U	11.2		11.3		11.9	
Perfluorohexanesulfonic Acid (PFHxS)	100	0.736	J	0.56	J	3.87		2.69		0.618	J	0.681	J	0.496	J	0.95	J	1.16	J	0.281	U	1.85	U	1.85	U	1.89	U
Perfluorohexanoic Acid (PFHxA)	100	6.85		3.73	U	17.7		22.3		3.22		3.18		4.61	U	8.22		6.21		5.91	U	10.3		11.2		10.4	
Perfluorononanoic Acid (PFNA)	100	1.18	J	2.53		8.35		9.87		0.984	J	0.741	J	0.788	J	0.993	J	1.97	J	0.574	U	2.64		2.35		2.23	
Perfluorooctanesulfonamide (FOSA)	100	0.296	U	0.296	U	0.296	U	2	U	2	U	0.296	U	0.296	U	0.296	U	0.296	U	0.296	U	1.85	J	1.85	J	1.89	J
Perfluorooctanesulfonic acid (PFOS)	10	4.75		9.4		84.3		130		10.9		12.3		6.2		3.76		9.58		3.1		12.5		15.9		12.5	
Perfluorooctanoic Acid (PFOA)	10	67.3		31.5		143		178		27.7		27.5		9.22		27.3		65.8		2.36	U	18		22.5		19.9	
Perfluoropentanoic Acid (PFPeA)	100	6.65	U	3.29	U	16.9	J	23.2	J	3.08	U	2.79	U	4.8	U	8.99		5.51	U	4.49	U	6.36		8.06		8.1	
Perfluorotetradecanoic Acid (PFTA)	100	3.8		0.531	U	0.531	J	0.537	J	0.671	J	0.531	U	0.531	U	0.531	U	0.531	U	0.531	U	1.85	UJ	1.85	UJ	1.89	UJ
Perfluorotridecanoic Acid (PFTrDA)	100	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.85	UJ	1.85	UJ	1.89	UJ
Perfluoroundecanoic Acid (PFUnA)	100	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	1.85	U	1.85	U	1.89	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	100	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	1.85	UJ	1.85	UJ	1.89	UJ
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	100	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	4.63	UJ	4.63	UJ	4.73	UJ
Total PFAS	500	86		47		310		401		48		48		18		56		93		5		89		90		89	

Notes:
1. Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) (January 2021).
2. Detected analytical results above NYSDEC January 2021 Guidance Values are bolded and shaded.
3. Analytical results with reporting limits (RL) above NYSDEC January 2021 Guidance Values.
4. Sample GWDUP01_043020 is a duplicate sample of
5. ~ = Regulatory limit for this analyte does not exist
6. ng/l = nanograms per liter

Qualifiers:
J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 7
Remedial Investigation Report
Co-Location Indoor Air and Sub-Slab Soil Vapor Sample Analytical Results Summary

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location	AA01		IA08		SS08		IA09		SS09	
Sample ID	AA01_043020		IA08_043020		SS08_043020		IA09_043020		SS09_043020	
Laboratory ID	20E0004-03		20E0004-06		20E0004-04		20E0004-07		20E0004-05	
Sample Date	4/30/2020		4/30/2020		4/30/2020		4/30/2020		4/30/2020	
Sample Type	AA		IA		SSV		IA		SSV	
Volatile Organic Compounds (µg/m³)										
1,2,4-Trimethylbenzene	0.39	U	0.55	D	9.9	D	0.47	U	17	D
1,3,5-Trimethylbenzene (Mesitylene)	0.39	U	0.4	U	2.6	D	0.47	U	3.8	D
4-Ethyltoluene	0.39	U	0.4	U	13	D	0.47	U	22	D
Acetone	6.6	D	8.4	D	6.7	D	4.2	D	4.8	D
Benzene	0.41	D	0.28	D	3.1	D	0.3	D	2.4	D
Carbon Disulfide	0.25	U	0.25	U	1.2	D	0.3	U	4.2	D
Carbon Tetrachloride	0.5	D	0.51	D	0.42	D	0.48	D	0.26	U
Chloroform	0.39	U	0.39	U	9.9	D	0.47	U	0.99	D
Chloromethane	1.2	D	1	D	0.35	U	1.1	D	0.35	U
Cyclohexane	0.28	U	0.28	U	1.3	D	0.33	U	3.2	D
Dichlorodifluoromethane	1.6	D	1.9	D	2.3	D	1.9	D	2.6	D
Ethylbenzene	0.38	D	0.52	D	14	D	0.5	D	19	D
Isopropanol	26	D	9.8	D	4.8	D	1.6	D	4.9	D
M,P-Xylene	1.1	D	1.9	D	55	D	1.6	D	76	D
Methyl Ethyl Ketone (2-Butanone)	1	D	0.76	D	1.2	D	0.79	D	1.1	D
Methyl Methacrylate	6.1	D	0.4	D	0.69	U	0.39	U	0.69	U
Methylene Chloride	1.5	D	0.56	U	1.2	U	0.66	U	1.2	U
n-Heptane	0.33	U	0.36	D	6.1	D	0.39	U	16	D
n-Hexane	0.42	D	0.28	U	5.8	D	0.34	U	6.5	D
o-Xylene (1,2-Dimethylbenzene)	0.38	D	0.63	D	13	D	0.54	D	19	D
Styrene	0.34	D	0.34	U	1.6	D	0.41	U	2.2	D
Tert-Butyl Methyl Ether	0.29	U	0.29	U	0.61	U	0.34	U	10	D
Tetrachloroethene (PCE)	0.54	U	0.55	UJ	35	J	0.65	UJ	20	J
Toluene	2.2	D	4.7	D	55	D	2.7	D	50	D
Trichlorofluoromethane	1.4	D	1.3	D	1.3	D	1.3	D	1.1	D
Total VOCs	51.1		33		243		17		287	

Notes:

1. Co-located sub-slab vapor and indoor air sample analytical results are evaluated using the New York State Department of Health (NYSDOH) October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York Decision Matrices for Sub-Slab Vapor and Indoor Air and subsequent updates (2017).
2. Ambient air sample analytical results are shown for reference only.
3. Only detected analytes are shown in the table.
4. No analytical results are detected above the NYSDOH Decision Matrices.
5. µg/m³ = Micrograms per cubic meter
6. AA = Ambient air
7. IA = Indoor air
8. SSV = Sub-slab vapor

Qualifiers:

D = The concentration reported is a result of a diluted sample.
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the Reporting Limit (RL) or the sample concentration for results impacted by blank contamination.

Table 8
Remedial Investigation Report
Soil Vapor Sample Analytical Results Summary

475 Bay Street and 31 Wave Street
Staten Island, New York
Langan Project No.: 170610601

Location Sample ID Laboratory ID Sample Date Sample Type	NYSDOH Decision Matrices Minimum Concentrations	AA02 AA02_050520 20E0109-08 5/5/2020 AA	SV01 SV01_050520 20E0109-01 5/5/2020 SV	SV02 SV02_050520 20E0109-02 5/5/2020 SV	SV03 SV03_050520 20E0109-03 5/5/2020 SV	SV04 SV04_043020 20E0004-01 4/30/2020 SV	SV07 SV07_043020 20E0004-02 4/30/2020 SV	SV11 SV11_050520 20E0109-04 5/5/2020 SV	SV13 SV13_050520 20E0109-05 5/5/2020 SV	SV15 SV15_050520 20E0109-06 5/5/2020 SV	SV16 SV16_050520 20E0109-07 5/5/2020 SV
Volatile Organic Compounds (µg/m³)											
1,2,4-Trimethylbenzene	~	0.88 D	21 D	14 D	13 D	20 D	28 D	23 D	16 D	20 D	25 D
1,3,5-Trimethylbenzene (Mesitylene)	~	0.49 U	9.6 D	4.5 D	4.3 D	8 D	12 D	8.5 D	5.5 D	7.2 D	6.1 D
1,3-Butadiene	~	0.66 U	11 U	2.7 D	6.1 D	1.1 U	1.1 D	5.4 U	1 U	4.1 D	2.3 D
2-Hexanone	~	0.81 U	13 U	8.8 D	8.1 D	3.5 D	2.9 D	34 D	11 D	16 D	6.6 D
4-Ethyltoluene	~	0.73 D	13 D	8.1 D	7.7 D	11 D	14 D	15 D	9.5 D	12 D	25 D
Acetone	~	20 D	170 D	82 D	110 D	54 D	29 D	520 D	120 D	180 D	350 D
Acrylonitrile	~	0.22 U	3.5 U	0.36 U	0.36 U	0.35 U	0.35 U	1.8 U	0.43 D	0.59 D	1.1 D
Benzene	~	0.44 D	14 D	1.1 D	1.8 D	2.1 D	9.9 D	14 D	1.8 D	6.6 D	61 D
Carbon Disulfide	~	0.31 U	110 D	12 D	70 D	4 D	13 D	79 D	110 D	130 D	93 D
Carbon Tetrachloride	6	0.63 D	2.6 U	0.26 U	0.41 D	0.4 D	0.25 U	1.3 U	0.24 U	0.3 D	0.78 D
Chloroethane	~	0.26 U	4.3 U	0.43 U	0.43 U	0.42 U	1.1 D	2.2 U	0.4 U	0.43 U	0.47 U
Chloroform	~	0.49 U	7.9 U	0.8 U	0.8 U	5 D	4.2 D	7.6 D	12 D	0.79 U	3.6 D
Chloromethane	~	1.5 D	3.4 U	0.34 U	0.88 D	0.79 D	0.33 U	1.7 U	0.34 D	0.43 D	0.74 D
Cis-1,2-Dichloroethene	6	0.099 U	1.6 U	0.16 U	0.16 U	0.16 U	0.16 U	0.81 U	0.15 U	1.1 D	0.21 D
Cyclohexane	~	0.34 U	88 D	13 D	13 D	1.5 D	7.8 D	4.2 D	3.2 D	23 D	0.61 U
Dichlorodifluoromethane	~	2 D	8.1 U	2 D	2.3 D	2.5 D	2.2 D	4.1 U	1.7 D	2.6 D	2.6 D
Ethyl Acetate	~	1.3 D	12 U	1.2 U	3.7 D	1.1 U	1.2 U	5.9 U	1.1 U	1.2 U	1.3 U
Ethylbenzene	~	0.69 D	9.2 D	3.3 D	3.2 D	3 D	2.7 D	9.3 D	4.7 D	5.6 D	84 D
Isopropanol	~	NA	15 D	1.8 D	160 D	29 D	2.3 D	11 D	21 D	8.2 D	12 D
M,P-Xylene	~	2.3 D	25 D	9.9 D	11 D	13 D	12 D	24 D	13 D	16 D	64 D
Methyl Ethyl Ketone (2-Butanone)	~	1.8 D	59 D	26 D	33 D	11 D	8.9 D	160 D	38 D	66 D	31 D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	0.53 D	6.7 U	0.94 D	1.5 D	0.65 U	0.79 D	3.4 U	0.93 D	1.3 D	0.73 U
Methyl Methacrylate	~	25 D	6.7 U	0.67 U	57 D	15 D	0.66 U	3.4 U	7.7 D	0.79 D	0.73 U
n-Heptane	~	0.45 D	210 D	4.9 D	5.4 D	8.8 D	11 D	12 D	4.8 D	19 D	6.6 D
n-Hexane	~	1.9 D	330 D	3.8 D	10 D	3.5 D	22 D	9.5 D	3.6 D	41 D	4.7 D
o-Xylene (1,2-Dimethylbenzene)	~	0.78 D	11 D	5.1 D	4.9 D	6.8 D	6.8 D	12 D	6.2 D	7.8 D	21 D
Propylene	~	0.17 U	240 D	37 D	90 D	0.27 U	0.28 U	27 D	7.8 D	76 D	24 D
Styrene	~	0.72 D	6.9 U	0.7 U	2.1 D	0.68 U	0.68 U	3.5 U	0.64 U	0.69 U	15 D
Tert-Butyl Methyl Ether	~	0.36 U	5.9 U	0.59 U	0.59 U	0.57 U	0.58 U	3 U	0.55 U	0.58 U	0.77 D
Tetrachloroethene (PCE)	100	0.67 U	11 U	1.1 U	1.1 U	13 J	13 J	5.6 U	1 U	3.1 D	10 D
Toluene	~	5.6 D	48 D	17 D	16 D	8.5 D	13 D	65 D	20 D	32 D	2,200 D
Trichloroethene (TCE)	6	0.13 U	2.2 U	0.22 U	0.22 U	0.21 U	0.22 U	1.1 U	0.2 U	0.22 U	0.38 D
Trichlorofluoromethane	~	1.7 D	9.1 U	1.3 D	1.8 D	1.7 D	2.1 D	4.6 U	1.7 D	2.7 D	1.7 D
Total VOCs	~	69	1,370	259	637	226	220	1,040	421	683	3,050

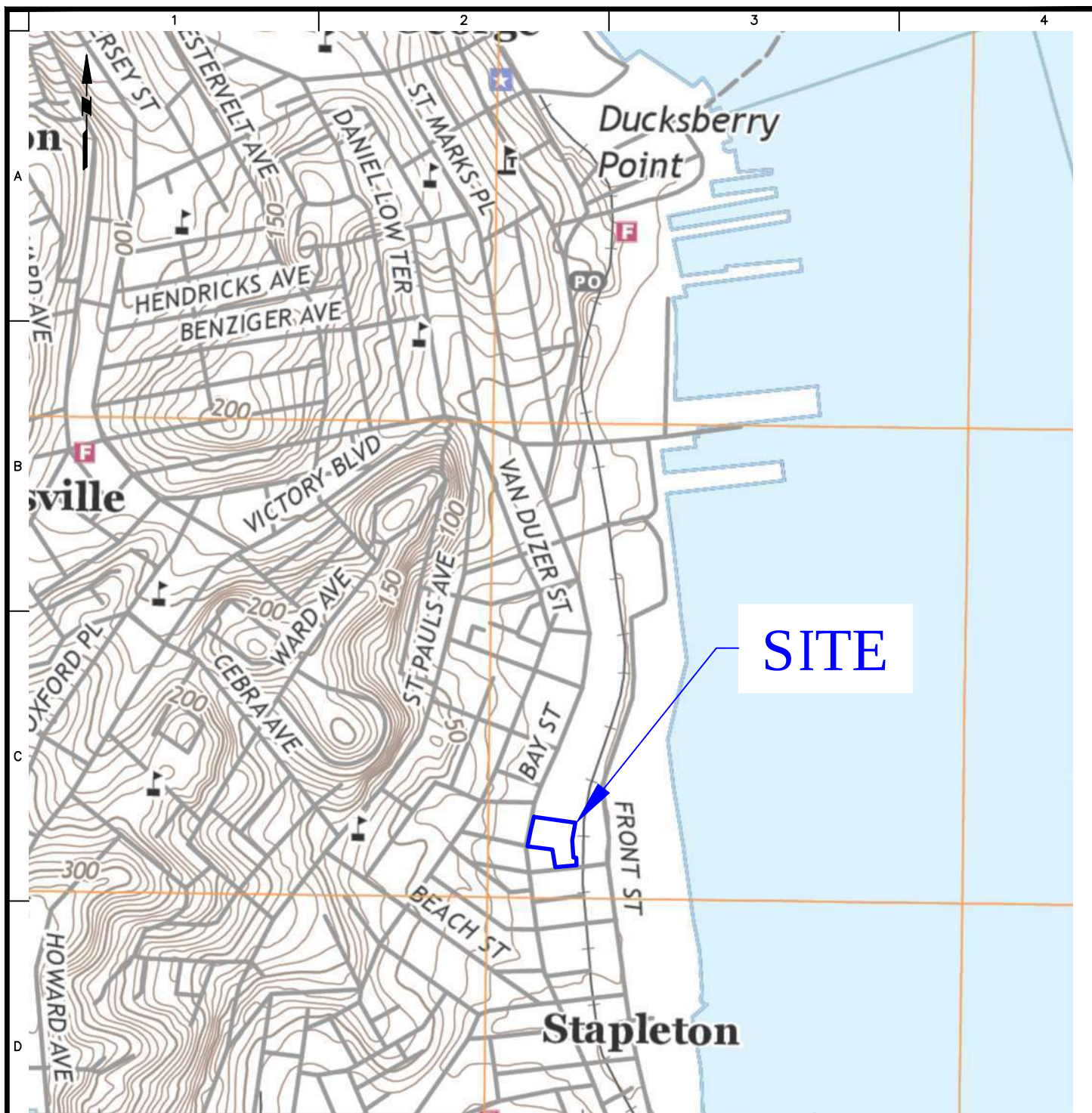
Notes:

1. Soil vapor sample analytical results are compared to the minimum soil vapor concentrations at which mitigation is recommended as set forth in the New York State Department of Health (NYSDOH) October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York Decision Matrices for Sub-Slab Vapor and Indoor Air and subsequent updates (2017).
2. Ambient air sample analytical results are shown for reference only.
3. Only detected analytes are shown in the table.
4. No analytical results are detected above the minimum soil vapor concentrations recommending mitigation.
5. ~ = Regulatory limit for this analyte does not exist
6. ug/m3= micrograms per cubic meter
7. AA = Ambient Air
8. SV = Soil Vapor

Qualifiers:

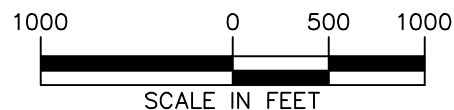
- D – The concentration reported is a result of a diluted sample.
J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

FIGURES



NOTES:

1. BASE MAP IS REFERENCED FROM UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5-MINUTE SERIES TOPOGRAPHICAL MAPS, JERSEY CITY QUADRANGLE, DATED 2016.



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Langan Engineering, Environmental, Surveying and
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Langan Engineering and Environmental Services, Inc.
Langan International LLC

Collectively known as Langan

Project

**475 BAY STREET AND
31 WAVE STREET**

BLOCK No. 488, LOT Nos. 9, 157,
162, & 164
STATEN ISLAND

RICHMOND COUNTY

NEW YORK

Figure Title

**SITE LOCATION
MAP**

Project No.

170610601

Date

02/03/2020

Scale

1" = 1000'

Drawn By

Checked By

KG

Submission Date

Figure No.

1

Sheet 1 of 17



LEGEND:

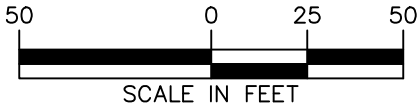
— APPROXIMATE SITE BOUNDARY

— — — — — APPROXIMATE TAX LOTS BOUNDARY

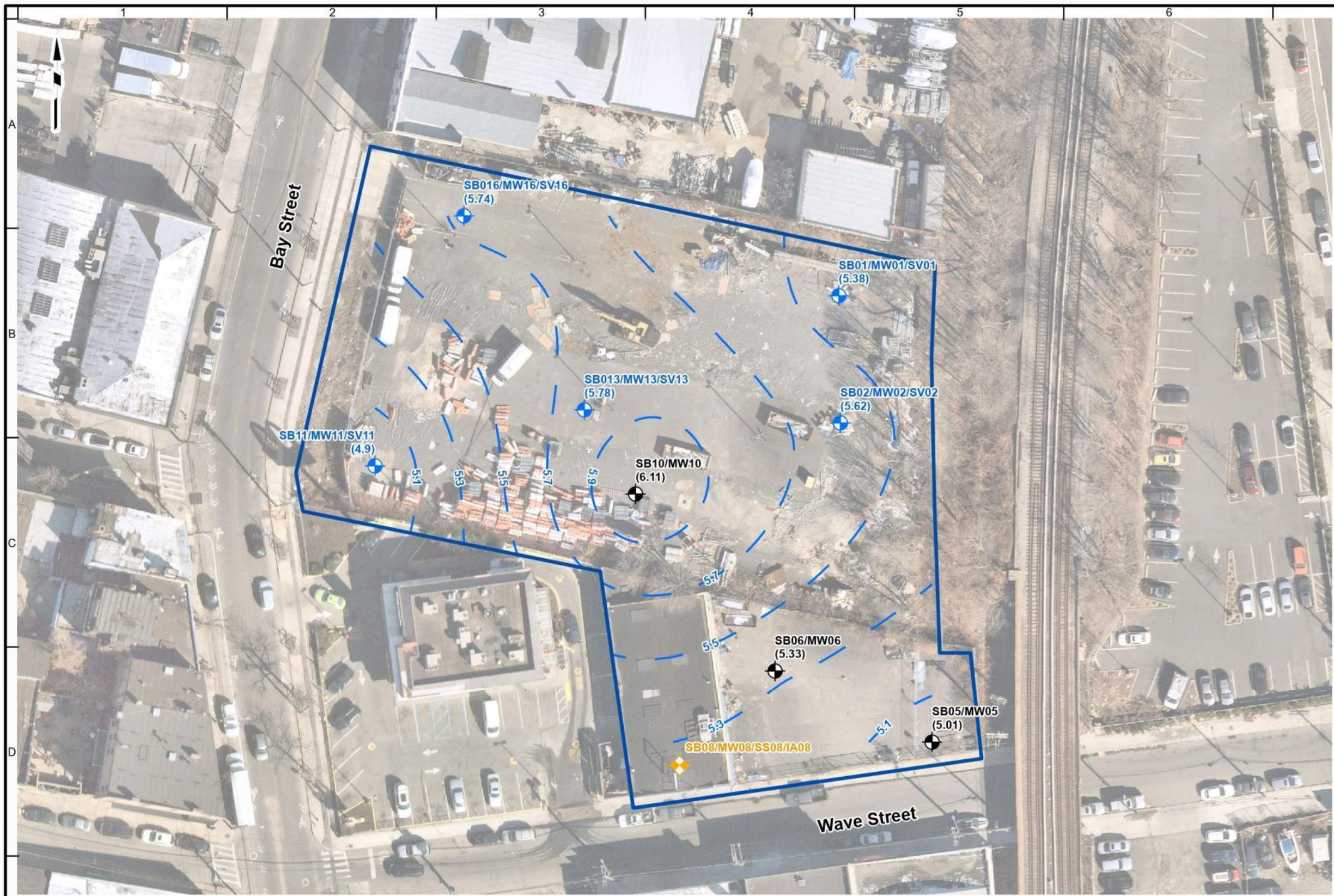
⑨ TAX BLOCK ID

- GENERAL NOTES:**
- BASEMAP TAKEN FROM LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C. NEARMAP WEB PORTAL, ACCESSED ON JANUARY 29, 2020.

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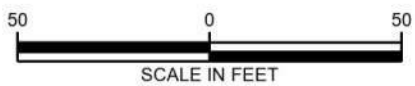
LANGAN Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com	Project 475 BAY STREET & 31 WAVE STREET BLOCK No. 488, LOTS No. 9, 157, 162, 164 STATEN ISLAND RICHMOND COUNTY NEW YORK	Figure Title SITE PLAN	Project No. 170610601	Figure 2 Sheet 2 of 17
		Date 5/18/2020		
		Drawn By DP		
		Checked By KS		



LEGEND

- Approximate Soil Boring and Monitoring Well Location (Groundwater Elevation)
- Approximate Soil Boring, Monitoring Well and Soil Vapor Sample Location (Groundwater Elevation)
- Approximate Soil Boring, Monitoring Well, Sub-slab, and Indoor Air Sample Location (Groundwater Elevation)
- Groundwater Contour Elevation
- Approximate Site Boundary

Notes:
1. Aerial imagery provided through Langan's subscription to Near Map, dated 03/12/2021.
2. PID = Photoionization Detection
3. Well elevations are based on a survey performed by Langan on 11 May 2020.
4. All elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).
5. Depth to water readings are measured in feet below top of the well casing (feet bTOC).
6. Depth to water readings were taken on 8/6/2021.

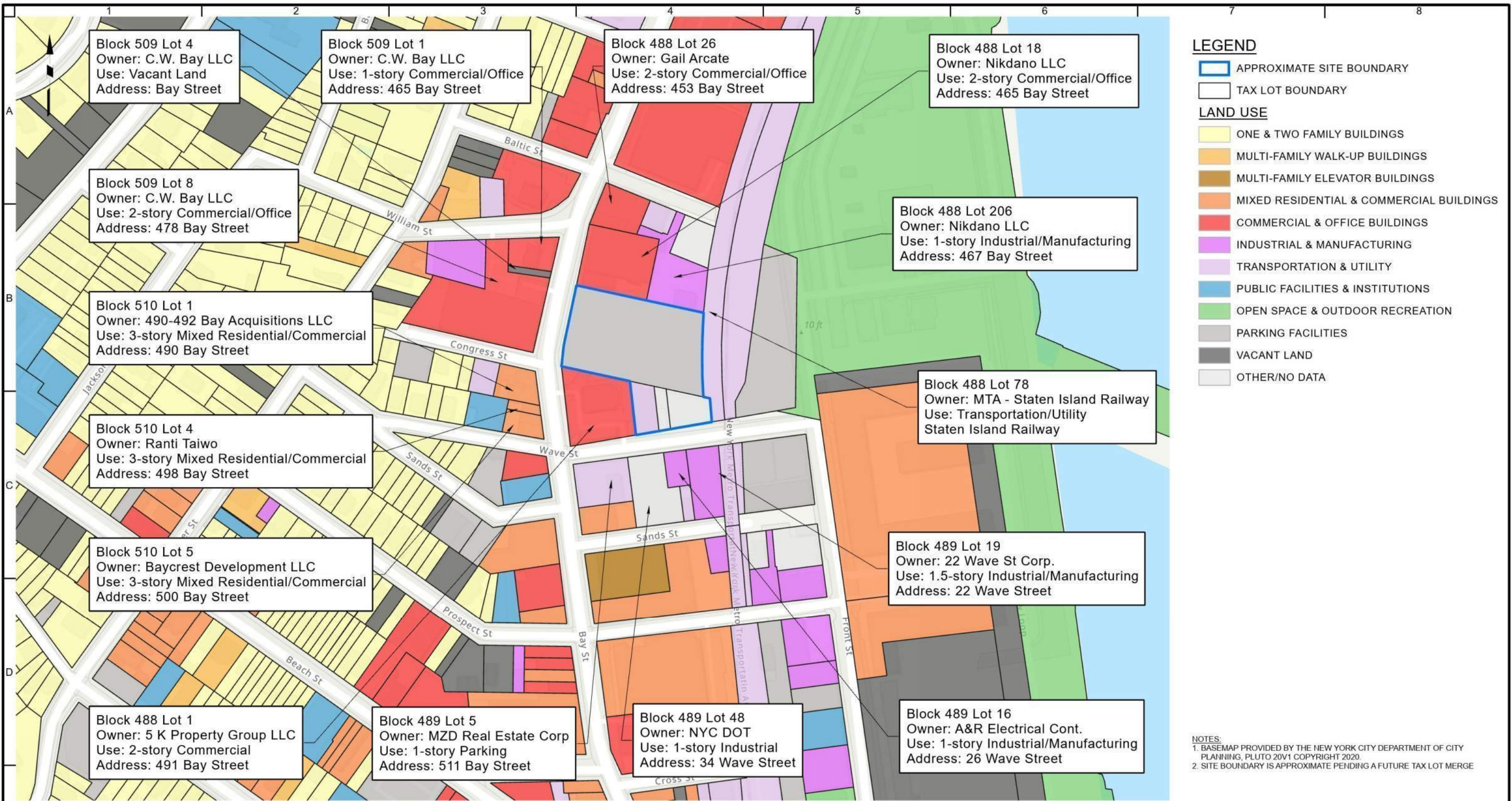


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Project
**475 BAY STREET &
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BLOCK No. 488, LOT Nos. 9, 157, 162 & 164
STATEN ISLAND
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Figure Title
**GROUNDWATER
CONTOUR
ELEVATION MAP**

Project No. 170610601	Figure No. 4
Date 8/9/2021	
Scale 1"=50'	
Drawn By MG	Sheet 4 of 17



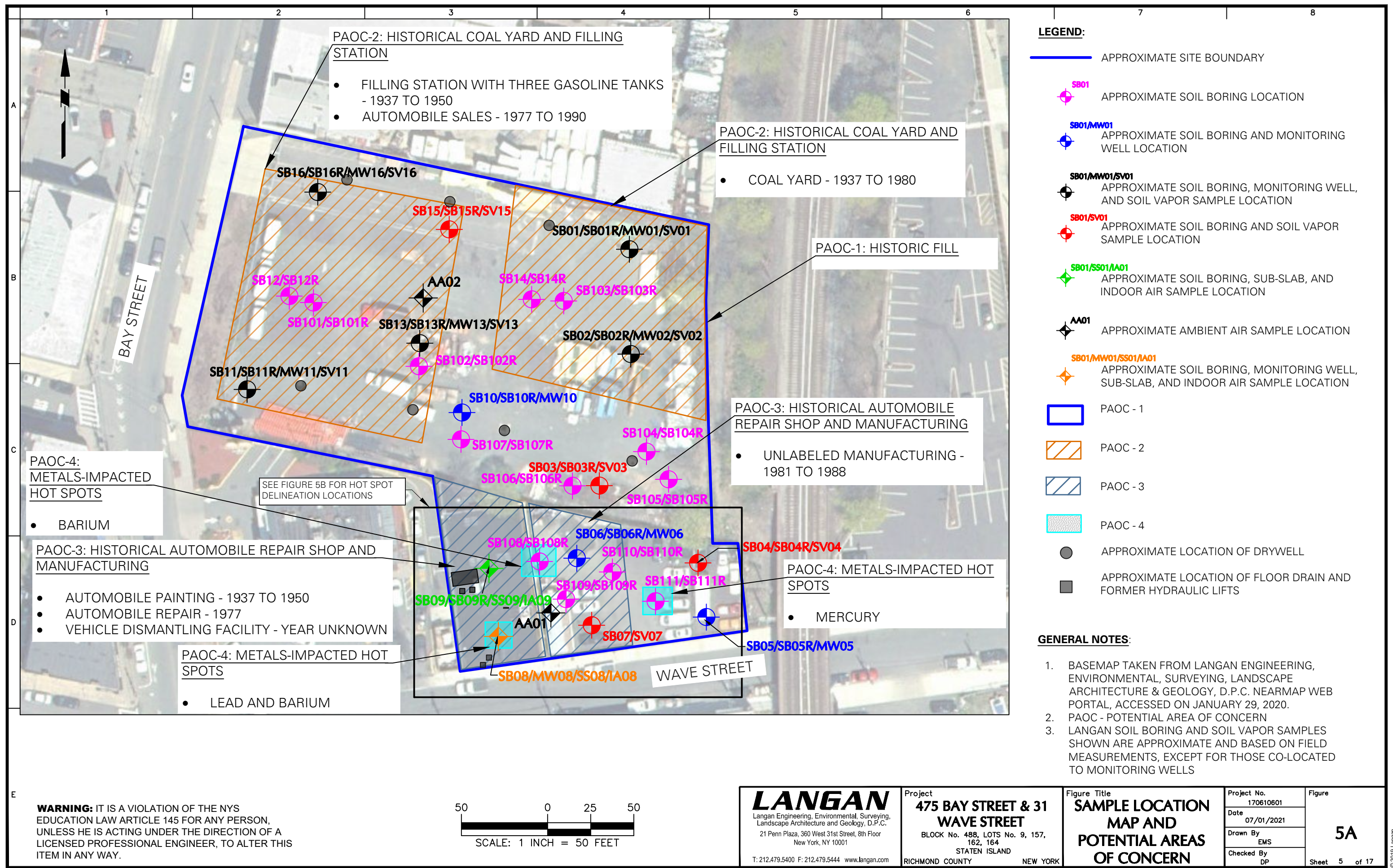
LEGEND

APPROXIMATE SITE BOUNDARY
TAX LOT BOUNDARY

LAND USE

- ONE & TWO FAMILY BUILDINGS
- MULTI-FAMILY WALK-UP BUILDINGS
- MULTI-FAMILY ELEVATOR BUILDINGS
- MIXED RESIDENTIAL & COMMERCIAL BUILDINGS
- COMMERCIAL & OFFICE BUILDINGS
- INDUSTRIAL & MANUFACTURING
- TRANSPORTATION & UTILITY
- PUBLIC FACILITIES & INSTITUTIONS
- OPEN SPACE & OUTDOOR RECREATION
- PARKING FACILITIES
- VACANT LAND
- OTHER/NO DATA

NOTES:
1. BASEMAP PROVIDED BY THE NEW YORK CITY DEPARTMENT OF CITY PLANNING, PLUTO 20V1 COPYRIGHT 2020.
2. SITE BOUNDARY IS APPROXIMATE PENDING A FUTURE TAX LOT MERGE



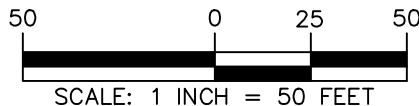
LEGEND:

- APPROXIMATE SITE BOUNDARY
- SB01 APPROXIMATE SOIL BORING LOCATION
- SB01/MW01 APPROXIMATE SOIL BORING AND MONITORING WELL LOCATION
- SB01/MW01/SV01 APPROXIMATE SOIL BORING, MONITORING WELL, AND SOIL VAPOR SAMPLE LOCATION
- SB01/SV01 APPROXIMATE SOIL BORING AND SOIL VAPOR SAMPLE LOCATION
- SB01/SS01/AA01 APPROXIMATE SOIL BORING, SUB-SLAB, AND INDOOR AIR SAMPLE LOCATION
- AA01 APPROXIMATE AMBIENT AIR SAMPLE LOCATION
- SB01/MW01/SS01/AA01 APPROXIMATE SOIL BORING, MONITORING WELL, SUB-SLAB, AND INDOOR AIR SAMPLE LOCATION
- PAOC - 1
- PAOC - 2
- PAOC - 3
- PAOC - 4
- APPROXIMATE LOCATION OF DRYWELL
- APPROXIMATE LOCATION OF FLOOR DRAIN AND FORMER HYDRAULIC LIFTS

GENERAL NOTES:

- BASEMAP TAKEN FROM LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C. NEARMAP WEB PORTAL, ACCESSED ON JANUARY 29, 2020.
- PAOC - POTENTIAL AREA OF CONCERN
- LANGAN SOIL BORING AND SOIL VAPOR SAMPLES SHOWN ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS, EXCEPT FOR THOSE CO-LOCATED TO MONITORING WELLS

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Project
**475 BAY STREET & 31
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BLOCK No. 488, LOTS No. 9, 157,
162, 164
STATEN ISLAND
RICHMOND COUNTY NEW YORK

Figure Title
**SAMPLE LOCATION
MAP AND
POTENTIAL AREAS
OF CONCERN**

Project No.
170610601
Date
07/01/2021
Drawn By
EMS
Checked By
DP

Figure
5A
Sheet 5 of 17



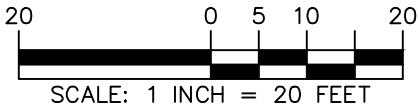
LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE RI AND SRI SOIL BORING LOCATION
- APPROXIMATE HOT SPOT DELINEATION SOIL BORING LOCATION
- APPROXIMATE LOCATION OF FORMER HYDRAULIC PITS

GENERAL NOTES:

- BASEMAP TAKEN FROM LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C. NEARMAP WEB PORTAL, ACCESSED ON JANUARY 29, 2020.
- SOIL BORING LOCATIONS AND FORMER HYDRAULIC PIT LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
- RI = REMEDIAL INVESTIGATION
- SRI = SUPPLEMENTAL REMEDIAL INVESTIGATION.

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Project
**475 BAY STREET & 31
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RICHMOND COUNTY NEW YORK

Figure Title
**SAMPLE LOCATION
MAP - HOT SPOT
DELINEATION**

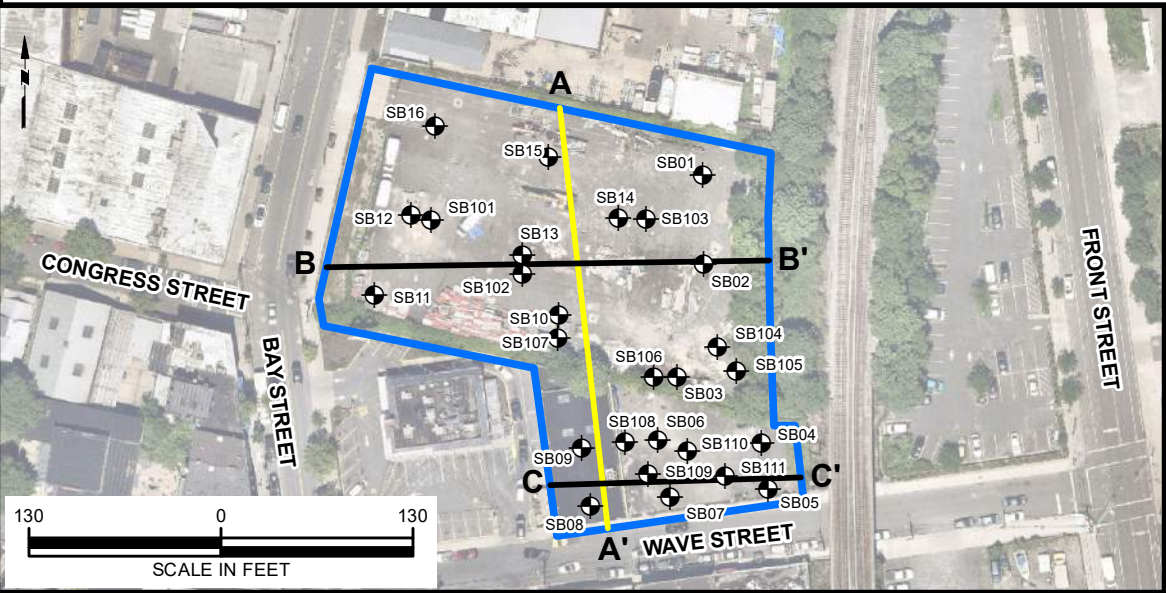
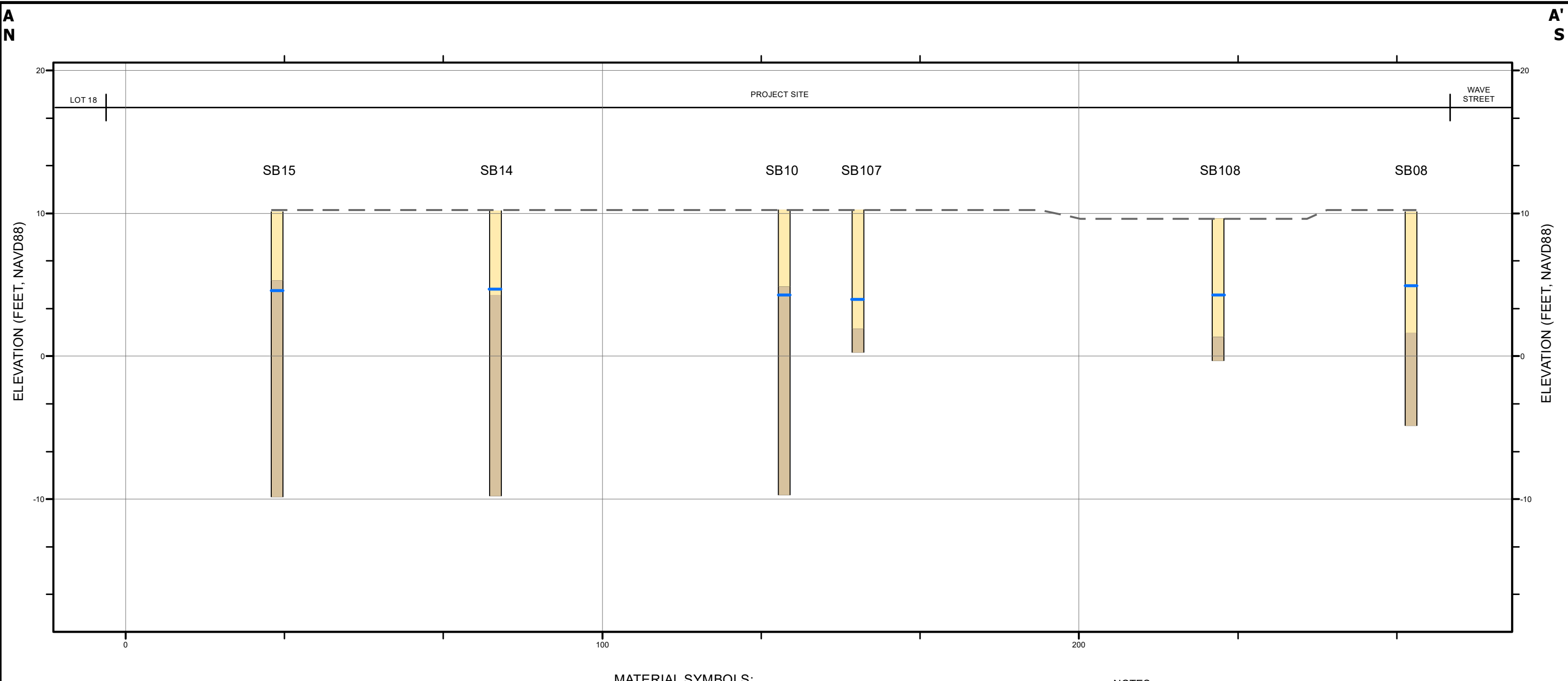
Project No. 170610601
Date 06/28/2021
Drawn By MA
Checked By DP

Figure

5B

Sheet 6 of 17

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MATERIAL SYMBOLS:

- FILL
- SAND
- GROUNDWATER ELEVATION

- NOTES:
1. VERTICAL EXAGGERATION 3:1
 2. BASEMAP TAKEN FROM LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C. NEARMAP WEB PORTAL, DATED: JUNE 8, 2020.
 3. THIS PROFILE REPRESENTS A GENERALIZED SOIL CROSS SECTION DEPICTING WIDELY SPACED BORINGS. SOIL AND GROUNDWATER WILL VARY IN TYPE, LOCATION, ELEVATION, AND ENVIRONMENTAL AND ENGINEERING PROPERTIES BETWEEN POINTS OF EXPLORATION. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS.
 4. NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

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T: 212.479.5400 F: 212.479.5444 www.langan.com

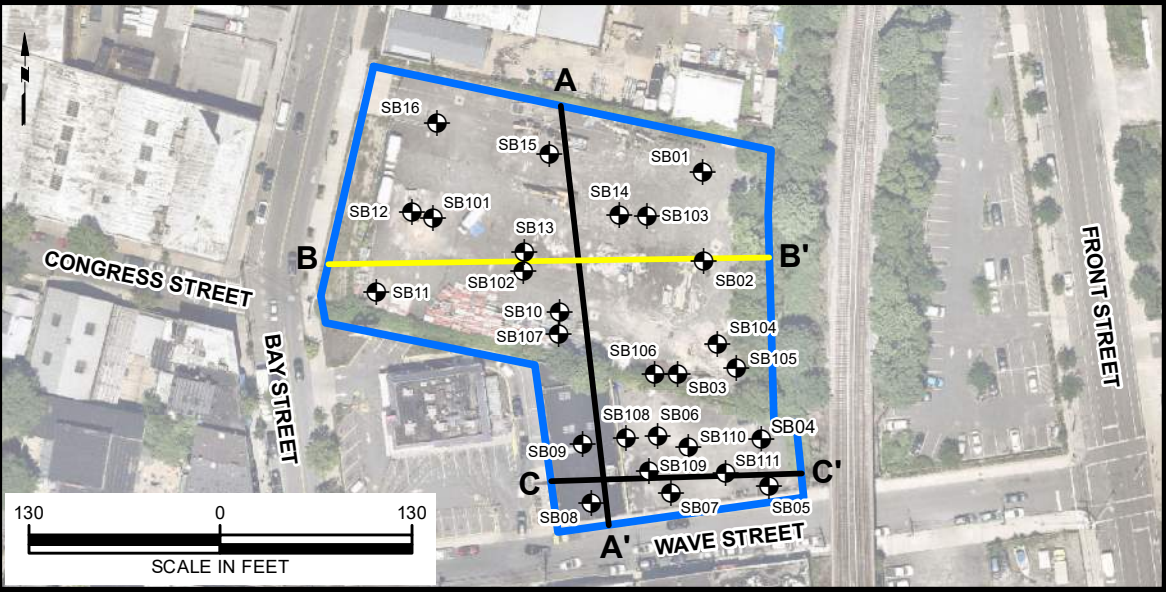
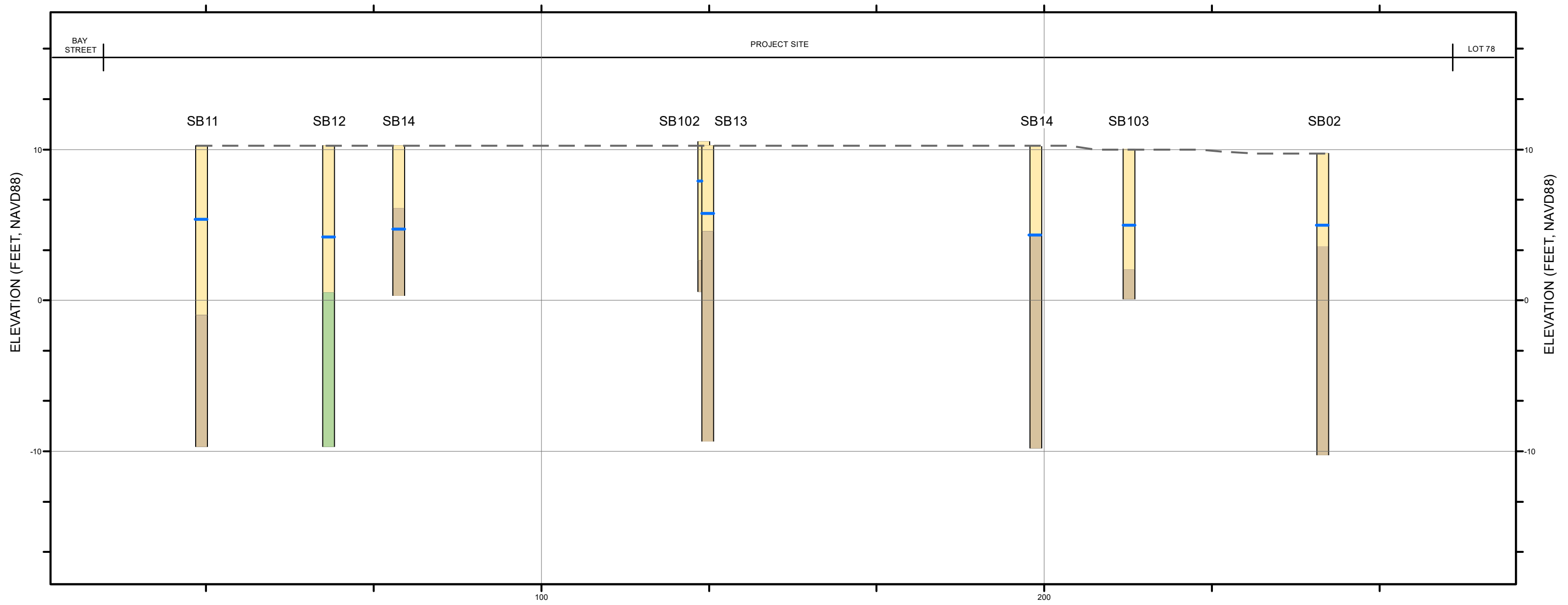
Project
475 BAY STREET & 31 WAVE STREET
BLOCK No. 488, LOT No. 9, 157, 162, 164
STATEN ISLAND
RICHMOND COUNTY NEW YORK

Drawing Title
SUBSURFACE PROFILE A-A'

Project No. 170610601	Drawing No. 6A
Date 10/19/2020	
Scale As Shown	
Drawn By MG	Sheet 7 of 17

B
W

B'
E



MATERIAL SYMBOLS:

- FILL
- SAND
- SILT
- GROUNDWATER ELEVATION

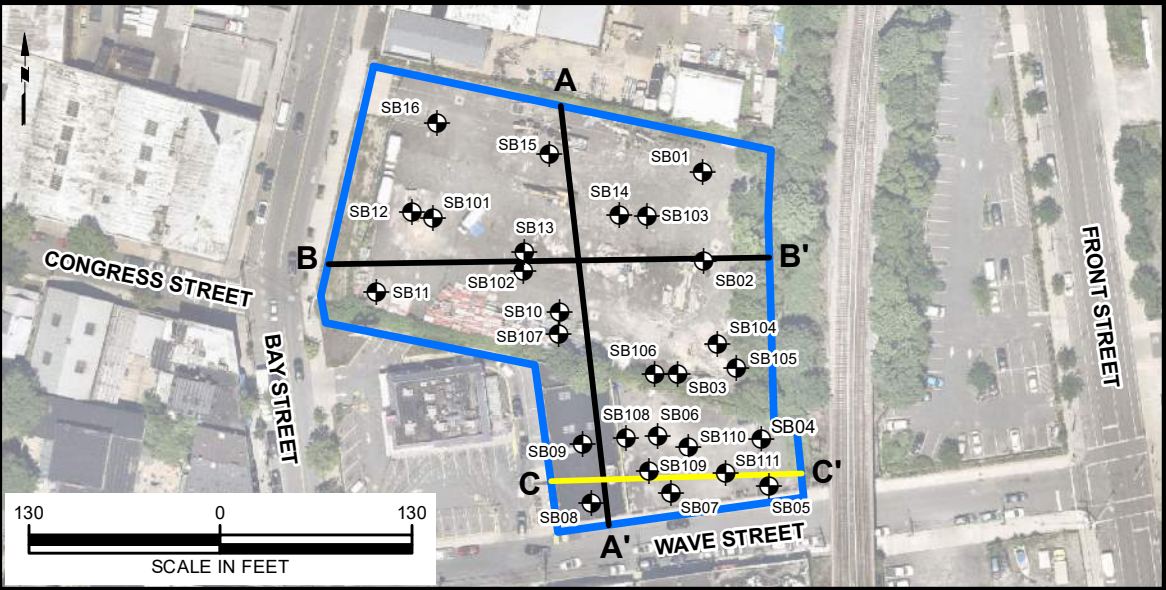
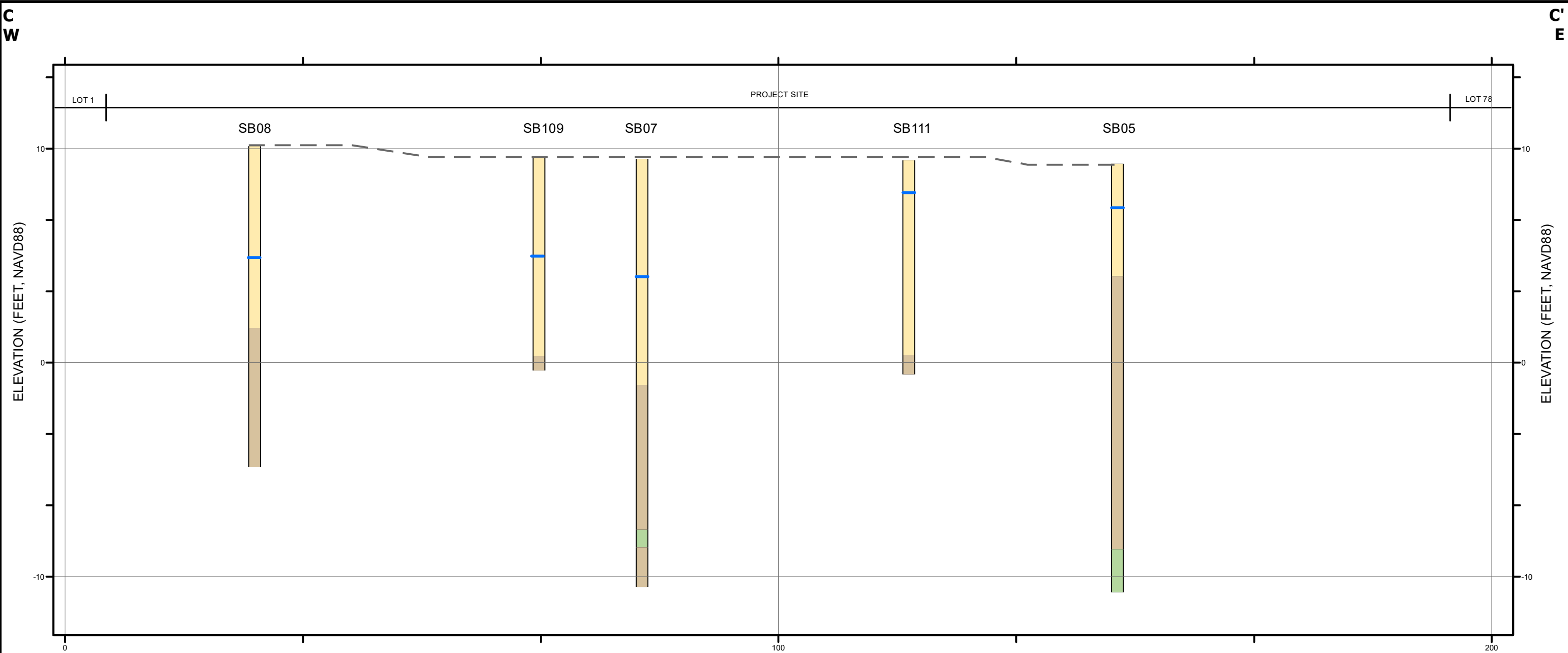
- NOTES:
1. VERTICAL EXAGGERATION 3:1
 2. BASEMAP TAKEN FROM LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C. NEARMAP WEB PORTAL, DATED: JUNE 8, 2020.
 3. THIS PROFILE REPRESENTS A GENERALIZED SOIL CROSS SECTION DEPICTING WIDELY SPACED BORINGS. SOIL AND GROUNDWATER WILL VARY IN TYPE, LOCATION, ELEVATION, AND ENVIRONMENTAL AND ENGINEERING PROPERTIES BETWEEN POINTS OF EXPLORATION. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS.
 4. NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

LANGAN
Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
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Project
**475 BAY STREET & 31
WAVE STREET**
BLOCK No. 488, LOT No. 9, 157, 162, 164
STATEN ISLAND
RICHMOND COUNTY NEW YORK

Drawing Title
**SUBSURFACE
PROFILE
B-B'**

Project No. 170610601	Drawing No. 6B
Date 10/19/2020	
Scale As Shown	
Drawn By MG	Sheet 8 of 17



MATERIAL SYMBOLS:

- FILL
- SAND
- SILT
- GROUNDWATER ELEVATION

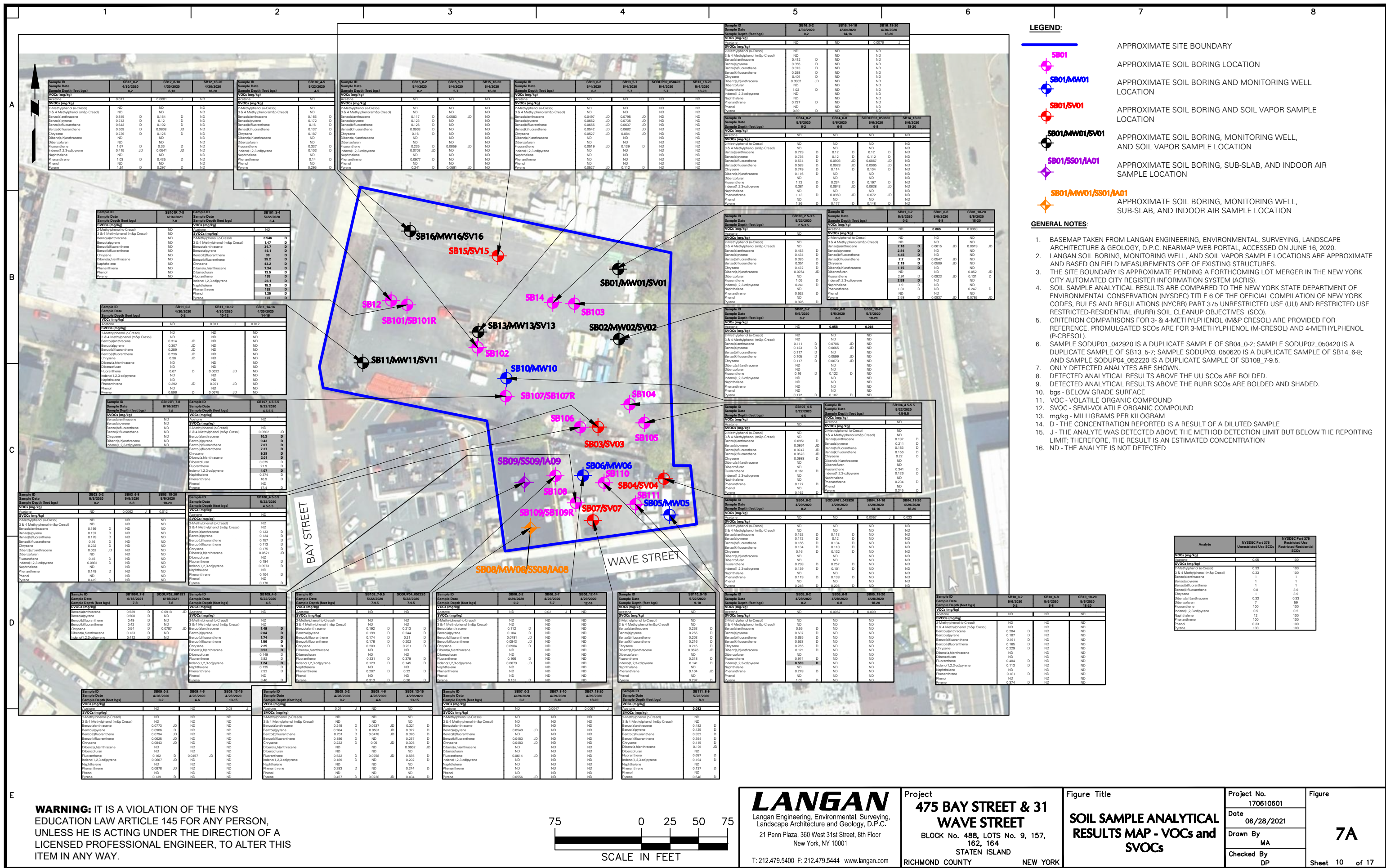
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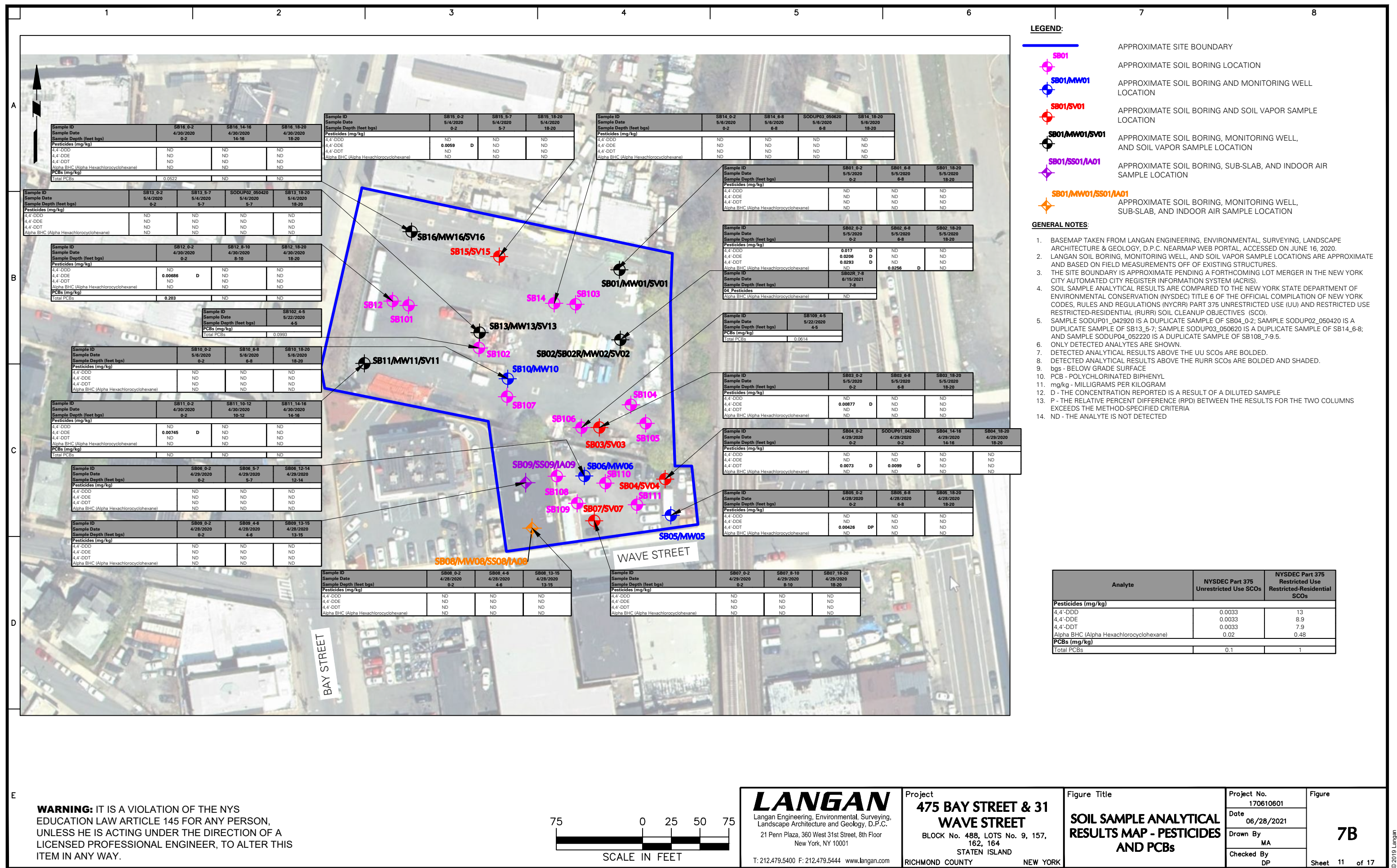
LANGAN
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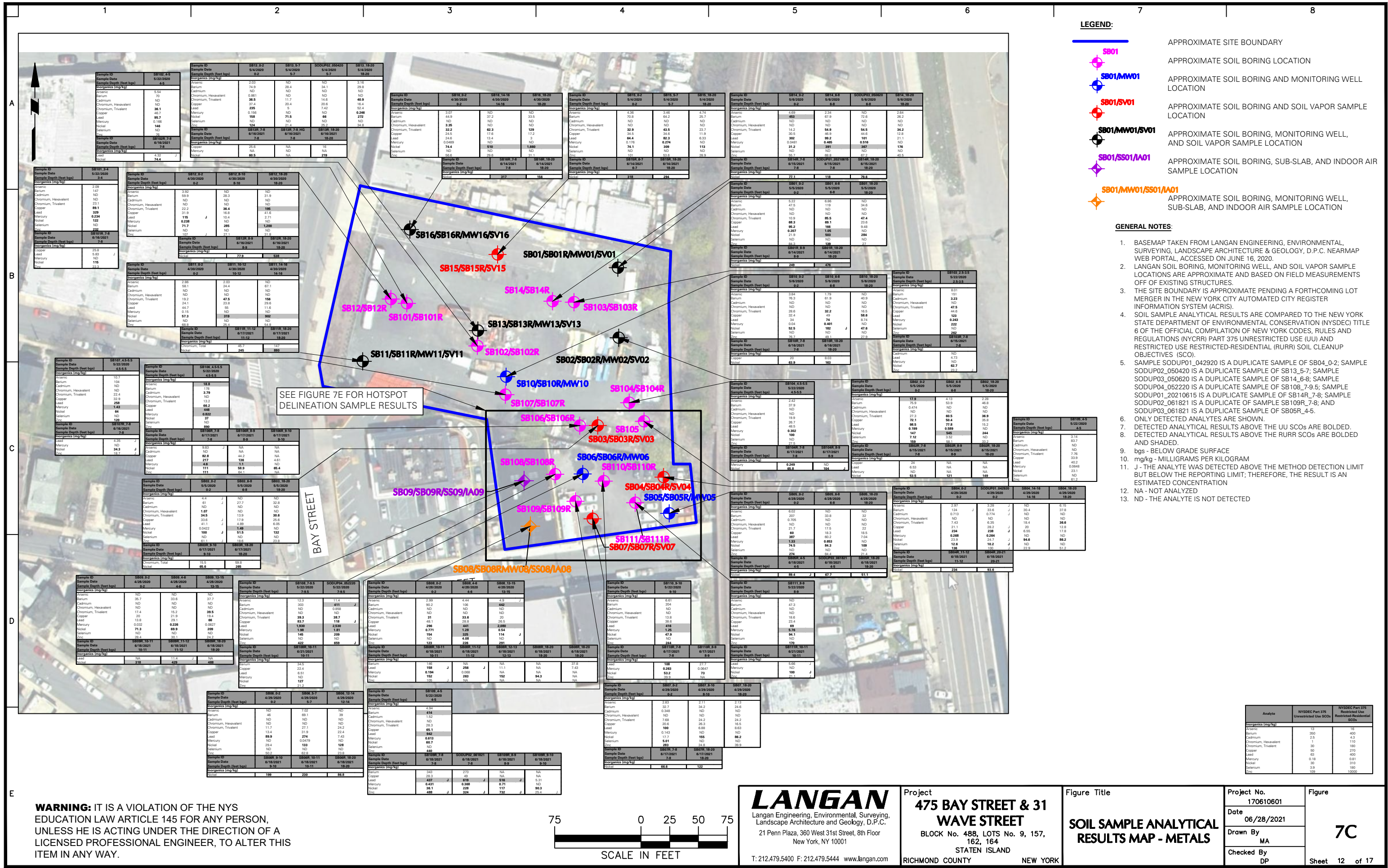
Project
**475 BAY STREET & 31
WAVE STREET**
BLOCK No. 488, LOT No. 9, 157, 162, 164
STATEN ISLAND
RICHMOND COUNTY NEW YORK

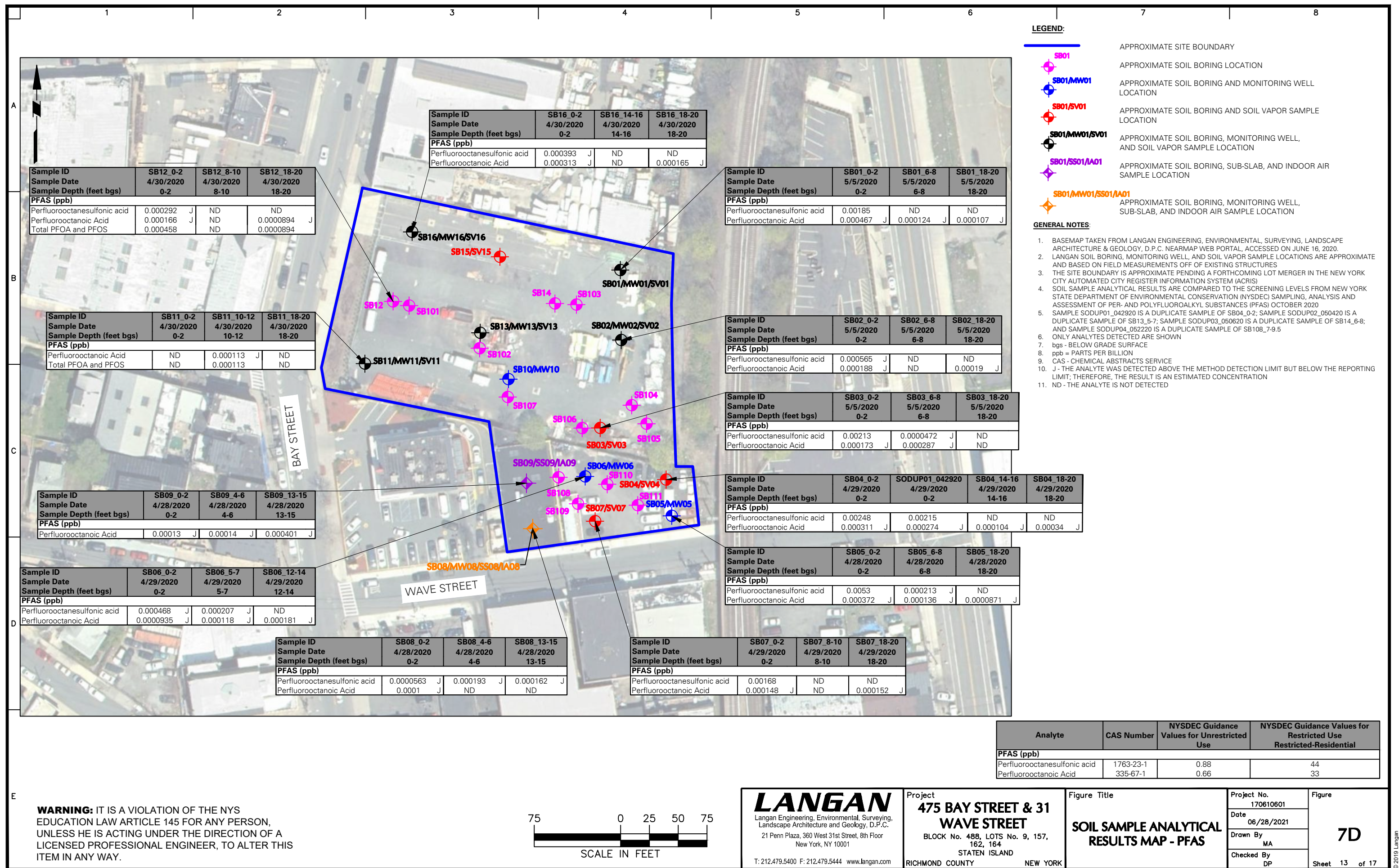
Drawing Title
**SUBSURFACE
PROFILE
C-C'**

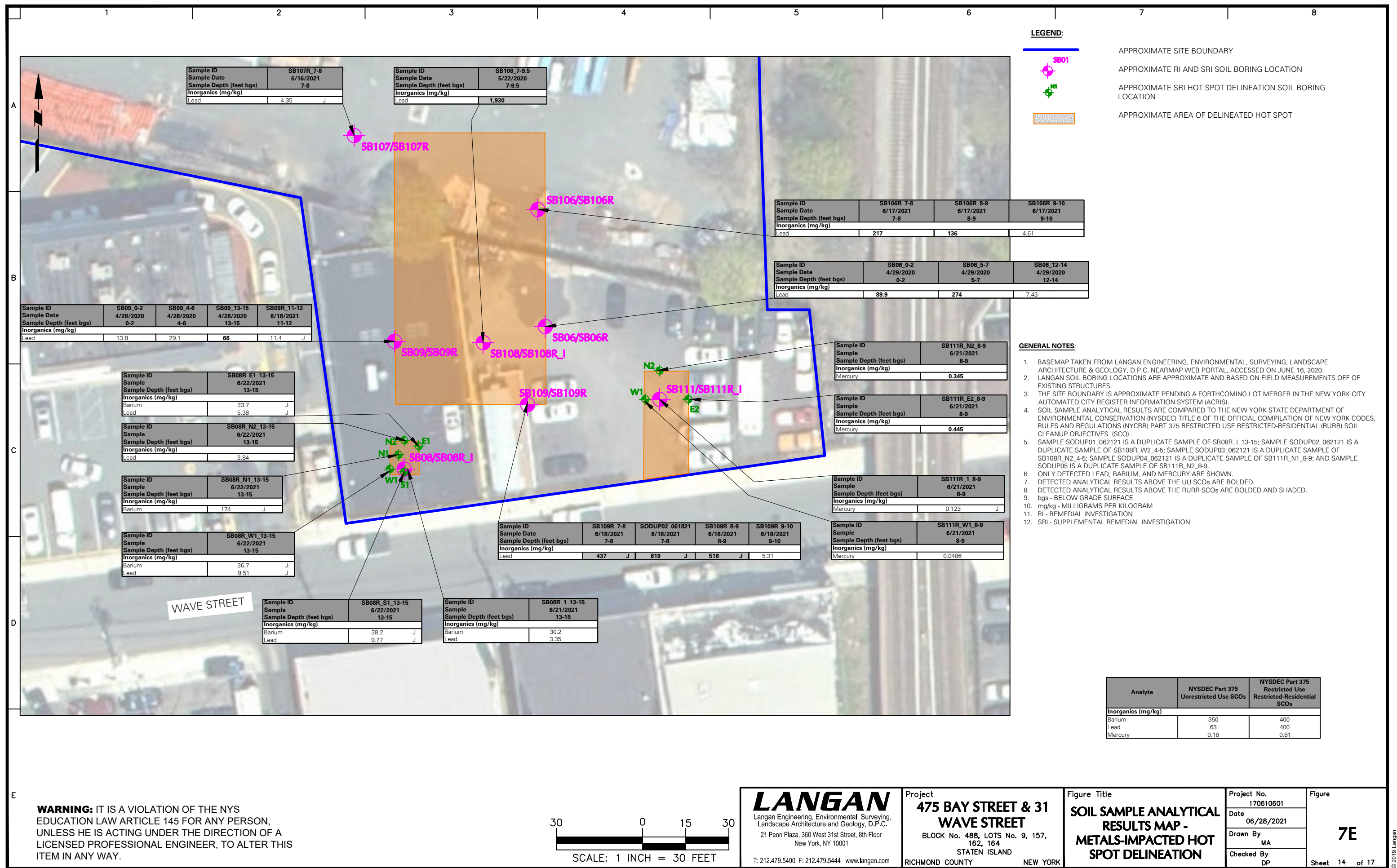
Project No. 170610601	Drawing No. 6C
Date 10/19/2020	
Scale As Shown	
Drawn By MG	Sheet 9 of 17

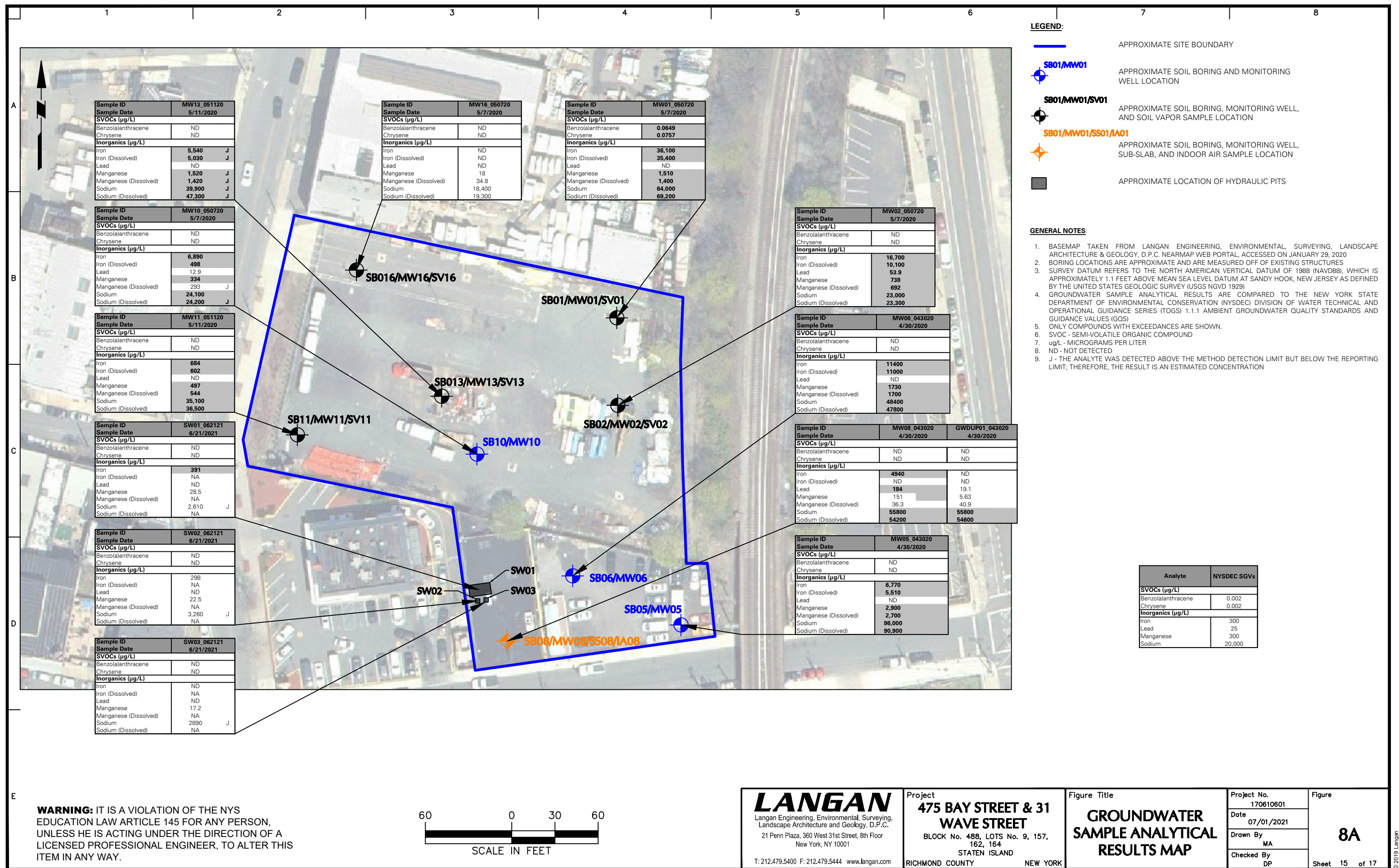


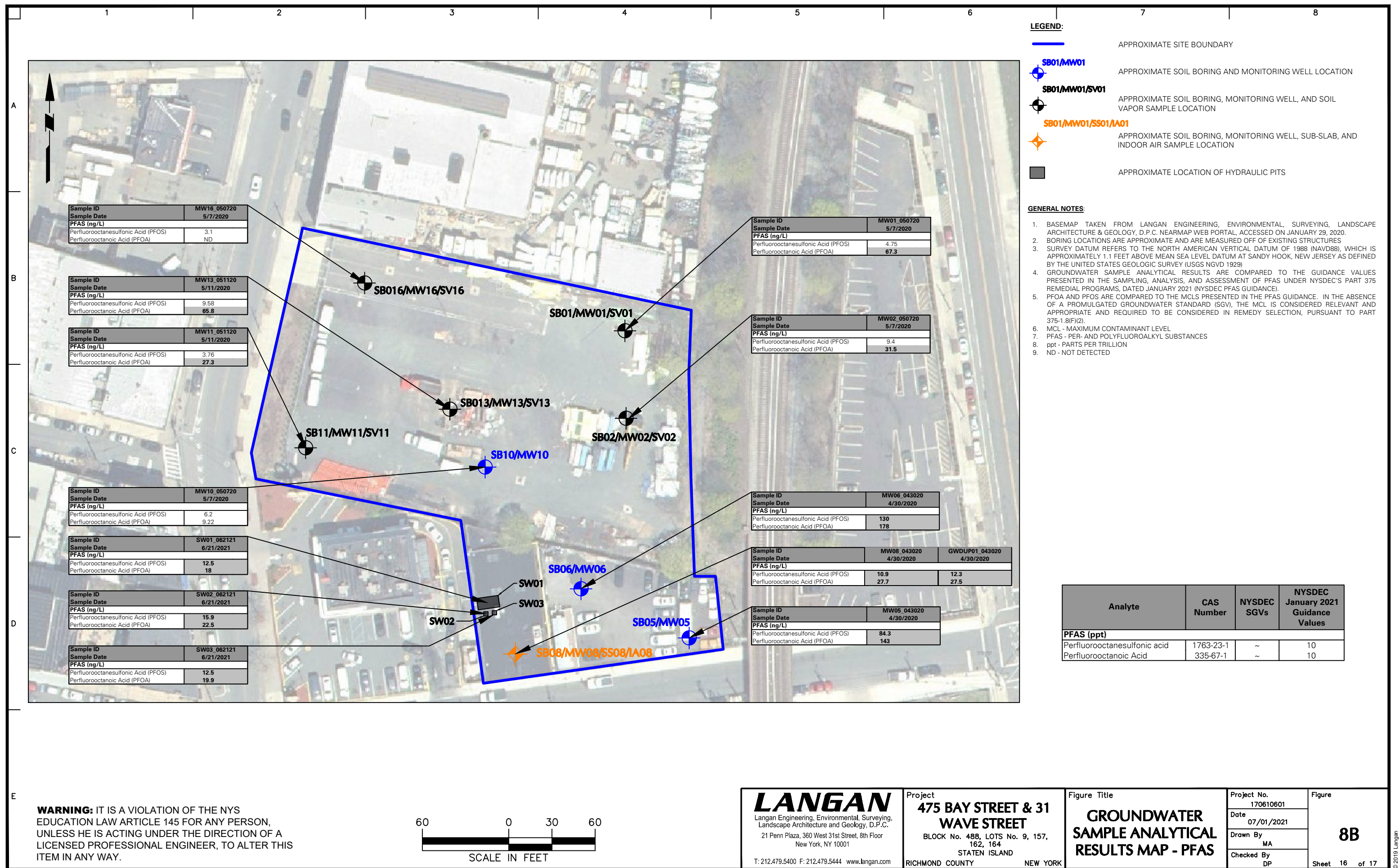


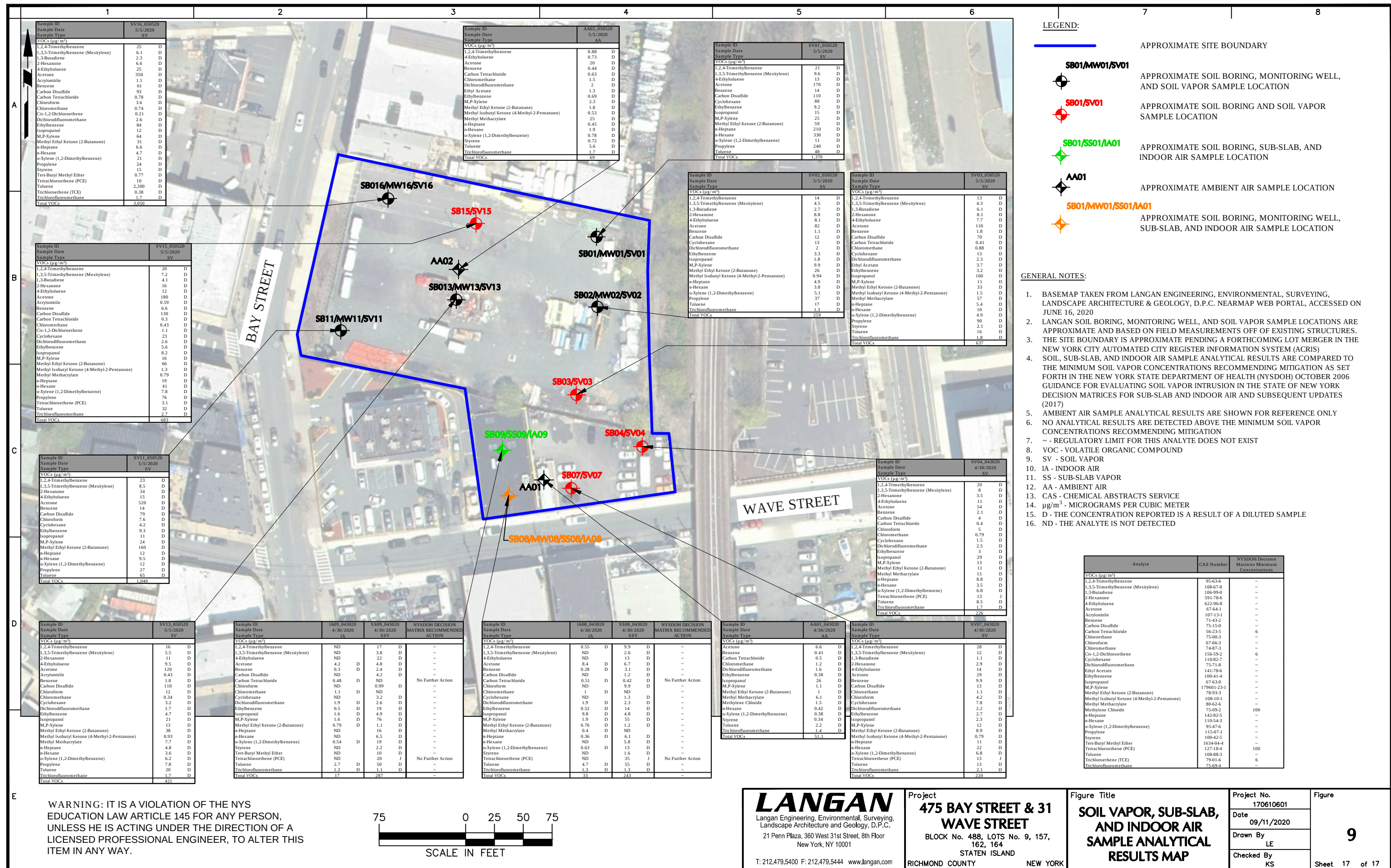












APPENDIX A

PROPOSED REDEVELOPMENT
(Submitted under separate cover)

APPENDIX B

PREVIOUS ENVIRONMENTAL REPORTS
(Submitted under separate cover)

APPENDIX C

GEOPHYSICAL SURVEY REPORTS

GEOPHYSICAL ENGINEERING SURVEY REPORT

Commercial Property

475 Bay Street,

Staten Island, New York 10304

NOVA PROJECT NUMBER:

20-1735

DATED:

May 6, 2020

PREPARED FOR:

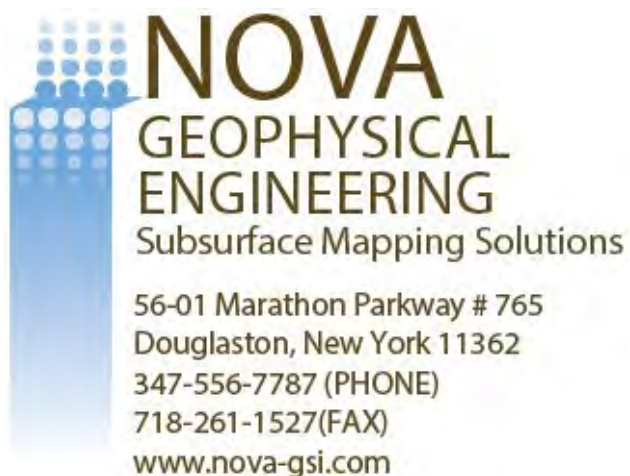
LANGAN

21 Penn Plaza

360 West 31st Street, 8th Floor

New York, New York 10001-2727

PREPARED BY:



NOVA GEOPHYSICAL SERVICES

SUBSURFACE MAPPING SOLUTIONS

56-01 Marathon Parkway #765, Douglaston, New York 11362
Ph. 347-556-7787 Fax. 718-261-1527
www.novagsi.com

May 6, 2020

Dina Palazzolo
Senior Staff Scientist

LANGAN

21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001-2727
P: 212.479.5499 x5618 | E: dapalazzolo@langan.com

Re: Geophysical Engineering Survey (GES) Report
Commercial Property
475 Bay Street,
Staten Island, New York 10304

Dear Ms. Palazzolo,

Nova Geophysical Services (NOVA) is pleased to provide the findings of the geophysical engineering survey (GES) at the above referenced project site: 475 Bay Street, Staten Island, New York 10304 (the "Site").

INTRODUCTION TO GEOPHYSICAL ENGINEERING SURVEY (GES)

NOVA performed a geophysical engineering survey (GES) consisting of a Ground Penetrating Radar (GPR) and Electromagnetic (EM) survey at the site. The purpose of this survey is to locate and identify utilities, underground storage tanks and other substructures on April 28th, 2020.

The equipment selected for this investigation was a Sensors and Software Noggin 250 MHz ground penetrating radar (GPR) with a shielded antenna and a Radio Detection RD7100 Electromagnetic utility locator.

A GPR system consists of a radar control unit, control cable, and transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 250 MHz. The trigger pulse is sent to the transmitter electronics in the transducer via the control cable. The transmitter electronics amplify the trigger pulse into bipolar pulses that are radiated to the surface. The transformed pulses vary in shape and frequency according to the transducer used. In the subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit and are represented as color graphic images for interpretation.

A typical electromagnetic (EM) utility locating system consists of a transmitter unit and a receiver unit. The receiver unit can be used independently of the transmitter unit in order to detect utility lines with an inherent EM signature (electric utility lines, water lines, etc.). If needed a current at a specific frequency can also be placed on a utility that is being located. This can be done via the transmitter unit by either direct connection or induction via an EM field varying at specific frequency. The receiver unit is then set to the selected frequency and the electromagnetic field created by the current running through the utility can be located allowing the utility to be marked.

GEOPHYSICAL METHODS

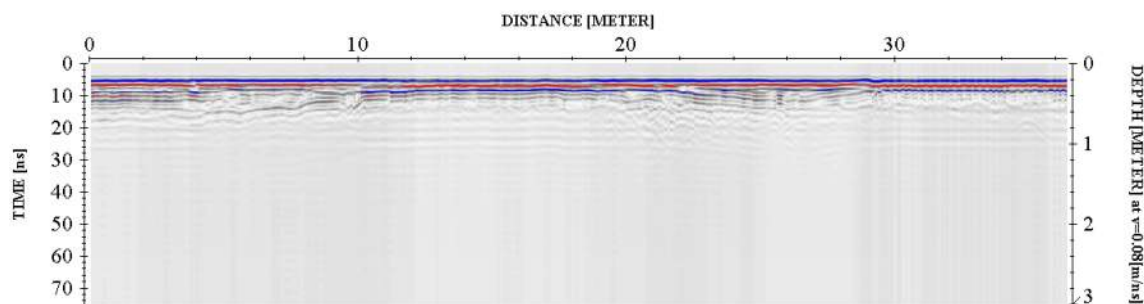
The project site was screened using GPR to search the specified area and inspected for reflections, which could be indicative of substructures and utilities within the subsurface. An EM utility locator was used to help determine the locations of utilities within the survey area.

EM data was collected and interpreted on site and suspected utilities marked as needed. GPR data profiles were collected for the areas of the Site specified by the client and processed as specified below.

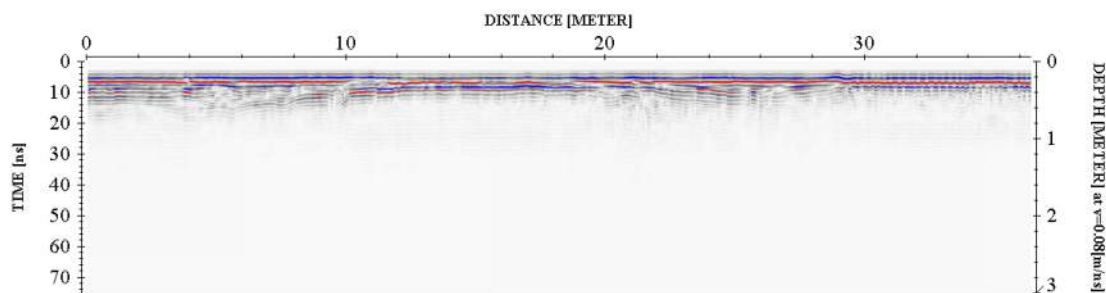
DATA PROCESSING

In order to improve the quality of the results and to better identify anomalies NOVA processed the collected data. The processing work flow is briefly described in this section.

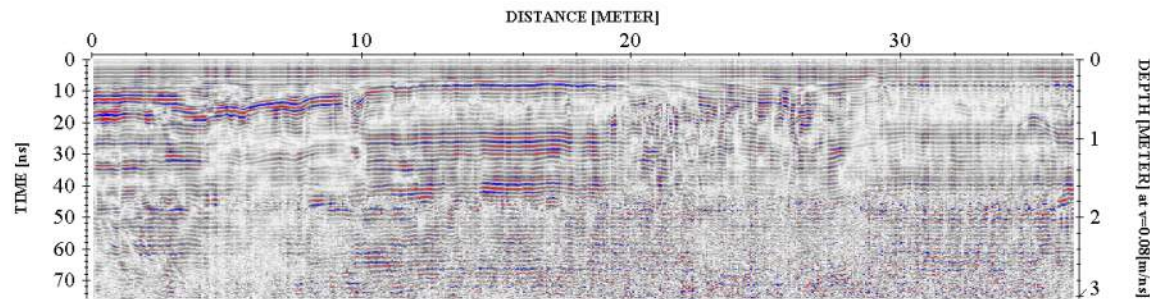
Step 1. Import Raw RAMAC data to standard processing format



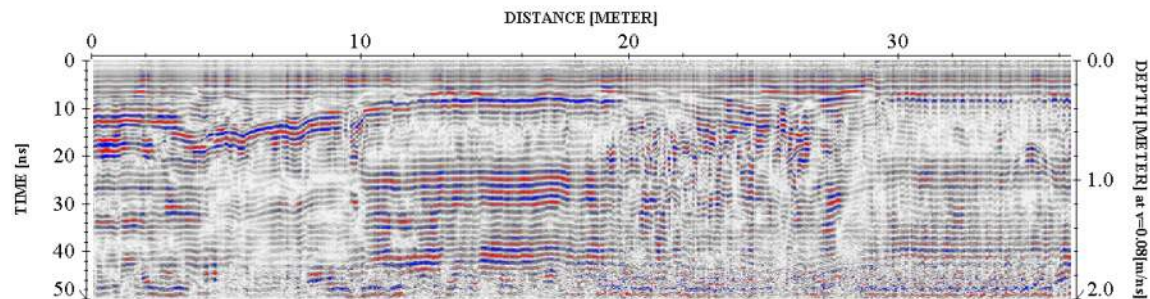
Step 2. Remove instrument noise (*dewow*)



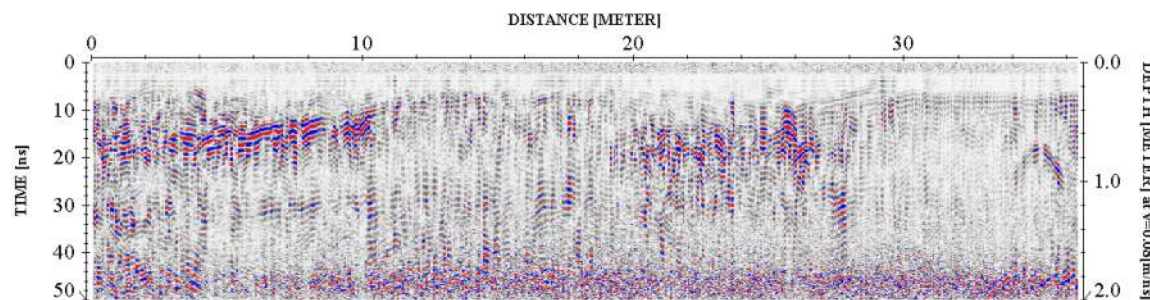
Step 3. Correct for attenuation losses (*energy decay function*)



Step 4. Remove static from bottom of profile (*time cut*)



Step 5. Mute horizontal ringing/noise (*subtracting average*)



The above example shows the significance of data processing. The last image (step 5) has higher resolution than the starting image (raw data – step 1) and represents the subsurface anomalies much more accurately.

PHYSICAL SETTINGS

NOVA observed the following physical conditions at the time of the survey.

Weather: Clear

Temperature: 50° F

Surface: Concrete, Asphalt, Pea Stone

Limitations: The geophysical noise level at the site was high due to being located in an urban environment and reinforced concrete slabs. Additionally, large portions of the site were covered with large, immobile objects. Limiting the coverage of the GPR survey.

RESULTS

The results of the geophysical engineering survey (GES) identified the following at the project site:

- Anomalies resembling potential subsurface utilities (such as sewer, water, gas and electric) were identified within the survey area. Their approximate locations are shown in the survey plan.
- No large geophysical anomalies resembling a potential underground storage tank were identified during the GES.
- All detected subsurface anomalies were marked in the onsite mark out.
- All cleared boring locations were marked in the onsite mark out.

If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

NOVA Geophysical Services



Levent Eskicakit, P.G., E.P.

Project Engineer

Attachments:

Location Map

Survey Plan

Geophysical Images



	Location Map	LEGEND
NOVA Geophysical Services Subsurface Mapping Solutions 56-01 Marathon Parkway, # 765 Douglaston, New York 11362 Phone (347) 556-7787 * Fax (718) 261-1527 www.novagsi.com	SITE: Commercial Site 475 Bay Street, Staten Island, New York 10304 CLIENT: Langan DATE: April 28th, 2020 AUTH: Chris Steinley	

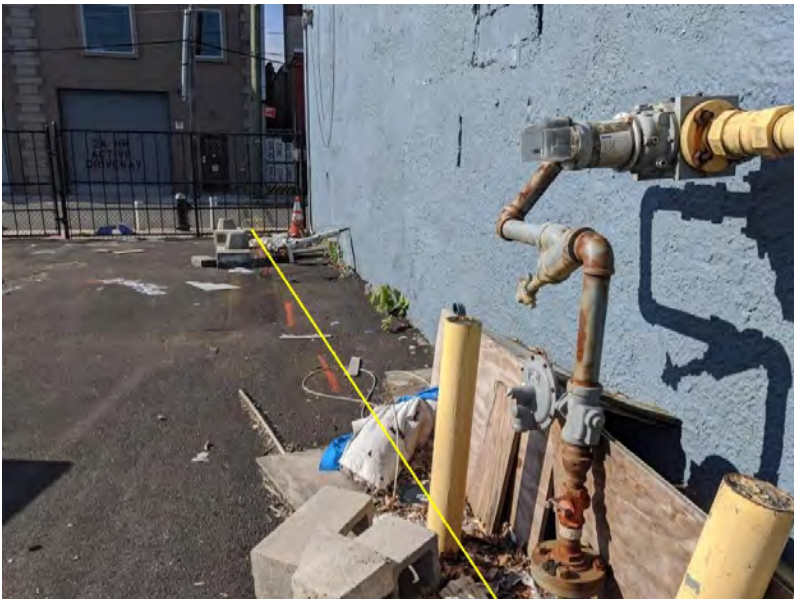


	SURVEY PLAN	LEGEND
NOVA Geophysical Services Subsurface Mapping Solutions 56-01 Marathon Parkway, # 765 Douglaston, New York 11362 Phone (347) 556-7787 * Fax (718) 261-1527 www.novagsi.com	SITE: Commercial Site 475 Bay Street, Staten Island, New York 10304 CLIENT: Langan DATE: April 28th, 2020 AUTH: Chris Steinley	 Survey Area — Electric — Sewer — Water — Gas

GEOPHYSICAL IMAGES

Commercial Site

475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



GEOPHYSICAL IMAGES

Commercial Site

475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



GEOPHYSICAL IMAGES

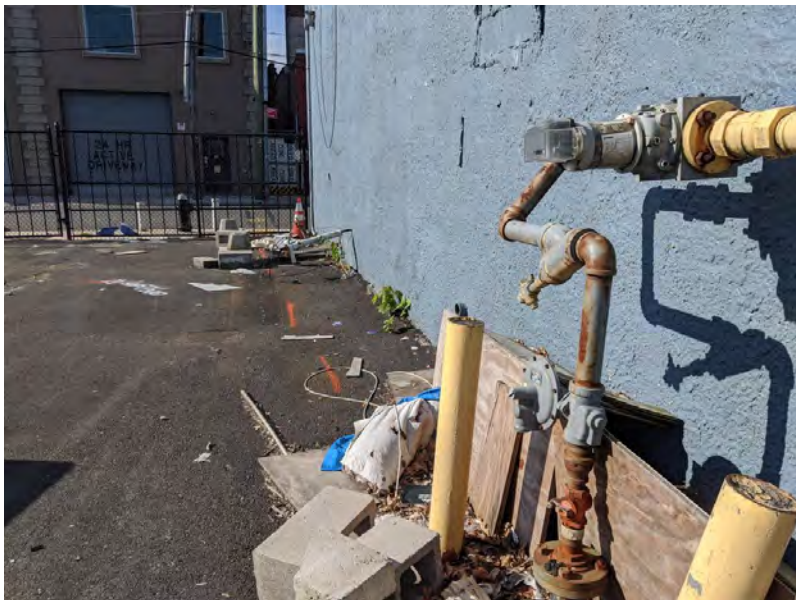
Commercial Site
475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



GEOPHYSICAL IMAGES

Commercial Site

475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



GEOPHYSICAL IMAGES

Commercial Site

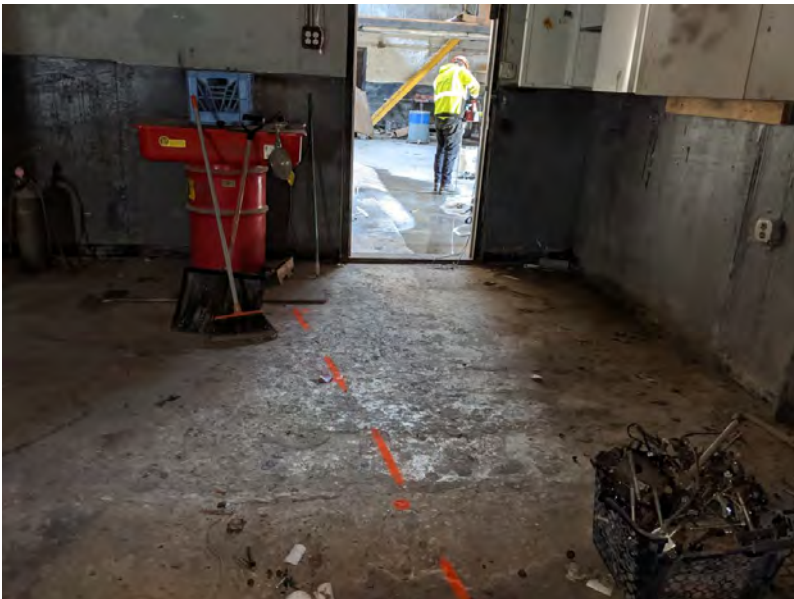
475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



GEOPHYSICAL IMAGES

Commercial Site

475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



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April 28th, 2020



GEOPHYSICAL IMAGES

Commercial Site

475 Bay Street,
Staten Island, New York 10304
April 28th, 2020



APPENDIX D
SOIL BORING LOGS

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																				
Location Staten Island, NY				Elevation and Datum 10.02 ft NAVD88																																																																																																				
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/5/20		Date Finished 5/5/20																																																																																																		
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA																																																																																																		
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples 5		Disturbed NA																																																																																																		
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA																																																																																																		
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Water Level (ft.) First 5																																																																																																		
Sampler 2-inch-diameter acetate liner				Drilling Foreman Thomas Harer																																																																																																				
Sampler Hammer NA				Field Engineer Ethan Smith																																																																																																				
<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="4">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist. BLU/in</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="4"></td> <td>R1a (0-10) Light gray to light tan gravelly coarse SAND, trace medium sand, concrete fragments, brick fragments (dry)[FILL] R1b (10-36) Black to dark gray coarse SAND, some fine gravel, coal fragments, slag fragments, brick fragments, wood fragments (dry)[FILL] R1c (36-40) Orangish red to reddish tan gravelly medium SAND, trace coal ash, slag fragments, Incinerated material (moist)[FILL]</td> <td>0</td> <td rowspan="4">R1</td> <td rowspan="4">MACROCORE</td> <td rowspan="4">40</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Collect soil sample SB01_0-2</td> </tr> <tr><td>1</td><td>0.0</td></tr> <tr><td>2</td><td>0.0</td></tr> <tr><td>3</td><td>0.0</td></tr> <tr> <td rowspan="4"></td> <td>R2a (0-4) Orangish red to reddish tan gravelly medium SAND, trace coal ash, slag fragments, Incinerated material (moist)[FILL] R2b (4-20) Gray to light gray fine SAND, some medium sand, trace silt, wood fragments (wet)[FILL]</td> <td>4</td> <td rowspan="4">R2</td> <td rowspan="4">MACROCORE</td> <td rowspan="4">36</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Collect soil sample SB01_6-8</td> </tr> <tr><td>5</td><td>0.0</td></tr> <tr><td>6</td><td>0.0</td></tr> <tr><td>7</td><td>0.0</td></tr> <tr> <td rowspan="4"></td> <td>R2c (20-36) Light gray fine SAND, some silt, trace fine gravel (wet)[SP-SC]</td> <td>8</td> <td rowspan="4">R3</td> <td rowspan="4">MACROCORE</td> <td rowspan="4">30</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4"></td> </tr> <tr><td>9</td><td>0.0</td></tr> <tr><td>10</td><td>0.0</td></tr> <tr><td>11</td><td>0.0</td></tr> <tr> <td rowspan="4"></td> <td>R3a (0-20) Light gray fine SAND, some silt, trace fine gravel (wet)[SP-SC] R3b (20-30) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]</td> <td>12</td> <td rowspan="4">R4</td> <td rowspan="4">MACROCORE</td> <td rowspan="4">42</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4"></td> </tr> <tr><td>13</td><td>0.0</td></tr> <tr><td>14</td><td>0.0</td></tr> <tr><td>15</td><td>0.0</td></tr> <tr> <td rowspan="4"></td> <td>R4 (0-42) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]</td> <td>16</td> <td rowspan="4">R5</td> <td rowspan="4">MACROCORE</td> <td rowspan="4">38</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Collect soil sample SB01_18-20 End of Boring at 20 feet below grade surface (bgs). Installed MW01 screened from 2 to 12 feet bgs. Installed SV01 at 3 feet bgs. See construction logs for details.</td> </tr> <tr><td>17</td><td>0.0</td></tr> <tr><td>18</td><td>0.0</td></tr> <tr><td>19</td><td>0.0</td></tr> <tr> <td></td> <td>R5a (0-8) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R5b (8-38) Reddish brown fine SAND, some silt, some fine gravel, clay lenses (wet)[SP-SC]</td> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td>0.0</td> <td></td> </tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist. 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Installed MW01 screened from 2 to 12 feet bgs. Installed SV01 at 3 feet bgs. See construction logs for details.	17	0.0	18	0.0	19	0.0		R5a (0-8) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R5b (8-38) Reddish brown fine SAND, some silt, some fine gravel, clay lenses (wet)[SP-SC]	20					0.0	
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	13	0.0																																																																																																						
	14	0.0																																																																																																						
	15	0.0																																																																																																						
	R4 (0-42) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]	16	R5	MACROCORE	38		0.0	Collect soil sample SB01_18-20 End of Boring at 20 feet below grade surface (bgs). Installed MW01 screened from 2 to 12 feet bgs. Installed SV01 at 3 feet bgs. See construction logs for details.																																																																																																
	17	0.0																																																																																																						
	18	0.0																																																																																																						
	19	0.0																																																																																																						
	R5a (0-8) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R5b (8-38) Reddish brown fine SAND, some silt, some fine gravel, clay lenses (wet)[SP-SC]	20					0.0																																																																																																	

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 9.75 ft NAVD88			
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/5/20		Date Finished 5/5/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples	Disturbed 5	Undisturbed NA	Core NA
Casing Diameter (in) NA			Casing Depth (ft) NA	Water Level (ft.) First ▽ 5	Completion ▼ NA	24 HR. ▽ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Thomas Harer	
Sampler 2-inch-diameter acetate liner				Field Engineer Ethan Smith			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
	R1a (0-8) Light gray to light brown gravelly medium SAND, some coarse sand, concrete fragments, brick fragments (dry)[FILL] R1b (8-30) Black to dark brown medium SAND, some fine gravel, trace sand, brick fragments, coal fragments, Serpentinite fragments (dry)[FILL]	0	R1	MACROCORE	30		0.0	Collect soil sample SB02_0-2
		1					0.0	
		2					0.0	
		3					0.0	
		4	R2	MACROCORE	34		0.0	Collect soil sample SB02_6-8
	R2a (0-6) Black to dark brown medium SAND, some fine gravel, trace sand, brick fragments, coal fragments, Serpentinite fragments (dry)[FILL] R2b (6-12) Dark gray fine SAND, trace silt, trace medium sand, trace fine gravel, wood fragments (wet)[FILL]	5					0.0	
	R2c (12-23) Dark gray to light gray fine SAND, some silt, trace fine gravel, clay lenses (wet)[SP-SC] R2d (23-34) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]	6					0.0	
		7					0.0	
		8	R3	MACROCORE	28		0.0	
	R3 (0-28) Reddish brown silty fine SAND, trace medium sand, trace fine gravel, clay lenses (wet)[SP-SC]	9					0.0	
		10					0.0	
		11					0.0	
		12	R4	MACROCORE	46		0.0	
	R4 (0-46) Reddish brown fine SAND, some silt, trace clay, trace medium sand, trace fine gravel (wet)[SP-SC]	13					0.0	
		14					0.0	
		15					0.0	
		16	R5	MACROCORE	48		0.0	Collect soil sample SB02_18-20 End of Boring at 20 feet bgs. Installed MW-02 screened from 2 to 12 feet bgs. Installed SV02 at 2 feet bgs. See construction logs for details.
	R5a (0-36) Reddish brown fine SAND, some silt, trace clay, trace medium sand, trace fine gravel (wet)[SP-SC]	17					0.0	
		18					0.0	
		19					0.0	
	R5b (36-48) Dark gray silty fine SAND, trace fine gravel, clay lenses (wet)[SP-SC]	20					0.0	

Project	475 Bay Street and 31 Wave Street			Project No.	170610601		
Location	Staten Island, NY			Elevation and Datum	9.71 ft		
Drilling Company	AARCO Environmental Services, Corp.			Date Started	5/5/20	Date Finished	
Drilling Equipment	Geoprobe 7822 DT			Completion Depth	20 ft	Rock Depth	
Size and Type of Bit	4' Macrocore 2 1/4" diameter			Number of Samples	5	Disturbed	Undisturbed
Casing Diameter (in)	NA	Casing Depth (ft)	NA	Water Level (ft.)	First	5	NA
Casing Hammer	NA	Weight (lbs)	NA	Drop (in)	NA	Completion	24 HR.
Sampler	2-inch-diameter acetate liner			Drilling Foreman	Thomas Harer		
Sampler Hammer	NA	Weight (lbs)	NA	Drop (in)	NA	Field Engineer	Ethan Smith

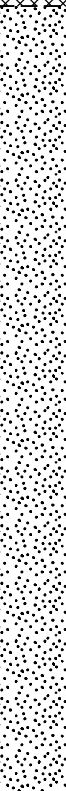
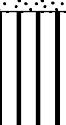
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
	R1a (0-3) Asphalt	0					0.0	Collect soil sample SB03_0-2
	R1b (3-15) Light brown to reddish brown gravelly medium SAND, brick fragments, concrete fragments (dry)[FILL]	1					0.0	
	R1c (15-44) Black to gray gravelly fine SAND, some medium sand, slag fragments, coal fragments, Serpentinite fragments (moist)[FILL]	2	R1	MACROCORE	44		0.0	
		3					0.0	
	R2a (0-5) Black to gray gravelly fine SAND, some medium sand, slag fragments, coal fragments, Serpentinite fragments (moist)[FILL]	4					0.0	Collect soil sample SB03_6-8
	R2b (5-21) Dark gray to black fine SAND, some clay, some silt, trace fine gravel (wet)[SP]	5	R2	MACROCORE	34		0.0	
	R2c (21-34) Reddish brown fine SAND, trace silt, trace medium sand, trace fine gravel (wet)[SP]	6					0.0	
		7					0.0	
	R3 (0-30) Reddish brown silty fine SAND, trace fine gravel, clay lenses (wet)[SP-SC]	8					0.0	
		9	R3	MACROCORE	30		0.0	
		10					0.0	
		11					0.0	
	R4a (0-24) Reddish brown silty fine SAND, trace fine gravel, clay lenses (wet)[SP-SC]	12					0.0	
	R4b (24-38) Reddish brown to dark gray fine SAND, some silt, trace sand, trace fine gravel (wet)[SP-SC]	13	R4	MACROCORE	38		0.0	
	R5a (0-38) Reddish brown fine SAND, some silt, trace medium sand, trace fine gravel (wet)[SP-SC]	14					0.0	
		15					0.0	
		16					0.0	Collect soil sample SB03_18-20 End of Boring at 20 feet bgs. Borehole was backfilled with soil cuttings to surface grade and patched with asphalt. Installed SV03 at 3 feet bgs. See soil vapor logs for details.
		17	R5	MACROCORE	48		0.0	
		18					0.0	
		19					0.0	
	R5b (38-48) Dark gray silty fine SAND, trace fine gravel, clay lenses (wet)[SP-SC]	20					0.0	

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 9.40 ft			
Drilling Company AARCO Environmental Services, Corp.				Date Started 4/29/20		Date Finished 4/29/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples 5		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 5.5		Completion ∇ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Thomas Harer	
Sampler 2-inch-diameter acetate liner				Field Engineer Deirdre Casey			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
			Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)			
	R1a (0-2) Black coarse angular GRAVEL (dry)[ASPHALT]	0	R1	MACROCORE	32			0.0	Collect soil samples SB04_0-2 and SODUP01_042920	
	R1b (2-7) Dark brownish black fine to coarse SAND, some silt, trace coal ash, trace coal (moist)[FILL]	1						0.0		
	R1c (7-12) Orangish brown fine SAND, trace silt, trace fine gravel (moist) [FILL]	2						0.0		
	R1d (12-26) Brown to black fine to coarse SAND, trace coal, trace coal ash (moist)[FILL]	3						0.0		
	R1e (26-32) Brown fine SAND, some silt, trace fine gravel (moist)[FILL]	4						0.0		
			5	R2	MACROCORE	27				0.0
	R2a (0-6) Brown fine SAND, some silt, trace fine gravel (moist)[FILL]	6	0.0							
	R2b (6-15) Dark reddish brown fine SAND, some silt, some gravel (wet)[FILL]	7	0.0							
	R2c (15-27) Dark gray to black fine SAND, some coal ash, trace coarse sand (wet)[FILL]	8	0.0							
		9	0.0							
			10	R3	MACROCORE	17				0.0
	R3a (0-5) Dark grayish brown sandy SILT (wet)[FILL]	11	0.0							
	R3b (5-15) Dark grayish brown gravelly SILT, trace fine sand (wet)[FILL]	12	0.0							
	R3c (15-17) Dark grayish brown sandy SILT, trace fine sand (wet)[FILL]	13	0.0							
		14	0.0							
			15	R4	MACROCORE	30				0.0
R4 (0-30) Dark reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]	16	0.0								
	17	0.0								
	18	0.0								
	19	0.0								
		20	R5	MACROCORE	44			0.0		
R5a (0-12) Dark grayish reddish brown SILT, trace fine sand, trace fine gravel (wet)[SP-SC]	21	0.0								
R5b (12-22) Dark grayish reddish brown SILT, some fine sand, trace fine gravel (wet)[SP-SC]	22	0.0								
R5c (22-44) Dark grayish reddish brown SILT, trace fine sand, trace fine gravel (wet)[SP-SC]	23	0.0								
	24	0.0								

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Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				9.29 ft NAVD88			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				4/28/20		4/28/20	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				20 ft		NA	
Size and Type of Bit				Number of Samples		Disturbed	
4" Macrocore 2 1/4" diameter				5		Undisturbed NA	
Casing Diameter (in)				Water Level (ft.)		Completion	
NA				First ▽ 7		24 HR. ▽ NA	
Casing Hammer		Weight (lbs)		Drop (in)		Drilling Foreman	
NA		NA		NA		Thomas Harer	
Sampler				Field Engineer			
2-inch-diameter acetate liner				Deirdre Casey			
Sampler Hammer		Weight (lbs)		Drop (in)			
NA		NA		NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BLU/in	PID Reading (ppm)		
	R1a (0-3) Black coarse angular GRAVEL (dry)[ASPHALT]	0	R1	MACROCORE	18			0.0	Collect soil sample SB05_0-2
	R1b (3-13) Dark brown to black coarse SAND, some fine angular gravel, trace coal/slag (dry)[FILL]	1						0.0	
	R1c (13-18) Dark reddish brown fine SAND, some silt, trace fine angular gravel (moist)[FILL]	2						0.0	
		3							
	R2a (0-17) Orange brown to brown fine SAND, some silt, trace angular coarse gravel (moist)	5	R2	MACROCORE	33			0.0	Collect soil sample SB05_6-8
		6						0.0	
	R2b (17-21) Dark brown to black fine SAND, some silt, trace angular coarse gravel (moist)	7						0.0	
	R2c (21-33) Dark reddish brown fine sand, some silt (wet)	8						0.0	
		9	0.0						
		10	0.0						
		11	0.0						
		12	0.0						
		13	0.0						
	R4 (0-31) Dark brown fine SAND, some silt (wet)	14	R4	MACROCORE	31			0.0	
		15						0.0	
		16						0.0	
	17	0.0							
	R5a (0-41) Dark brown fine SAND, some silt (wet)	18	R5	MACROCORE	48			0.0	Collect soil sample SB05_18-20 End of boring at 20 feet bgs. Installed MW-05 screened from 4 to 14 feet bgs. See construction logs for details.
		19						0.0	
		20						0.0	
		21						0.0	

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 9.71 ft NAVD88			
Drilling Company AARCO Environmental Services, Corp.				Date Started 4/29/20		Date Finished 4/29/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples 5		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 4		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Thomas Harer	
Sampler 2-inch-diameter acetate liner				Field Engineer Deirdre Casey			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
[Pattern]	R1a (0-2) Black coarse angular GRAVEL (dry)[ASPHALT]	0	R1	MACROCORE	25			0.0
	R1b (2-8) Light gray medium angular GRAVEL (dry)[CONCRETE]	1						0.0
	R1c (8-15) Dark reddish brown fine SAND, trace silt (moist)[FILL]	2						0.0
	R1d (15-25) Gray to black fine SAND, trace coal ash, trace wood, trace coal, Trace tile (moist)[FILL]	3						0.0
[Pattern]	R2a (0-6) Grayish reddish brown fine SAND, trace wood, trace coarse sand (wet)[FILL]	4	R2	MACROCORE	23			8.0
	R2b (6-15) Tannish brown to mottled gray SILT, trace wood, trace glass, trace coal, trace coal ash, trace clay, trace fine sand (wet)[FILL]	5						1.7
	R2c (15-20) Dark brown SILT, trace wood, trace glass, trace fine gravel (wet)[FILL]	6						0.0
	R2d (20-23) Dark reddish brown fine SAND, trace wood, trace silt (wet)[FILL]	7						0.0
	R3a (0-12) Grayish brown fine SAND, trace silt, trace fine gravel (wet)[FILL]	8	R3	MACROCORE	35			0.0
	R3b (12-35) Reddish brown fine SAND, some silt, trace wood (wet)[FILL]	9						0.0
		10						0.0
		11						0.0
[Pattern]	R4 (0-28) Reddish brown fine SAND, some silt (wet)[SP-SM]	12	R4	MACROCORE	28			0.0
		13						0.0
		14						0.0
		15						0.0
[Pattern]	R5a (0-28) Reddish brown fine SAND, some silt (wet)[SP-SM]	16	R5	MACROCORE	33			0.0
		17						0.0
		18						0.0
		19						0.0
[Pattern]	R5b (28-33) Grayish black SILT, trace clay, trace fine sand (wet)[GW-GM]	20						1.6

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Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				9.54 ft			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				4/29/20		4/29/20	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 420M				20 ft		NA	
Size and Type of Bit				Number of Samples	Disturbed	Undisturbed	Core
4' Macrocore 2 1/4" diameter				5	NA	NA	NA
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)	First	Completion	24 HR.
NA			NA	NA	4	NA	NA
Casing Hammer		Weight (lbs)		Drop (in)	Drilling Foreman		
NA		NA		NA	Thomas Harer		
Sampler				Field Engineer			
2-inch-diameter acetate liner				Deirdre Casey			
Sampler Hammer		Weight (lbs)		Drop (in)			
NA		NA		NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	R1a (0-2) Black coarse angular GRAVEL (dry)[ASPHALT]	0					0.0	Collect soil sample SB07_0-2
	R1b (2-6) Dark brown fine SAND, some fine gravel, trace silt (moist)[FILL]	1					0.0	
	R1c (6-14) Dark reddish brown fine SAND, some silt (moist)[FILL]	2					0.0	
	R1d (14-32) Brown fine SAND, trace fine gravel, Coal and coal ash lens 19-20 and 24-25 (moist)[FILL]	3					0.0	
		4						
		5						
		6						
		7					0.0	Collect soil sample SB07_8-10
	R2 (0-12) Dark reddish brown fine SAND, trace wood, trace coal, trace coal ash, trace silt, trace fine gravel (wet)[FILL]	8					0.0	
		9						
		10						
		11					0.0	Collect soil sample SB07_18-20 End of boring at 20 feet bgs. Borehole was backfilled with soil cuttings to surface grade and patched with asphalt. Installed SV04 at 2 feet bgs. See soil vapor logs for details.
	R3 (0-17) Reddish brown fine SAND, trace silt, trace fine gravel (wet)[SP-SC]	12					0.0	
		13						
		14						
		15					0.0	
		16					0.0	
		17					0.0	
		18					0.0	
	R5a (0-10) Reddish brown fine SAND, trace silt, trace fine gravel (wet)[SP-SC]	19					0.0	
	R5b (10-20) Dark gray SILT, some clay, trace fine sand (wet)[SP-SC]	20					0.0	
	R5c (20-32) Grayish tan fine SAND, trace silt, trace fine gravel (wet)[SP-SC]						0.0	

Project						Project No.							
475 Bay Street and 31 Wave Street						170610601							
Location						Elevation and Datum							
Staten Island, NY						10.12 ft NAVD88							
Drilling Company						Date Started			Date Finished				
AARCO Environmental Services, Corp.						4/28/20			4/28/20				
Drilling Equipment						Completion Depth			Rock Depth				
Geoprobe 420M						15 ft			NA				
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core	
3' Macrocore 2 1/4" diameter								5		NA		NA	
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.	
NA				NA		∇		5		$\blacktriangledown$		∇ NA	
Casing Hammer			Weight (lbs)		Drop (in)		Drilling Foreman						
NA			NA		NA		Julio Galaraza						
Sampler						Field Engineer							
2-inch-diameter acetate liner						Deirdre Casey							
Sampler Hammer			Weight (lbs)		Drop (in)								
NA			NA		NA								
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
							Number	Type	Recov. (in)	Penetr. resist	BL/6in		
	R1a (0-12) Gray medium SAND (dry)[CONCRETE]					0						0.0	Collect soil sample SB08_0-2
	R1b (12-24) Grayish brown fine SAND, trace gravel (dry)[FILL]					1	R1	MACROCORE	24			0.0	
						2						0.0	
						3						0.0	
						4							Collect soil sample SB08_4-6
	R2a (0-6) Light reddish brown fine SAND, trace fine gravel (wet)[FILL]					5	R2	MACROCORE	12			0.0	
	R2b (6-12) Reddish brown SAND, trace fine gravel (wet)[FILL]					6						0.0	
	R3a (0-24) Brown fine SAND, trace fine gravel (wet)[FILL]					7	R3	MACROCORE	30			0.0	
						8						0.0	Collect soil sample SB08_13-15
	R3b (24-30) Light brownish olive fine SAND, trace medium sand, trace fine gravel (wet)					9						0.0	
						10	R4	MACROCORE	18			0.0	
	R4 (0-18) Brownish olive fine SAND, some medium sand, trace fine gravel (wet)					11						0.0	
						12						0.0	End of boring at 15 feet bgs. Installed MW-08 screened from 1 to 11 feet bgs. See construction logs for details.
	R5 (0-30) Brown fine SAND, trace fine gravel (wet)					13	R5	MACROCORE	30			0.0	
						14						0.0	
						15						0.0	
						16							
						17							
						18							
						19							
						20							

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.14 ft			
Drilling Company AARCO Environmental Services, Corp.				Date Started 4/28/20		Date Finished 4/28/20	
Drilling Equipment Geoprobe 420M				Completion Depth 15 ft		Rock Depth NA	
Size and Type of Bit 3' Macrocore 2 1/4" diameter				Number of Samples 5		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 6		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Julio Galaraza	
Sampler 2-inch-diameter acetate liner				Field Engineer Deirdre Casey			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	R1a (0-12) Gray medium SAND (dry)[CONCRETE]	0					0.0	Collect soil sample SB09_0-2
	R1b (12-23) Reddish brown fine SAND, trace fine gravel (moist)[FILL]	1	R1	MACROCORE	29		0.0	
	R1c (23-27) Reddish brown clayey SILT, some fine sand, trace fine gravel (moist)[FILL]	2					0.0	
	R1d (27-29) Asphalt (moist)[FILL]	3					0.0	
	R2a (0-18) Reddish brown fine SAND, trace fine gravel (moist)[FILL]	4	R2	MACROCORE	24		0.0	Collect soil sample SB09_4-6
	R2b (18-20) Grayish olive CLAY, trace fine gravel (moist)[FILL]	5					0.1	
	R2c (20-24) Light gray coarse SAND, trace coal, trace gravel (moist)[FILL]	6					0.0	
	R3a (0-18) Brownish olive fine SAND, trace gravel (wet)	7	R3	MACROCORE	36		0.0	
	R3b (18-36) Black clayey SAND, trace wood, trace fine gravel (wet)	8					0.0	Collect soil sample SB09_13-15
		9					0.0	
		10	R4	MACROCORE	6		0.0	
	R4 (0-6) Brownish gray medium SAND, trace fine gravel (wet)	11					0.0	
	R5a (0-12) Brown silty fine SAND (wet)	12	R5	MACROCORE	18		0.0	End of boring at 15 feet bgs. Borehole was backfilled with soil cuttings to surface grade and patched with asphalt.
		13					0.0	
		14					0.0	
	R5b (12-18) Gray CLAY, trace fine gravel (wet)[CL]	15					0.0	
		16						
		17						
		18						
		19						
		20						

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Project					Project No.										
475 Bay Street and 31 Wave Street					170610601										
Location					Elevation and Datum										
Staten Island, NY					10.27 ft NAVD88										
Drilling Company					Date Started			Date Finished							
AARCO Environmental Services, Corp.					5/6/20			5/6/20							
Drilling Equipment					Completion Depth			Rock Depth							
Geoprobe 7822 DT					20 ft			NA							
Size and Type of Bit					Number of Samples		Disturbed	Undisturbed	Core						
4' Macrocore 2 1/4" diameter							5	NA	NA						
Casing Diameter (in)			Casing Depth (ft)		Water Level (ft.)		First	Completion	24 HR.						
NA			NA		▽ 4.5		▼	NA	▼ NA						
Casing Hammer		Weight (lbs)		Drop (in)	Drilling Foreman										
NA		NA		NA	Thomas Harer										
Sampler					Field Engineer										
2-inch-diameter acetate liner					Ethan Smith										
Sampler Hammer		Weight (lbs)		Drop (in)											
NA		NA		NA											
MATERIAL SYMBOL	Sample Description				Depth Scale	Sample Data						Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)			
						Number	Type	Recov. (in)	Penetr. resist. BLU/ft	PID Reading (ppm)					
	R1a (0-17) Light brown gravelly medium SAND, trace organics, brick fragments, concrete fragments (dry)[FILL]				0	R1	MACROCORE	33		0.0	Collect soil sample SB10_0-2				
					1					0.0					
	R1b (17-23) Gray fine GRAVEL, some coarse sand (dry)[FILL] R1c (23-33) Black to light gray medium-fine SAND, trace fine gravel, coal fragments, slag fragments, Incinerated material (moist)[FILL]				2					0.0					
					3					0.0					
					4										
					R2a (0-5) Black to light gray medium-fine SAND, trace fine gravel, coal fragments, slag fragments, Incinerated material (moist)[FILL] R2b (5-15) Light gray fine SAND, some silt, trace clay, trace fine gravel (wet)[SP-SC] R2c (15-36) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]				5	R2		MACROCORE	36		0.0
									6						0.0
									7						0.0
	8	0.0													
	R3a (0-12) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R3b (12-17) Reddish gray silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R3c (17-26) Reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]				9										
					10	R3	MACROCORE	26		0.0					
					11					0.0					
					12					0.0					
	R4 (0-40) Reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]				13										0.0
					14	R4	MACROCORE	40		0.0					
					15					0.0					
					16					0.0					
	17	0.0													
	R5a (0-28) Reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]				18	R5	MACROCORE	36		0.0					
					19					0.0					
20					0.0										
21					0.0										
R5b (28-36) Gray to dark gray silty fine SAND, trace fine gravel, clay lenses (wet)[SP-SC]				22					0.0	Collect soil sample SB10_18-20 End of boring at 20 feet bgs. Installed MW10 screened from 3 to 13 feet bgs. See construction logs for details.					

Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				10.29 ft			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				5/22/20		5/22/20	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				10 ft		NA	
Size and Type of Bit				Number of Samples		Disturbed	
5' Macrocore 2 1/4" diameter				2		Undisturbed	
Casing Diameter (in)				First		Completion	
NA				NA		24 HR.	
Casing Hammer		Weight (lbs)		Drop (in)		NA	
NA		NA		NA		NA	
Sampler				Drilling Foreman			
2-inch-diameter acetate liner				Ron Dixon			
Sampler Hammer				Field Engineer			
NA		Weight (lbs)		Drop (in)		NA	
NA		NA		NA		NA	
				Luke McCartney			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	
	R1a (0-6) Black GRAVEL (dry)[ASPHALT]	0	R1	MACROCORE	60		0.2	Collect soil sample SB101_3-4
	R1b (6-36) Brown fine SAND, some silt, trace coarse sand, trace fine gravel, brick, concrete, gravel (moist)[FILL]	1					0.3	
		2					0.1	
		3					0.1	
		4					0.1	
		5					0.2	
		6					0.1	
		7					0.2	
		8					0.1	
		9					0.0	
	R1c (36-50) Reddish brown to black fine SAND, trace fine gravel, coal ash, coal, fabric, glass, ceramics, slag (moist)[FILL]	10	R2	MACROCORE	17		0.0	End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.
	R1d (50-60) Reddish brown fine SAND, some silt, trace clay, trace coarse sand, trace fine gravel (wet)[SP]	11					0.0	
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
	R2 (0-17) Reddish brown fine SAND, some silt, trace clay, trace medium to coarse sand, trace fine gravel (wet)[SP]	20						

Project						Project No.								
Location						Elevation and Datum								
						10.55 ft								
Drilling Company						Date Started				Date Finished				
AARCO Environmental Services, Corp.						5/22/20				5/22/20				
Drilling Equipment						Completion Depth				Rock Depth				
Geoprobe 7822 DT						10 ft				NA				
Size and Type of Bit 5' Macrocore 2 1/4" diameter						Number of Samples		Disturbed		Undisturbed		Core		
Casing Diameter (in) NA						Casing Depth (ft) NA		Water Level (ft.) ▽ 7.9		Completion ▼ NA		24 HR. ▼ NA		
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Ron Dixon								
Sampler 2-inch-diameter acetate liner						Field Engineer Luke McCartney								
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA										
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
	R1a (0-24) Brown fine SAND, trace silt, trace fine gravel, brick, concrete (moist)[FILL]					0	R1	MACROCORE		33		PID Reading (ppm)	Collect soil sample SB102_4-5	
						1						0.0		
						2						0.0		
						3						0.0		
						4						0.0		
	R1b (24-33) Dark gray to black clayey SAND, trace silt, trace fine gravel, coal, brick (moist)[FILL]					5	R2	MACROCORE	25		0.0			
						6					0.0			
						7					0.0			
						8					0.0			
						9					0.0			
	R2a (0-9) Dark gray to black clayey SAND, trace silt, trace medium sand, trace fine gravel (wet)[SC] R2b (9-25) Reddish brown fine SAND, some silt, trace clay, trace medium to coarse sand, trace fine gravel (wet)[SP-SM]					10					0.0			
						11					0.0			
						12						End of boring at 10 feet below grade surface (bgs). Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.		
						13								
						14								
						15								
						16								
						17								
						18								
						19								
						20								

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.06 ft			
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/22/20		Date Finished 5/22/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth NA	
Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Undisturbed NA	
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Water Level (ft.) First ∇ 5	
Sampler 2-inch-diameter acetate liner				Completion ∇ NA			
Sampler Hammer NA				24 HR. ∇ NA			
Drilling Foreman Ron Dixon				Field Engineer Luke McCartney			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
	R1a (0-20) Brown fine SAND, some silt, trace fine gravel, brick, concrete (moist)[FILL]	0	R1	MACROCORE	28			0.0
		1						0.0
		2						0.0
		3						0.0
		4						0.0
	R1b (20-28) Dark gray to black fine SAND, some clay, trace silt, trace fine gravel, slab, brick, coal (wet)[FILL]	5	R2	MACROCORE	30			0.0
		6						0.0
		7						0.0
		8						0.0
		9						0.0
		10						0.0
		11						0.0
		12						0.0
		13						0.0
		14						0.0
	R2a (0-6) Dark gray to black fine SAND, some clay, trace silt, trace fine gravel, brick (wet)[FILL]	15						0.0
		16						0.0
		17						0.0
		18						0.0
		19						0.0
		20						0.0
	R2b (6-30) Reddish brown fine SAND, some silt, trace clay, trace medium to coarse sand, trace fine gravel (wet)[SP-SM]	21						
		22						
		23						
		24						
		25						
		26						

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Collect soil sample SB103-2.5-3.5

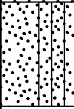
End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																										
Location Staten Island, NY				Elevation and Datum 9.59 ft																																																																																																										
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/22/20		Date Finished 5/22/20																																																																																																								
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth NA																																																																																																								
Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Disturbed NA																																																																																																								
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 5		Completion NA																																																																																																								
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA																																																																																																								
Sampler 2-inch-diameter acetate liner				Drilling Foreman Ron Dixon																																																																																																										
Sampler Hammer NA				Field Engineer Luke McCartney																																																																																																										
<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="5">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist. BLU/in</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="10"> </td> <td>R1a (0-9) Light gray to brown fine SAND, some coarse sand, some fine gravel, brick, concrete (dry)[FILL]</td> <td>0</td> <td rowspan="10">R1</td> <td rowspan="10">MACROCORE</td> <td rowspan="10">44</td> <td rowspan="10"></td> <td rowspan="10"></td> <td>0.0</td> <td rowspan="10">Collect soil sample SB104_4.5-5.5</td> </tr> <tr><td>R1b (9-20) Black fine SAND, trace fine gravel, coal ash, coal, slag (moist)[FILL]</td><td>1</td><td>0.0</td></tr> <tr><td>R1c (20-29) Olive brown to black silty fine SAND, coal, brick (moist)[FILL]</td><td>2</td><td>0.0</td></tr> <tr><td>R1d (29-44) Black fine SAND, trace medium to coarse sand, trace fine gravel, coal ash, coal, slag (moist)[FILL]</td><td>3</td><td>0.0</td></tr> <tr><td></td><td>4</td><td>0.0</td></tr> <tr><td></td><td>5</td><td>0.0</td></tr> <tr><td></td><td>6</td><td>0.0</td></tr> <tr><td></td><td>7</td><td>0.0</td></tr> <tr><td></td><td>8</td><td>0.0</td></tr> <tr><td></td><td>9</td><td>0.0</td></tr> <tr> <td rowspan="10"> </td> <td>R2a (0-26) Olive brown to black silty fine SAND, some clay, some fine gravel, coal, brick (wet)[FILL]</td> <td>6</td> <td rowspan="10">R2</td> <td rowspan="10">MACROCORE</td> <td rowspan="10">46</td> <td rowspan="10"></td> <td rowspan="10"></td> <td>0.0</td> <td rowspan="10">End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.</td> </tr> <tr><td></td><td>7</td><td>0.0</td></tr> <tr><td></td><td>8</td><td>0.0</td></tr> <tr><td></td><td>9</td><td>0.0</td></tr> <tr><td></td><td>10</td><td>0.0</td></tr> <tr><td></td><td>11</td><td>0.0</td></tr> <tr><td></td><td>12</td><td>0.0</td></tr> <tr><td></td><td>13</td><td>0.0</td></tr> <tr><td></td><td>14</td><td>0.0</td></tr> <tr><td></td><td>15</td><td>0.0</td></tr> <tr><td></td><td>16</td><td>0.0</td></tr> <tr><td></td><td>17</td><td>0.0</td></tr> <tr><td></td><td>18</td><td>0.0</td></tr> <tr><td></td><td>19</td><td>0.0</td></tr> <tr><td></td><td>20</td><td>0.0</td></tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)		R1a (0-9) Light gray to brown fine SAND, some coarse sand, some fine gravel, brick, concrete (dry)[FILL]	0	R1	MACROCORE	44			0.0	Collect soil sample SB104_4.5-5.5	R1b (9-20) Black fine SAND, trace fine gravel, coal ash, coal, slag (moist)[FILL]	1	0.0	R1c (20-29) Olive brown to black silty fine SAND, coal, brick (moist)[FILL]	2	0.0	R1d (29-44) Black fine SAND, trace medium to coarse sand, trace fine gravel, coal ash, coal, slag (moist)[FILL]	3	0.0		4	0.0		5	0.0		6	0.0		7	0.0		8	0.0		9	0.0		R2a (0-26) Olive brown to black silty fine SAND, some clay, some fine gravel, coal, brick (wet)[FILL]	6	R2	MACROCORE	46			0.0	End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.		7	0.0		8	0.0		9	0.0		10	0.0		11	0.0		12	0.0		13	0.0		14	0.0		15	0.0		16	0.0		17	0.0		18	0.0		19	0.0		20	0.0
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																			
			Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)																																																																																																							
	R1a (0-9) Light gray to brown fine SAND, some coarse sand, some fine gravel, brick, concrete (dry)[FILL]	0	R1	MACROCORE	44			0.0	Collect soil sample SB104_4.5-5.5																																																																																																					
	R1b (9-20) Black fine SAND, trace fine gravel, coal ash, coal, slag (moist)[FILL]	1						0.0																																																																																																						
	R1c (20-29) Olive brown to black silty fine SAND, coal, brick (moist)[FILL]	2						0.0																																																																																																						
	R1d (29-44) Black fine SAND, trace medium to coarse sand, trace fine gravel, coal ash, coal, slag (moist)[FILL]	3						0.0																																																																																																						
		4						0.0																																																																																																						
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		9						0.0																																																																																																						
	R2a (0-26) Olive brown to black silty fine SAND, some clay, some fine gravel, coal, brick (wet)[FILL]	6	R2	MACROCORE	46			0.0	End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.																																																																																																					
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Project 475 Bay Street and 31 Wave Street				Project No. 170610601				
Location Staten Island, NY				Elevation and Datum 9.54 ft				
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/22/20		Date Finished 5/22/20		
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth NA		
Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Disturbed NA		
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 5		Completion NA		
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA		
Sampler 2-inch-diameter acetate liner				Drilling Foreman Ron Dixon				
Sampler Hammer NA				Field Engineer Luke McCartney				
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
			Number	Type	Recov. (in)	Penetr. resist. BLU6in		PID Reading (ppm)
	R1a (0-12) Light gray to light brown fine SAND, some medium to coarse sand, trace fine gravel, brick, coal, concrete (dry)[FILL]	0	R1	MACROCORE	48		0.0	Collect soil sample SB105_4-5
	1							
	2							
	3							
	4							
	R1b (12-20) Black fine SAND, trace fine gravel, coal ash, brick (dry)[FILL]	5	R2	MACROCORE	31		0.0	
	6							
	7							
	8							
	9							
R1c (20-26) Brown fine SAND, trace clay, trace silt, trace fine gravel (moist)[FILL]	10						End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.	
11								
12								
13								
14								
15								
16								
17								
18								
19								
R1d (26-48) Black fine SAND, trace silt, trace fine gravel, coal ash, brick, wood, slag (wet)[FILL]	20							
R2a (0-14) Black fine SAND, trace medium to coarse sand, brick (wet)[FILL]								
R2b (14-31) Brown fine SAND, trace silt, trace medium to coarse sand, trace fine gravel (wet)[SP]								

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Project 475 Bay Street and 31 Wave Street			Project No. 170610601		
Location Staten Island, NY			Elevation and Datum 10.25 ft		
Drilling Company AARCO Environmental Services, Corp.			Date Started 5/22/20		Date Finished 5/22/20
Drilling Equipment Geoprobe 7822 DT			Completion Depth 10 ft		Rock Depth NA
Size and Type of Bit 5' Macrocore 2 1/4" diameter			Number of Samples	Disturbed 2	Undisturbed NA
Casing Diameter (in) NA		Casing Depth (ft) NA	Water Level (ft.) First 2	Completion NA	24 HR. NA
Casing Hammer NA	Weight (lbs) NA	Drop (in) NA	Drilling Foreman Ron Dixon		
Sampler 2-inch-diameter acetate liner			Field Engineer Luke McCartney		
Sampler Hammer NA	Weight (lbs) NA	Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
	R1a (0-22) Light brown to tan fine SAND, some medium to coarse sand, some fine gravel, brick, concrete (dry)[FILL]	0	R1	MACROCORE	35		0.0	Collect soil sample SB107_4.5-5.5
		1					0.0	
		2					0.1	
		3					0.0	
		4					0.0	
	R1b (22-23) Gray fine GRAVEL (dry)[FILL] R1c (23-35) Dark gray fine SAND, some silt, trace medium to coarse sand, trace fine gravel, coal ash, coal, brick, glass (wet)[FILL]	5	R2	MACROCORE	32		0.0	
		6					0.0	
		7					0.0	
		8					0.0	
		9					0.0	
R2a (0-12) Dark gray fine SAND, trace medium to coarse sand, trace fine gravel, coal, brick (wet)[FILL]	10					0.0	End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.	
R2b (12-32) Reddish brown fine SAND, some silt, some medium sand, trace clay, trace fine gravel, trace coarse sand (wet)[SP-SM]	11					0.0		
	12					0.0		
	13					0.0		
	14					0.0		
	15					0.0		
	16					0.0		
	17					0.0		
	18					0.0		
	19					0.0		
	20							

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 9.66 ft			
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/22/20		Date Finished 5/22/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth NA	
Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Disturbed NA	
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Water Level (ft.) First ∇ 4.5	
Sampler 2-inch-diameter acetate liner				Completion ∇ NA			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. ∇ NA	
Drilling Foreman Ron Dixon				Field Engineer Luke McCartney			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)		
	R1a (0-19) Reddish brown fine SAND, trace silt, trace fine gravel (moist)[FILL]	0	R1	MACROCORE	48			0.0	
		1						0.0	
		2						0.0	
		3						0.0	
		4						0.0	
		R1d (46-48) Olive brown to olive fine SAND, some clay, trace fine gravel (moist)[FILL]	5	R2	MACROCORE	27			0.0
		6	0.0						
		7	0.0						
		8	0.0						
		9	0.0						
	R2a (0-19) Light gray to dark gray fine SAND, trace clay, trace silt, trace fine gravel, coal ash, coal, glass (wet)[FILL]	10						0.0	
	R2b (19-27) Reddish brown fine SAND, trace silt, trace medium to coarse sand, trace fine gravel (wet)[SP]	11						0.0	
	12						0.0		
	13						0.0		
	14						0.0		
	15						0.0		
	16						0.0		
	17						0.0		
	18						0.0		
	19						0.0		
	20						0.0		

\\LANGAN.COM\DATA\ANYC\DATA6170610601\PROJECT DATA_DISCIPLINE\ENVIRONMENTAL\GINTLOGS\170610601 ENTERPRISE.GPJ ... 7/2/2020 12:37:08 PM ... Report: Log - LANGAN

Collect soil samples
SB108_7-9.5 and
SODUP04_052220

End of boring at 10 feet bgs.
Borehole was backfilled with
clean soil cuttings to surface
and patched with asphalt.

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																																
Location Staten Island, NY				Elevation and Datum 9.65 ft																																																																																																																
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Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Disturbed NA																																																																																																														
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA																																																																																																														
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Water Level (ft.) First 5																																																																																																														
Sampler 2-inch-diameter acetate liner				Drilling Foreman Ron Dixon																																																																																																																
Sampler Hammer NA				Field Engineer Luke McCartney																																																																																																																
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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																									
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Project					Project No.						
475 Bay Street and 31 Wave Street					170610601						
Location					Elevation and Datum						
Staten Island, NY					10.28 ft NAVD88						
Drilling Company					Date Started			Date Finished			
AARCO Environmental Services, Corp.					4/30/20			4/30/20			
Drilling Equipment					Completion Depth			Rock Depth			
Geoprobe 7822 DT					16 ft			NA			
Size and Type of Bit					Number of Samples		Disturbed		Undisturbed	Core	
4' Macrocore 2 1/4" diameter							4		NA	NA	
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		Completion		24 HR.	
NA				NA		First ▽ 5.5		Completion ▼ NA		NA ▼ NA	
Casing Hammer			Weight (lbs)		Drop (in)		Drilling Foreman				
NA			NA		NA		Thomas Harer				
Sampler					Field Engineer						
2-inch-diameter acetate liner					Deirdre Casey						
Sampler Hammer			Weight (lbs)		Drop (in)						
NA			NA		NA						
MATERIAL SYMBOL	Sample Description				Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
						Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	
	R1a (0-8) Black coarse angular GRAVEL (moist)[ASPHALT]				0						Collect soil sample SB11_0-2
	R1b (8-12) Brown fine to coarse SAND, some fine gravel, trace silt, Brick? (moist)[FILL]				1					0.0	
	R1c (12-17) Black coarse angular GRAVEL, some fine gravel (moist)[ASPHALT]				2	R1	MACROCORE	36		0.0	
	R1d (17-36) Brown to dark gray fine SAND, trace wood, trace slag, trace silt, trace fine gravel (moist)[FILL]				3					0.0	
					4					0.0	
	R2a (0-11) Brown fine to coarse SAND, some fine gravel, trace silt, Brick? (moist)[FILL]				5					0.0	Collect soil sample SB11_10-12
	R2b (11-26) Orangish brown to mottled tan fine SAND, trace fine gravel (moist)[FILL]				6	R2	MACROCORE	34		0.0	
	R2c (26-34) Brown fine SAND, some wood, trace silt (wet)[FILL]				7					0.0	
					8					0.0	
					9						
	R3a (0-6) Brown fine SAND, some wood, trace silt (wet)[FILL]				10	R3	MACROCORE	24.5		0.0	Collect soil sample SB11_14-16
	R3b (6-14) Dark brown sandy SILT, some wood, trace coarse gravel (wet)[FILL]				11					0.0	
	R3c (14-24.5) Dark grayish brown fine SAND, some silt, trace coquina (wet)[SP-SC]				12					0.0	
					13						Collect soil sample SB11_14-16
	R4 (0-23) Dark grayish brown fine SAND, some silt, trace coquina (wet)[SP-SC]				14	R4	MACROCORE	23		0.0	
					15					0.0	
					16					0.0	
					17						Refusal at 16 feet bgs. Installed MW11 screened from 1 to 11 feet bgs. Installed SV11 at 3 feet bgs. See construction logs for details.
					18						
					19						
					20						

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																									
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Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth NA																																																																							
Size and Type of Bit 5' Macrocore 2 1/4" diameter				Number of Samples 2		Disturbed NA																																																																							
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA																																																																							
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Water Level (ft.) First 5																																																																							
Sampler 2-inch-diameter acetate liner				Drilling Foreman Ron Dixon																																																																									
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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																		
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Sampler 2-inch-diameter acetate liner				Drilling Foreman Ron Dixon																																																																																										
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<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="5">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="5"></td> <td rowspan="5">R1 (0-28) Tan to dark brown fine SAND, trace silt, trace fine gravel, concrete, coal ash, brick (moist)[FILL]</td> <td>0</td> <td rowspan="5">R1</td> <td rowspan="5">MACROCORE</td> <td rowspan="5">28</td> <td rowspan="5"></td> <td rowspan="5"></td> <td>0.0</td> <td rowspan="5"></td> </tr> <tr><td>1</td><td>0.0</td></tr> <tr><td>2</td><td>0.0</td></tr> <tr><td>3</td><td>0.0</td></tr> <tr><td>4</td><td>0.0</td></tr> <tr> <td rowspan="3"></td> <td rowspan="3">R2a (0-12) Brown to dark gray fine SAND, trace silt, trace fine gravel, coal ash (wet)[FILL]</td> <td>5</td> <td rowspan="3">R2</td> <td rowspan="3">MACROCORE</td> <td rowspan="3">23</td> <td rowspan="3"></td> <td rowspan="3"></td> <td>0.0</td> <td rowspan="3">Collect soil sample SB111_8-9</td> </tr> <tr><td>6</td><td>0.0</td></tr> <tr><td>7</td><td>0.0</td></tr> <tr> <td rowspan="2"></td> <td rowspan="2">R2b (12-23) Reddish brown fine SAND, some silt, trace clay, trace gravel (wet)[SP-SM]</td> <td>8</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>0.0</td> <td rowspan="2">End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.</td> </tr> <tr><td>9</td><td>0.0</td></tr> <tr> <td rowspan="10"></td> <td rowspan="10"></td> <td>10</td> <td rowspan="10"></td> <td rowspan="10"></td> <td rowspan="10"></td> <td rowspan="10"></td> <td rowspan="10"></td> <td rowspan="10"></td> <td rowspan="10"></td> </tr> <tr><td>11</td></tr> <tr><td>12</td></tr> <tr><td>13</td></tr> <tr><td>14</td></tr> <tr><td>15</td></tr> <tr><td>16</td></tr> <tr><td>17</td></tr> <tr><td>18</td></tr> <tr><td>19</td></tr> <tr> <td></td> <td></td> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)		R1 (0-28) Tan to dark brown fine SAND, trace silt, trace fine gravel, concrete, coal ash, brick (moist)[FILL]	0	R1	MACROCORE	28			0.0		1	0.0	2	0.0	3	0.0	4	0.0		R2a (0-12) Brown to dark gray fine SAND, trace silt, trace fine gravel, coal ash (wet)[FILL]	5	R2	MACROCORE	23			0.0	Collect soil sample SB111_8-9	6	0.0	7	0.0		R2b (12-23) Reddish brown fine SAND, some silt, trace clay, trace gravel (wet)[SP-SM]	8						0.0	End of boring at 10 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.	9	0.0			10								11	12	13	14	15	16	17	18	19			20							
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																			
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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.29 ff			
Drilling Company AARCO Environmental Services, Corp.				Date Started 4/30/20		Date Finished 4/30/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples	Disturbed 5	Undisturbed NA	Core NA
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ▽ 4	Completion ▼ NA	24 HR. ▼ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Thomas Harer	
Sampler 2-inch-diameter acetate liner				Field Engineer			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA		Deirdre Casey	

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	BLU6in		
	R1a (0-8) Black angular GRAVEL (moist)[ASPHALT]	0						0.0	
	R1b (8-39) Brown to black fine to coarse SAND, fine gravel, coal, coal ash, brick, silt (moist)[FILL]	1						0.0	
		2	R1	MACROCORE	39			0.0	
		3						0.0	
		4						0.0	Coal ash lense 3 to 3.25 feet bgs
	R2a (0-4) Black fine to coarse SAND, some fine gravel, trace coal, trace coal ash, trace brick, trace silt (moist)[FILL] R2b (4-11) Dark brown sandy SILT, trace clay (wet)[FILL] R2c (11-22) Reddish brown f-c SAND, trace fine gravel (wet)[FILL] R2d (22-42) Brown silty fine SAND, some fine gravel, trace clay (wet)[FILL]	5						0.0	
		6	R2	MACROCORE	42			0.0	
		7						0.0	
		8						0.0	
		9						0.0	
		10	R3	MACROCORE	27			0.0	
	R3a (0-9) Reddish brown SILT, trace silt, trace c-f gravel (wet)[SP-SC] R3b (9-27) Reddish brown SILT, trace silt, trace c-f gravel (wet)[SP-SC]	11						0.0	
		12						0.0	
		13						0.0	
	R4a (0-12) Reddish brown SILT, some silt, trace c-f gravel (wet)[SP-SC] R4b (12-28) Reddish brown SILT, some silt, trace c-f gravel (wet)[SP-SC]	14	R4	MACROCORE	28			0.0	
		15						0.0	
		16						0.0	
		17						0.0	
	R5 (0-30) Reddish brown SILT, some silt, trace c-f gravel (wet)[SP-SC]	18	R5	MACROCORE	30			0.0	
		19						0.0	
		20						0.0	Collect soil sample SB12_18-20 End of boring at 12 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.66 ft NAVD88			
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/4/20		Date Finished 5/4/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples	Disturbed 5	Undisturbed NA	Core NA
Casing Diameter (in) NA			Casing Depth (ft) NA	Water Level (ft.) First ▽ 4.3	Completion ▼ NA	24 HR. ▽ NA	
Casing Hammer NA		Weight (lbs) NA	Drop (in) NA	Drilling Foreman Thomas Harer			
Sampler 2-inch-diameter acetate liner				Field Engineer			
Sampler Hammer NA		Weight (lbs) NA	Drop (in) NA	Ethan Smith			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)	
	R1a (0-3) Asphalt	0	R1	MACROCORE	48		0.0	Collect soil sample SB13_0-2
	R1b (3-14) Light brown gravelly coarse SAND, trace silt, brick fragments, concrete fragments (dry)[FILL]	1						
	R1c (14-28) Tannish brown fine SAND, trace silt, trace fine gravel, brick fragments (dry)[FILL]	2						
	R1d (28-48) Dark brown to black medium-fine SAND, some fine gravel, trace coal ash, coal fragments, slag fragments (moist)[FILL]	3						
		4	R2	MACROCORE	30		0.0	Collect soil sample SB13_6-8
	R2a (0-5) Dark brown to black medium-fine SAND, some fine gravel, trace coal ash, coal fragments, slag fragments (moist)[FILL]	5						
	R2b (5-7) Wood Fragments	6						
	R2c (7-17) Gray to black fine SAND, trace silt, trace sand, trace gravel (wet)[SP]	7						
	R2d (17-30) Reddish brown fine SAND, some silt, trace fine sand, trace fine gravel (wet)[SP-SC]	8	R3	MACROCORE	24		0.0	
		9						
	R3 (0-24) Reddish brown fine SAND, some silt, trace fine sand, trace fine gravel (wet)[SP-SC]	10						
		11						
		12	R4	MACROCORE	25		0.0	
		13						
	R4a (0-4) Light gray to reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]	14						
	R4b (4-25) Dark gray to black fine SAND, some silt, trace fine gravel, clay lenses (wet)[SP-SC]	15						
		16	R5	MACROCORE	36		0.0	Collect soil sample SB13_18-20 End of boring at 20 feet bgs. Installed MW-13 screened from 3 to 13 feet bgs. Installed SV-13 at 3 feet bgs. See soil vapor and monitoring well logs for details.
		17						
	R5a (0-25) Black to gray fine SAND, some medium sand, trace clay, trace silt (wet)[SW]	18						
		19						
	R5b (25-36) Light gray to gray silty fine SAND, trace fine gravel (wet)[SP-SC]	20						

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.21 ft			
Drilling Company AARCO Environmental Services, Corp.				Date Started 5/6/20		Date Finished 5/6/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples	Disturbed 5	Undisturbed NA	Core NA
Casing Diameter (in) NA			Casing Depth (ft) NA	Water Level (ft.) First ▽ 4.8	Completion ▼ NA	24 HR. ▽ NA	
Casing Hammer NA		Weight (lbs) NA	Drop (in) NA	Drilling Foreman Thomas Harer			
Sampler 2-inch-diameter acetate liner				Field Engineer			
Sampler Hammer NA		Weight (lbs) NA	Drop (in) NA	Ethan Smith			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in	PID Reading (ppm)	
	R1a (0-10) Light brown to black gravelly medium SAND, some coarse sand, trace fine gravel, brick fragments, concrete fragments, wood fragments, glass fragments (dry)[FILL] R1b (10-36) Dark brown to orangish red medium SAND, trace coal ash, trace fine gravel, coal fragments, slag fragments, brick fragments, Incinerated material (dry)[FILL]	0	R1	MACROCORE	38		0.0	Collect soil sample SB14_0-2
		1					0.0	
		2					0.0	
		3					0.0	
		4					0.0	
	R1c (36-38) Light red to orangish red medium SAND, trace coal ash, slag fragments, Incinerated material (moist)[FILL]	5	R2	MACROCORE	32		0.0	Collect soil sample SB14_6-8
		6					0.0	
		7					0.0	
		8					0.0	
		9					0.0	
	R2a (0-7) Black to dark brown medium SAND, some fine gravel, trace silt, slag fragments (moist)[FILL] R2b (7-20) Light gray fine SAND, some silt, trace clay, trace fine gravel (wet)[SP-SC] R2c (20-32) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]	10	R3	MACROCORE	30		0.0	
		11					0.0	
		12					0.0	
		13					0.0	
		14					0.0	
	R3 (0-30) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC]	15	R4	MACROCORE	28		0.0	
		16					0.0	
		17					0.0	
		18					0.0	
		19					0.0	
	R4a (0-4) Reddish brown silty fine SAND, trace medium sand, trace fine gravel (wet)[SP-SC] R4b (4-28) Reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]	20	R5	MACROCORE	48		0.0	Collect soil sample SB14_18-20 End of boring at 20 feet bgs. Borehole was backfilled with clean soil cuttings to surface and patched with asphalt.
							0.0	
							0.0	
							0.0	
							0.0	
	R5a (0-28) Reddish brown fine SAND, some silt, trace fine gravel (wet)[SP-SC]							
	R5b (28-48) Light gray to dark gray silty fine SAND, trace fine gravel, clay lenses, wood fragments (wet)[SP-SC]							

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Project				Project No.				
475 Bay Street and 31 Wave Street				170610601				
Location				Elevation and Datum				
Staten Island, NY				10.14 ft				
Drilling Company				Date Started		Date Finished		
AARCO Environmental Services, Corp.				5/4/20		5/4/20		
Drilling Equipment				Completion Depth		Rock Depth		
Geoprobe 7822 DT				20 ft		NA		
Size and Type of Bit				Number of Samples	Disturbed	Undisturbed	Core	
4' Macrocore 2 1/4" diameter					5	NA	NA	
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)	First	Completion	24 HR.	
NA			NA		4.8	NA	NA	
Casing Hammer		Weight (lbs)		Drop (in)	Drilling Foreman			
NA		NA		NA	Thomas Harer			
Sampler				Field Engineer				
2-inch-diameter acetate liner								
Sampler Hammer		Weight (lbs)		Drop (in)	Ethan Smith			
NA		NA		NA				

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)	
	R1a (0-3) Black fine GRAVEL (dry)[ASPHALT]	0						
	R1b (3-10) Light brown gravelly medium SAND (dry)[FILL]	1					0.0	
	R1c (10-23) Dark grey to black medium to fine SAND, trace fine gravel, slag fragments, coal fragments (dry)[FILL]	2					0.0	
	R1d (23-40) Light gray fine SAND, some fine gravel, trace clay, brick fragments (moist)[FILL]	3					0.0	Collect soil sample SB15_0-2
	R2a (0-6) Light gray fine SAND, some fine gravel, trace clay, brick fragments (moist)[FILL]	4					0.0	
	R2b (6-10) Dark gray fine SAND, trace coarse sand, wood fragments (moist)[FILL]	5					0.0	Collect soil sample SB15_5-7
	R2c (10-33) Gray fine SAND, trace silt, trace fine gravel (wet)[SP]	6					0.0	
	R2d (33-48) Light gray to reddish brown fine SAND, some clay, trace fine gravel (wet)[SP]	7					0.0	
	R3 (0-36) Light gray to reddish brown fine SAND, some clay, trace fine gravel (wet)[SP]	8					0.0	
		9					0.0	
		10					0.0	
		11					0.0	
	R4a (0-15) Reddish brown medium SAND, trace silt, trace coarse sand, trace fine gravel (wet)[SP]	12					0.0	
	R4b (15-28) Light brown to brown fine SAND, trace clay, trace fine gravel (wet)[SP]	13					0.0	
	R4c (28-32) Light brown medium SAND, trace clay, trace fine sand, trace fine gravel (wet)[SP]	14					0.0	
	R4d (32-48) Light brown to black clayey fine SAND, trace fine sand, trace fine gravel (wet)[SP-SC]	15					0.0	
		16					0.0	
		17					0.0	Collect soil sample SB15_18-20
		18					0.0	End of boring at 20 feet bgs. Borehole was backfilled with soil cuttings to surface grade and patched with asphalt. Installed SV15 at 3 feet bgs. See soil vapor logs for details.
		19					0.0	
		20					0.0	

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum 10.24 ft NAVD88			
Drilling Company AARCO Environmental Services, Corp.				Date Started 4/30/20		Date Finished 4/30/20	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth NA	
Size and Type of Bit 4' Macrocore 2 1/4" diameter				Number of Samples 5		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 4		Completion ∇ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Thomas Harer	
Sampler 2-inch-diameter acetate liner				Field Engineer Deirdre Casey			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)	
	R1a (0-3) Black coarse angular GRAVEL (moist)[ASPHALT]	0	R1	MACROCORE	48			0.0
	R1b (3-14) Light brown gravelly medium SAND, trace silt, brick fragments, coal fragments, concrete fragments (dry)[FILL]	1						0.0
	R1c (14-28) Tannish brown fine SAND, trace silt, trace fine gravel, brick fragments (dry)[FILL]	2						0.0
	R1d (28-48) Dark brown to black medium to fine SAND, trace fine gravel, coal fragments, slag fragments (moist)[FILL]	3						0.0
	R2a (0-5) Reddish brown medium SAND, trace fine sand, trace fine gravel (wet)[FILL]	4	R2	MACROCORE	30			0.0
	R2b (5-7) Dark brown to black medium to fine SAND, trace fine gravel, coal fragments, slag fragments (moist)[FILL]	5						0.0
	R2c (7-17) Brown PEAT (wet)[WOOD]	6						0.0
	R2d (17-30) Gray to black fine SAND, some medium sand, trace clay, trace fine gravel (wet)[FILL]	7						0.0
	R3 (0-24) Reddish brown medium SAND, trace fine sand, trace fine gravel (wet)[SP]	8	R3	MACROCORE	24			0.0
		9						0.0
		10						0.0
		11						0.0
	R4a (0-4) Light gray to reddish brown fine SAND, trace clay, trace fine gravel (wet)[SP]	12	R4	MACROCORE	25			0.0
	R4b (4-25) Black to gray fine SAND, some silt, trace gravel, trace organics, clay lenses (wet)[SP]	13						0.0
		14						0.0
		15						0.0
	R5a (0-25) Black to gray fine SAND, some clay, trace fine gravel (wet)[SP-SC]	16	R5	MACROCORE	36			0.0
		17						0.0
		18						0.0
		19						0.0
	R5b (25-36) Light gray to dark gray clayey fine SAND, trace fine gravel (wet)[SP-SC]	20						0.0

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/14/21		Date Finished 6/14/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed 4	
Casing Diameter (in) NA				Casing Depth (ft) NA		Undisturbed NA	
Casing Hammer NA				Weight (lbs) NA		Drop (in) NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Michael Au			
Weight (lbs) NA				Drop (in) NA			

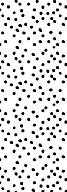
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	PID Reading (ppm)	
[Pattern]	M-1A (0-6") Gray fine GRAVEL, some medium sand (dry)[FILL]	0	M-1A	MC	48/60	0.0	Sample SB01R_GRAB03_0-1 collected.
	M-1B (6-12") Brown medium-coarse SAND, some fine gravel, concrete (dry)[FILL]	1	M-1B			0.0	
	M-1C (12-18") [WOOD]	2	M-1C			0.0	
	M-1D (18-30") Dark brown medium SAND, trace fine gravel (dry)[FILL]	3	M-1D			0.0	
	M-1E (30-36") Light gray medium-coarse SAND, trace fine gravel (dry)[FILL]	4	M-1E			0.0	
	M-1F (36-42") Orangish-brown fine SAND, trace concrete (moist)[FILL]	5	M-1F			0.0	
	M-1G (42-48") Black coarse-medium SAND, trace fine gravel (wet)[FILL]	6	M-1G			0.0	
	M-2A (0-6") Dark brown fine SAND (wet)[FILL]	7	M-2A			0.0	
	M-2B (6-18") Dark brown medium-coarse SAND (wet)	8	M-2B			0.0	
	M-2C (18-48") Dark brown silty fine SAND, some coarse sand (wet)	9	M-2C			0.0	
[Pattern]	M-3A (0-60") Light brown fine SAND, trace fine gravel (wet)	10	MC	60/60	0.0	Sample SB01R_GRAB03_3-4 collected. Sample SB01R_GRAB03_4-5 collected. Sample SB01R_GRAB03_5-6 collected. Sample SB01R_GRAB03_6-7 collected. Sample SB01R_8-9 collected. Sample SB01R_GRAB03_9-10 collected.	
	M-4A (0-24") Light brown fine SAND, trace fine gravel (wet)	11			M-3A		0.0
		12			M-3A		0.0
		13			M-3A		0.0
		14			M-3A		0.0
		15			M-3A		0.0
		16			M-3A		0.0
		17			M-3A		0.0
		18			M-3A		0.0
	M-4B (24"-30") Dark gray CLAY, trace silt (moist)	19			M-4B		0.0
[Pattern]		20			0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	
		21			0.0		
		22			0.0		

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																																																											
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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																																																				
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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/18/21		Date Finished 6/18/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 21 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples	Disturbed 5	Undisturbed NA	Core NA
Casing Diameter (in) NA			Casing Depth (ft) NA	Water Level (ft.) First ▽ 3	Completion ▼ NA	24 HR. ▼ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Ron Dixon	
Sampler 5' Macrocore 2" diameter				Field Engineer Tyler Zorn			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BLU/in	PID Reading (ppm)	
	M-1A (0-36") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0					0.0	Sample SB04R_GRAB14_0-1 collected. Sample SB04R_GRAB14_1-2 collected.
		1					0.0	
		2	M-1A	MC	54/60		0.0	
		3					0.0	
	M-1B (36-54") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick (moist)[FILL]	4	M-1B				0.0	
		5					0.0	
	M-2A (0-8") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick (wet)[FILL]	6	M-2A				0.0	
	M-2B (8-50") Gray to dark gray fine SAND, brick, some medium sand, trace fine gravel, brick, glass, wood (wet)[FILL]	7					0.0	
		8	M-2B	MC	50/60		0.0	
		9					0.0	
	M-3A (0-12") Brown fine SAND, some medium sand, trace silt (wet)[FILL]	10	M-3A				0.0	Sample WC14_GRAB_8-9 collected. Sample SB04R_GRAB14_9-10 collected. Sample SB04R_11-12 collected.
	M-3B (12-48") Dark brown to gray fine SAND, some silt, trace fine sand (wet)[FILL]	11					0.0	
		12					0.0	
		13	M-3B	MC	48/60		0.0	
		14					0.0	
	M-4A (0-12") Dark brown to gray fine SAND, some silt, trace fine sand, wood (wet)[FILL]	15	M-4A				0.0	
	M-4B (12-24") Dark brown to gray fine SAND, some silt, trace fine sand (wet)	16					0.0	
		17					0.0	
		18	M-4B	MC	24/60		0.0	
		19					0.0	
	M-5A (0-12") Dark brown to gray fine SAND, some silt, trace fine sand (wet)	20	M-5A	MC	12/12		0.0	Sample SB04R_20-21 collected. E.O.B. at 21' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		21					0.0	
		22					0.0	
		23					0.0	
		24					0.0	
		25					0.0	

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(in)</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="10">[Cross-hatched pattern]</td> <td rowspan="10">M-1A (0-30") Reddish-brown to light gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]</td> <td>0</td> <td rowspan="10">M-1A</td> <td rowspan="10">MC</td> <td rowspan="10">30/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_GRAB14_2-3 collected.</td> </tr> <tr><td>1</td><td>0.0</td></tr> <tr><td>2</td><td>0.0</td></tr> <tr><td>3</td><td>0.1</td></tr> <tr><td>4</td><td>0.1</td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td></td></tr> <tr><td>7</td><td></td></tr> <tr><td>8</td><td></td></tr> <tr><td>9</td><td></td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-2A (0-24") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (wet)[FILL]</td> <td>10</td> <td rowspan="10">M-2A</td> <td rowspan="10">MC</td> <td rowspan="10">36/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_GRAB14_3-4 collected.</td> </tr> <tr><td>11</td><td>0.0</td></tr> <tr><td>12</td><td>0.1</td></tr> <tr><td>13</td><td>0.1</td></tr> <tr><td>14</td><td>0.2</td></tr> <tr><td>15</td><td>0.0</td></tr> <tr><td>16</td><td>0.0</td></tr> <tr><td>17</td><td>0.0</td></tr> <tr><td>18</td><td>0.0</td></tr> <tr><td>19</td><td>0.0</td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-2B (24-36") Reddish brown to dark gray fine SAND, some medium sand, trace silt (wet)</td> <td>20</td> <td rowspan="10">M-2B</td> <td rowspan="10">MC</td> <td rowspan="10">60/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_9-10 collected.</td> </tr> <tr><td>21</td><td>0.0</td></tr> <tr><td>22</td><td>0.0</td></tr> <tr><td>23</td><td>0.0</td></tr> <tr><td>24</td><td>0.0</td></tr> <tr><td>25</td><td>0.0</td></tr> <tr><td>26</td><td>0.0</td></tr> <tr><td>27</td><td>0.0</td></tr> <tr><td>28</td><td>0.0</td></tr> <tr><td>29</td><td>0.0</td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)</td> <td>30</td> <td rowspan="10">M-3A</td> <td rowspan="10">MC</td> <td rowspan="10">30/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_10-11 collected.</td> </tr> <tr><td>31</td><td>0.0</td></tr> <tr><td>32</td><td>0.0</td></tr> <tr><td>33</td><td>0.0</td></tr> <tr><td>34</td><td>0.0</td></tr> <tr><td>35</td><td>0.0</td></tr> <tr><td>36</td><td>0.0</td></tr> <tr><td>37</td><td>0.0</td></tr> <tr><td>38</td><td>0.0</td></tr> <tr><td>39</td><td>0.0</td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-4A (0-12") Dark brown fine SAND, trace silt, trace medium sand (wet)</td> <td>40</td> <td rowspan="10">M-4A</td> <td rowspan="10">MC</td> <td rowspan="10">30/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_11-12 collected.</td> </tr> <tr><td>41</td><td>0.0</td></tr> <tr><td>42</td><td>0.0</td></tr> <tr><td>43</td><td>0.0</td></tr> <tr><td>44</td><td>0.0</td></tr> <tr><td>45</td><td>0.0</td></tr> <tr><td>46</td><td>0.0</td></tr> <tr><td>47</td><td>0.0</td></tr> <tr><td>48</td><td>0.0</td></tr> <tr><td>49</td><td>0.0</td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-4B (12-30") Dark gray fine SAND, some silt (wet)</td> <td>50</td> <td rowspan="10">M-4B</td> <td rowspan="10">MC</td> <td rowspan="10">30/60</td> <td>0.0</td> <td rowspan="10">Sample SB06R_18-20 collected.</td> </tr> <tr><td>51</td><td>0.0</td></tr> <tr><td>52</td><td>0.0</td></tr> <tr><td>53</td><td>0.0</td></tr> <tr><td>54</td><td>0.0</td></tr> <tr><td>55</td><td>0.0</td></tr> <tr><td>56</td><td>0.0</td></tr> <tr><td>57</td><td>0.0</td></tr> <tr><td>58</td><td>0.0</td></tr> <tr><td>59</td><td>0.0</td></tr> <tr> <td rowspan="10">[Dotted pattern]</td> <td rowspan="10">M-4B (12-30") Dark gray fine SAND, some silt (wet)</td> <td>60</td> <td rowspan="10">M-4B</td> <td rowspan="10">MC</td> <td rowspan="10">30/60</td> <td>0.0</td> <td rowspan="10">E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.</td> </tr> <tr><td>61</td><td>0.0</td></tr> <tr><td>62</td><td>0.0</td></tr> <tr><td>63</td><td>0.0</td></tr> <tr><td>64</td><td>0.0</td></tr> <tr><td>65</td><td>0.0</td></tr> <tr><td>66</td><td>0.0</td></tr> <tr><td>67</td><td>0.0</td></tr> <tr><td>68</td><td>0.0</td></tr> <tr><td>69</td><td>0.0</td></tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	PID Reading (ppm)	[Cross-hatched pattern]	M-1A (0-30") Reddish-brown to light gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	30/60	0.0	Sample SB06R_GRAB14_2-3 collected.	1	0.0	2	0.0	3	0.1	4	0.1	5		6		7		8		9		[Dotted pattern]	M-2A (0-24") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (wet)[FILL]	10	M-2A	MC	36/60	0.0	Sample SB06R_GRAB14_3-4 collected.	11	0.0	12	0.1	13	0.1	14	0.2	15	0.0	16	0.0	17	0.0	18	0.0	19	0.0	[Dotted pattern]	M-2B (24-36") Reddish brown to dark gray fine SAND, some medium sand, trace silt (wet)	20	M-2B	MC	60/60	0.0	Sample SB06R_9-10 collected.	21	0.0	22	0.0	23	0.0	24	0.0	25	0.0	26	0.0	27	0.0	28	0.0	29	0.0	[Dotted pattern]	M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)	30	M-3A	MC	30/60	0.0	Sample SB06R_10-11 collected.	31	0.0	32	0.0	33	0.0	34	0.0	35	0.0	36	0.0	37	0.0	38	0.0	39	0.0	[Dotted pattern]	M-4A (0-12") Dark brown fine SAND, trace silt, trace medium sand (wet)	40	M-4A	MC	30/60	0.0	Sample SB06R_11-12 collected.	41	0.0	42	0.0	43	0.0	44	0.0	45	0.0	46	0.0	47	0.0	48	0.0	49	0.0	[Dotted pattern]	M-4B (12-30") Dark gray fine SAND, some silt (wet)	50	M-4B	MC	30/60	0.0	Sample SB06R_18-20 collected.	51	0.0	52	0.0	53	0.0	54	0.0	55	0.0	56	0.0	57	0.0	58	0.0	59	0.0	[Dotted pattern]	M-4B (12-30") Dark gray fine SAND, some silt (wet)	60	M-4B	MC	30/60	0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	61	0.0	62	0.0	63	0.0	64	0.0	65	0.0	66	0.0	67	0.0	68	0.0	69	0.0
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[Dotted pattern]	M-4B (12-30") Dark gray fine SAND, some silt (wet)	60	M-4B	MC	30/60	0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.																																																																																																																																																																																																		
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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/17/21		Date Finished 6/17/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 5		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-20") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0					3.6	
		1	M-1A				15.9	
		2					28.4	
		3	MC	20/60		19.2		
		4						
	M-2A (0-18") Brown fine SAND, some medium sand, trace fine gravel (wet)	5						Sample SB07R_7-8 collected.
		6						
		7	M-2A					
		8	MC	18/60				
		9					8.1	
	M-3A (0-30") Brown fine SAND, trace silt, trace medium sand (wet)	10					5.9	
		11					5.6	
		12	M-3A				5.6	
		13	MC	30/60				
		14					0.0	
	M-4A (0-30") Brown fine SAND, trace silt, trace medium sand (wet)	15					0.0	
		16					0.0	
		17	M-4A				0.0	
		18	MC	60/60				
		19					0.0	
	M-4B (30-60") Gray to dark gray SILT, trace clay, trace fine sand (wet)	20					0.0	Sample SB07R_18-20 collected.
		21	M-4B				0.0	
		22					0.0	

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/22/21		Date Finished 6/22/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed 4	
Casing Diameter (in) NA				Casing Depth (ft) NA		Undisturbed NA	
Casing Hammer NA				Weight (lbs) NA		Drop (in) NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Weight (lbs) NA		Drop (in) NA	
				Field Engineer Michael Au			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)		
	M-1A (0-6") 6-inch-thick Concrete Slab	0	M-1A				0.0		
	M-1B (6-12") Brown medium SAND, some fine sand, concrete, brick (dry)[FILL]	1				0.0			
		2				0.0			
		3	MC	12/60					
		4	M-1B						
		M-2A (0-6") Brown medium SAND, some fine sand, concrete (moist)[FILL]	5	M-2A					
		M-2B (6-36") Brown medium SAND, some fine sand, trace fine gravel, brick (moist)[FILL]	6						
			7				0.0		
			8	MC	36/60		0.0		
			9	M-2B			0.0		
		M-3A (0-36") Brown medium SAND, some coarse sand, trace fine gravel, brick (wet)[FILL]	10				0.0		
	11								
		12	M-3A	MC	36/60		0.0		
		13				0.0			
		14				0.0			
		15				0.0			
	M-4A (0-48") Brown silty fine SAND, trace fine gravel, (wet)	15				0.0			
		16				0.0			
		17				0.0			
		18	MC	60/60		0.0			
		19	M-4A			0.0			
		20				0.0			
	M-4B (48-60") Dark gray silty fine SAND, trace fine gravel (moist)	21				0.0			
		22				0.0			

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Project						Project No.							
475 Bay Street and 31 Wave Street						170610601							
Location						Elevation and Datum							
Staten Island, NY						NA							
Drilling Company						Date Started				Date Finished			
AARCO Environmental Services, Corp.						6/22/21				6/22/21			
Drilling Equipment						Completion Depth				Rock Depth			
Geoprobe 7822 DT						2 ft							
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core	
2" Direct Push								1		NA		NA	
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.	
NA				NA				NA		NA		NA	
Casing Hammer		Weight (lbs)		Drop (in)		Drilling Foreman							
NA		NA		NA		Ron Dixon							
Sampler						Field Engineer							
5' Macrocore 2" diameter						Michael Au							
Sampler Hammer		Weight (lbs)		Drop (in)									
NA		NA		NA									
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
							Number	Type	Recov. (in)	Penetr. resist BL/in	PID Reading (ppm)		
	M-1A (0-4") 4-inch-thick Concrete Slab					0	M-1A	MC	24/60			0.0	E.O.B. at 2' (Refusal at two locations)
	M-1B (4-24") Light brown fine SAND, trace fine gravel, brick, concrete (dry)[FILL]					1	M-1B						
						2						0.0	
						3							
						4							
						5							
						6							
						7							
						8							
						9							
						10							
						11							
						12							
						13							
						14							
						15							
						16							
						17							
						18							
						19							
						20							
21													
22													

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/18/21		Date Finished 6/18/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 0		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-24") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL]	0					0.1	Sample SB08R_GRAB13_3-4 collected.
		1					0.1	
		2					0.0	
		3	M-1A	MC	24/60		0.0	
		4						
	M-2A (0-36") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel (wet)	5						Sample SB08R_GRAB13_7-8 collected.
		6						
		7					0.0	
		8	M-2A	MC	36/60		0.0	
		9					0.0	
	M-3A (0-60") Brown to dark brown fine SAND, some medium sand, trace silt (wet)	10					0.0	Sample SB08R_10-11 collected. Sample SB08R_11-12 collected. Sample SB08R_I_11-12 collected. Sample SB08R_12-13 collected. Sample SB08R_I_12-13 collected. Sample SB08R_GRAB13_13-14 collected. Sample SB08R_I_13-15 collected. Sample SODUP01_062121 collected. Sample SB08R_I_15-16 collected. Sample SB08R_I_16-17 collected. Sample SB08R_18-20 collected.
		11					0.0	
		12	M-3A	MC	60/60		0.0	
		13					0.0	
		14					0.0	
	M-4A (0-60") Dark brown to dark gray fine SAND, some silt, trace clay (wet)	15					0.0	
		16					0.0	
		17	M-4A	MC	60/60		0.0	
		18					0.0	
		19					0.0	
		20					0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		21						
		22						

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/22/21		Date Finished 6/22/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 25 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed	
				5		NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First		Completion	
				5		NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Ron Dixon	
Sampler 5' Macrocore 2" diameter				Field Engineer Michael Au			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU6in		
[Concrete]	M-1A (0-2") 2-inch-thick Concrete Slab	0	M-1A				0.0	Sample SB08R_N1_11-12 collected. Sample SB08R_N1_12-13 collected. Sample SB08R_N1_13-15 collected. E.O.B. at 25' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
	M-1B (2-8") Reddish-brown fine SAND, brick (dry) [FILL]	2		MC	8/60		0.0	
[Fill]	M-2A (0-18") Brown silty fine SAND, brick (wet) [FILL]	4	M-1B					
		6		MC	18/60		0.0	
		8	M-2A				0.0	
[Fill]	M-3A (0-30") Brown silty fine SAND, trace fine gravel (wet)	10		MC	30/60		0.0	
		12	M-3A				0.0	
		14		MC	0/60		0.0	
[Fill]	M-4A (0-0") No Recovery	16		MC	0/60		0.0	
		18	M-4A				0.0	
		20		MC	0/60		0.0	
[Fill]	M-5A (0-0") No Recovery	22	M-5A				0.0	
		24		MC	0/60		0.0	
		26					0.0	
		28						
		30						

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/22/21		Date Finished 6/22/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 5		Completion ∇ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Ron Dixon	
Sampler 5' Macrocore 2" diameter				Field Engineer Michael Au			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-2") 2-inch-thick Concrete Slab	0	M-1A				0.0	
	M-1B (2-8") Reddish-brown fine SAND, brick (dry) [FILL]	1					0.0	
	M-2A (0-18") Brown silty fine SAND, brick (wet) [FILL]	2						
		3		MC	8/60			
		4	M-1B					
		5						
		6						
		7	M-2A	MC	18/60			
		8						
		9					0.0	
		10					0.0	
		11					0.0	
	M-3A (0-30") Brown silty fine SAND, trace fine gravel (wet)	12	M-3A	MC	30/60		0.0	
		13					0.0	
		14					0.0	
		15					0.0	
		16	M-4A				0.0	
		17					0.0	
		18		MC	24/60		0.0	
		19	M-4B				0.0	
		20					0.0	
		21					0.0	
		22					E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/22/21		Date Finished 6/22/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 25 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 5		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 0.5		Completion ∇ NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. ∇ NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Michael Au			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BLU/in		
	M-1A (0-4") 4-inch-thick Concrete Slab	0	M-1A	MC	24/60		0.0	Sample SB08R_S1_11-12 collected. Sample SB08R_S1_12-13 collected. Sample SB08R_S1_13-15 collected. E.O.B. at 25' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
	M-1B (4-6") Tannish-brown fine SAND, brick, concrete (dry) [FILL]	1	M-1B				0.0	
	M-1C (6-24") Dark brown silty fine SAND, trace fine gravel, brick, concrete (wet) [FILL]	2	M-1C				0.0	
	M-2A (0-6") Gray fine SAND [CONCRETE]	6	M-2A	MC	24/60		0.0	
	M-2B (6-24") Brown silty fine SAND, brick (wet) [FILL]	7	M-2B				0.0	
		8					0.0	
	M-3A (0-36") Brown silty fine SAND, some clay, trace fine gravel (wet)	10	M-3A	MC	36/60		0.0	
		12					0.0	
		14					0.0	
	M-4A (0-0") No Recovery	16	M-4A	MC	0/60		0.0	
		18					0.0	
		20					0.0	
	M-5A (0-0") No Recovery	22	M-5A	MC	0/60		0.0	
		24					0.0	
		26					0.0	
		28						
		30						

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																																																																
Location Staten Island, NY				Elevation and Datum NA																																																																																																																																																
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/22/21		Date Finished 6/22/21																																																																																																																																														
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth																																																																																																																																														
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA																																																																																																																																														
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 0.7		Completion ∇ NA																																																																																																																																														
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. ∇ NA																																																																																																																																														
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon																																																																																																																																																
Sampler Hammer NA				Field Engineer Michael Au																																																																																																																																																
<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="4">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist BLU/in</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="4"></td> <td>M-1A (0-2") 2-inch-thick Concrete Slab</td> <td>0</td> <td>M-1A</td> <td rowspan="4">MC</td> <td rowspan="4">20/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4"></td> </tr> <tr> <td>M-1B (2-8") Reddish-brown medium SAND, some fine sand, trace fine gravel, concrete (dry) [FILL]</td> <td>1</td> <td>M-1B</td> <td>0.0</td> </tr> <tr> <td>M-1C (8-20") Tannish-brown fine SAND, trace fine gravel (wet) [FILL]</td> <td>2</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>3</td> <td></td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-2A (0-10") Brown medium SAND, some fine gravel, concrete (moist) [FILL]</td> <td>4</td> <td>M-1C</td> <td rowspan="4">MC</td> <td rowspan="4">10/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4"></td> </tr> <tr> <td></td> <td>5</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>6</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>7</td> <td></td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-3A (0-24") Brown silty fine SAND, trace fine gravel (wet)</td> <td>8</td> <td>M-2A</td> <td rowspan="4">MC</td> <td rowspan="4">24/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Sample SB08R_W1_11-12 collected.</td> </tr> <tr> <td></td> <td>9</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>10</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>11</td> <td></td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-4A (0-12") Brown silty fine SAND, trace fine gravel (wet)</td> <td>12</td> <td>M-3A</td> <td rowspan="4">MC</td> <td rowspan="4">48/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Sample SB08R_W1_12-13 collected.</td> </tr> <tr> <td></td> <td>13</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>14</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>15</td> <td></td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-4B (12-14") Dark gray silty fine SAND, trace fine gravel (moist)</td> <td>16</td> <td>M-4A</td> <td rowspan="4">MC</td> <td rowspan="4"></td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Sample SB08R_W1_13-15 collected.</td> </tr> <tr> <td>M-4C (14-48") Light gray silty CLAY, (moist)</td> <td>17</td> <td>M-4B</td> <td>0.0</td> </tr> <tr> <td></td> <td>18</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>19</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td></td> <td>20</td> <td>M-4C</td> <td></td> <td></td> <td></td> <td>0.0</td> <td rowspan="3">E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.</td> </tr> <tr> <td></td> <td></td> <td>21</td> <td></td> <td></td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td></td> <td>22</td> <td></td> <td></td> <td></td> <td>0.0</td> </tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist BLU/in	PID Reading (ppm)		M-1A (0-2") 2-inch-thick Concrete Slab	0	M-1A	MC	20/60		0.0		M-1B (2-8") Reddish-brown medium SAND, some fine sand, trace fine gravel, concrete (dry) [FILL]	1	M-1B	0.0	M-1C (8-20") Tannish-brown fine SAND, trace fine gravel (wet) [FILL]	2		0.0		3		0.0		M-2A (0-10") Brown medium SAND, some fine gravel, concrete (moist) [FILL]	4	M-1C	MC	10/60		0.0			5		0.0		6		0.0		7		0.0		M-3A (0-24") Brown silty fine SAND, trace fine gravel (wet)	8	M-2A	MC	24/60		0.0	Sample SB08R_W1_11-12 collected.		9		0.0		10		0.0		11		0.0		M-4A (0-12") Brown silty fine SAND, trace fine gravel (wet)	12	M-3A	MC	48/60		0.0	Sample SB08R_W1_12-13 collected.		13		0.0		14		0.0		15		0.0		M-4B (12-14") Dark gray silty fine SAND, trace fine gravel (moist)	16	M-4A	MC			0.0	Sample SB08R_W1_13-15 collected.	M-4C (14-48") Light gray silty CLAY, (moist)	17	M-4B	0.0		18		0.0		19		0.0			20	M-4C				0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.			21				0.0			22				0.0
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																																																													
			Number	Type	Recov. (in)	Penetr. resist BLU/in		PID Reading (ppm)																																																																																																																																												
	M-1A (0-2") 2-inch-thick Concrete Slab	0	M-1A	MC	20/60		0.0																																																																																																																																													
	M-1B (2-8") Reddish-brown medium SAND, some fine sand, trace fine gravel, concrete (dry) [FILL]	1	M-1B				0.0																																																																																																																																													
	M-1C (8-20") Tannish-brown fine SAND, trace fine gravel (wet) [FILL]	2					0.0																																																																																																																																													
		3					0.0																																																																																																																																													
	M-2A (0-10") Brown medium SAND, some fine gravel, concrete (moist) [FILL]	4	M-1C	MC	10/60		0.0																																																																																																																																													
		5					0.0																																																																																																																																													
		6					0.0																																																																																																																																													
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	M-3A (0-24") Brown silty fine SAND, trace fine gravel (wet)	8	M-2A	MC	24/60		0.0	Sample SB08R_W1_11-12 collected.																																																																																																																																												
		9					0.0																																																																																																																																													
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	M-4A (0-12") Brown silty fine SAND, trace fine gravel (wet)	12	M-3A	MC	48/60		0.0	Sample SB08R_W1_12-13 collected.																																																																																																																																												
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	M-4B (12-14") Dark gray silty fine SAND, trace fine gravel (moist)	16	M-4A	MC			0.0	Sample SB08R_W1_13-15 collected.																																																																																																																																												
	M-4C (14-48") Light gray silty CLAY, (moist)	17	M-4B				0.0																																																																																																																																													
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		21				0.0																																																																																																																																														
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Project				Project No.				
475 Bay Street and 31 Wave Street				170610601				
Location				Elevation and Datum				
Staten Island, NY				NA				
Drilling Company				Date Started		Date Finished		
AARCO Environmental Services, Corp.				6/22/21		6/22/21		
Drilling Equipment				Completion Depth		Rock Depth		
Geoprobe 7822 DT				20 ft				
Size and Type of Bit				Number of Samples	Disturbed	Undisturbed	Core	
2" Direct Push					4	NA	NA	
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)	First	Completion	24 HR.	
NA			NA		5.5	NA	NA	
Casing Hammer		Weight (lbs)		Drop (in)	Drilling Foreman			
NA		NA		NA	Ron Dixon			
Sampler				Field Engineer				
5' Macrocore 2" diameter				Michael Au				
Sampler Hammer		Weight (lbs)		Drop (in)				
NA		NA		NA				

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BL6in	PID Reading (ppm)	
	M-1A (0-2") 2-inch-thick Concrete Slab	0	M-1A				0.0	
	M-1B (2-6") Tannish-brown medium SAND, some fine sand, trace fine gravel, brick (dry) [FILL]	1					1.2	
		2						
		3		MC	6/60			
		4	M-1B					
	M-2A (0-6") Tannish-brown medium SAND, some fine sand, trace fine gravel, brick (dry) [FILL]	5	M-2A					
	M-2B (6-12") Brown medium SAND, some coarse sand, trace fine gravel (wet) [FILL]	6						
		7						
		8		MC	12/60			
		9	M-2B					
	M-3A (0-60") Brown medium SAND, some fine sand, trace fine gravel (wet)	10					0.0	
		11					0.0	
		12					0.0	
		13	M-3C	MC	60/60		0.0	Sample SB08R_W2_11-12 collected.
		14					0.0	Sample MS/MSD-SO04_062221 collected.
	M-4A (0-24") Brown medium SAND, some fine sand, trace fine gravel (wet)	15					0.0	Sample SB08R_W2_12-13 collected.
		16	M-4A				0.0	Sample SB08R_W2_13-15 collected.
		17					0.0	
	M-4B (24-42") Dark gray silty fine SAND (moist)	18	M-4B	MC	60/60		0.0	Sample SB08R_W2_15-16 collected.
		19					0.0	Sample SB08R_W2_16-17 collected.
	M-4C (42-60") Light gray silty CLAY (moist)	20	M-4C				0.0	
		21					0.0	
		22					0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/18/21		Date Finished 6/18/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 0		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-28") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick (wet)[FILL]	0	M-1A	MC	28/60		0.1	Sample SB09R_GRAB13_2-3 collected.
		1					1.4	
		2					2.8	
		3					0.9	
		4					0.6	
	M-2A (0-36") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel (wet)	5	M-2A	MC	36/60		0.4	Sample SB09R_GRAB13_8-9 collected. Sample WC13_GRAB_8-9 collected.
		6					0.4	
		7					0.3	
		8					0.3	
		9					0.1	
		10					0.1	
		11						
		12						
		13					0.0	
		14					0.0	
	M-3A (0-30") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel (wet)	10	M-3A	MC	30/60		0.1	Sample SB09R_10-11 collected. Sample SB09R_11-12 collected. Sample SB09R_12-13 collected. Sample SB09R_GRAB13_12-13 collected. Sample SB09R_13-14 collected.
		11						
		12						
		13						
		14						
	M-4A (0-30") Brown to dark brown fine SAND, trace medium sand (wet)	15	M-4A	MC	60/60		0.0	Sample SB09R_18-20 collected.
		16					0.0	
		17					0.0	
		18					0.0	
		19					0.0	
	M-4B (30-60") Dark gray SILT, some clay, trace fine sand (wet)	20	M-4B				0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		21					0.0	
		22					0.0	

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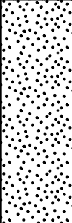
Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/16/21		Date Finished 6/16/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed	
				2		NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First		Completion	
				5		NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Drilling Foreman Ron Dixon	
Sampler 5' Macrocore 2" diameter				Field Engineer Tyler Zorn			
Sampler Hammer NA		Weight (lbs) NA		Drop (in) NA			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-54") Orangish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (moist) [FILL]	0					0.0	Sample SB101R_GRAB07_3-4 collected.
		1					0.0	
		2					0.0	
		3	M-1A	MC	54/60		0.0	
		4					0.1	
		5					0.2	
		6					0.2	
		7					0.4	
		8						
		9						
	M-2A (0-6") Dark brown to dark gray fine SAND, some medium sand, trace silt, brick (wet) [FILL] M-2B (6-36") Brown fine SAND, some silt, trace clay, trace medium sand (wet)	5	M-2A					Sample SB101R_7-8 collected. Sample SB101R_8-9 collected. Sample SB101R_9-10 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		6						
		7					0.0	
		8					0.0	
		9	M-2B	MC	36/60		0.0	
		10					0.0	
		11						
		12						
		13						
		14						
		15						
		16						
		17						
18								
19								
20								
21								
22								

Project						Project No.											
475 Bay Street and 31 Wave Street						170610601											
Location						Elevation and Datum											
Staten Island, NY						NA											
Drilling Company						Date Started			Date Finished								
AARCO Environmental Services, Corp.						6/15/21			6/15/21								
Drilling Equipment						Completion Depth			Rock Depth								
Geoprobe 7822 DT						15 ft											
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core					
2" Direct Push								3		NA		NA					
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.					
NA				NA		∇		5		$\blacktriangledown$		$\blacktriangledown$					
Casing Hammer			Weight (lbs)		Drop (in)		Drilling Foreman										
NA			NA		NA		Ron Dixon										
Sampler						Field Engineer											
5' Macrocore 2" diameter						Michael Au											
Sampler Hammer			Weight (lbs)		Drop (in)												
NA			NA		NA												
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)					
							Number	Type	Recov. (in)	Penetr. resist. BU/in	PID Reading (ppm)						
	M-1A (0-12") Tannish-brown medium SAND, trace fine gravel, brick, concrete (dry)[FILL] M-1B (12-36") Black fine SAND, some medium sand, brick (dry)[FILL] M-1C (36-42") Brown fine SAND, some mediu sand, wood (dry)[FILL] M-2A (0-6") Dark brown fine SAND, some silt, wood (wet)[FILL] M-2B (6-24") Dark brown silty fine SAND, some clay, brick (wet)[FILL]					0	M-1A		42/60		0.0	Sample SB103R_GRAB06_0-1 collected.					
						1											
						2	M-1B						MC				
						3											
						4	M-1C										
						5											
						6	M-2A							33/60		0.0	Sample SB103R_GRAB06_6-7 collected. Sample SB103R_GRAB06_7-8 collected. Sample SB103R_7-8 collected. Sample SB103R_GRAB06_8-9 collected. Sample SB103R_8-9 collected. Sample SB103R_GRAB06_9-10 collected. Sample SB103R_9-10 collected.
						7											
						8	M-2B										
						9											
10	M-2C																
11																	
12	M-3A		48/60		0.0												
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	

SB-104R

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/17/21		Date Finished 6/17/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples	Disturbed 2	Undisturbed NA	Core NA
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ▽ 5	Completion ▼ NA	24 HR. ▽ NA	
Casing Hammer NA	Weight (lbs) NA		Drop (in) NA	Drilling Foreman Ron Dixon			
Sampler 5' Macrocore 2" diameter							
Sampler Hammer NA	Weight (lbs) NA		Drop (in) NA	Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	BL/6in	PID Reading (ppm)	
	M-1A (0-42") Dark brown to dark gray fine SAND, some medium sand, trace silt, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	42/60			0.0	Sample SB104R_GRAB12_0-1 collected.
		1						0.0	
		2						0.0	
		3						0.0	
		4						0.0	
	M-2A (0-12") Dark brown to dark gray fine SAND, some medium sand, trace silt, brick (wet)[FILL]	5	M-2A						Sample SB104R_GRAB12_5-6 collected.
6									
	M-2B (12-42") Dark brown to gray fine SAND, trace silt, trace medium sand (wet)	7	MC	42/60				0.0	Sample SB104R_GRAB12_6-7 collected.
		8						0.0	
		9						0.0	
		10						0.0	
		11						0.0	
		12						0.0	Sample SB104R_7-8 collected. Sample SB104R_8-9 collected. Sample SB104R_9-10 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							
		21							
		22							

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/17/21		Date Finished 6/17/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 2		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 5		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-18") Brown to light gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0					0.0	Sample SB106R_GRAB12_1-2 collected. Sample WC12_GRAB_2-3 collected.
		1	M-1A				0.0	
		2		MC	46/60		0.1	
		3					0.3	
		4	M-1B				0.1	
	M-2A (0-12") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, concrete (wet)[FILL]	5					0.1	Sample SB106R_GRAB12_4-5 collected.
	M-2B (12-36") Brown to gray fine SAND, trace silt, trace medium sand (wet)	6	M-2A					
		7		MC	44/60		0.0	Sample SB106R_GRAB12_7-8 collected. Sample WC12_GRAB_7-8 collected. Sample SB106R_7-8 collected. SB106R_8-9 collected. Sample SB106R_GRAB12_9-10 collected. Sample SB106R_9-10 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		8	M-2B				0.0	
		9					0.0	
		10	M-2C				0.0	
		11					0.0	
	M-3A (36-44") Brown fine SAND, trace silt, trace medium sand (wet)	12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						
		21						
		22						

Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				NA			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				6/16/21		6/16/21	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				10 ft			
Size and Type of Bit				Number of Samples		Disturbed	
2" Direct Push				2		NA	
Casing Diameter (in)				Water Level (ft.)		Completion	
NA				First ▽		NA	
Casing Hammer				Weight (lbs)		Drop (in)	
NA				NA		NA	
Sampler				Drilling Foreman			
5" Macrocore 2" diameter				Ron Dixon			
Sampler Hammer				Field Engineer			
NA				Tyler Zorn			
MATERIAL SYMBOL				Sample Data			
Sample Description				Depth Scale			
M-1A (0-18") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, plastic (moist)[FILL]				0			
				1			
				2			
				3			
				4			
M-2A (0-12") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL]				5			
M-2B (12-40") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet)				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			

Project	475 Bay Street and 31 Wave Street			Project No.	170610601		
Location	Staten Island, NY			Elevation and Datum	NA		
Drilling Company	AARCO Environmental Services, Corp.			Date Started	6/21/21	Date Finished	
Drilling Equipment	Geoprobe 7822 DT			Completion Depth	10 ft	Rock Depth	
Size and Type of Bit	2" Direct Push			Number of Samples	2	Disturbed	Undisturbed
Casing Diameter (in)	NA	Casing Depth (ft)	NA	Water Level (ft.)	First	5	Completion
Casing Hammer	NA	Weight (lbs)	NA	Drop (in)	NA	NA	24 HR.
Drilling Foreman	Ron Dixon			Field Engineer	Michael Au		
Sampler	5' Macrocore 2" diameter			Field Engineer	Michael Au		
Sampler Hammer	NA	Weight (lbs)	NA	Drop (in)	NA		

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-12") 1-foot-thick asphalt and concrete pavement	0					0.0	
	M-1B (12-18") Brown fine SAND, trace fine gravel, brick (dry)[FILL]	1	M-1A				0.0	
	M-1C (18-24") [CONCRETE]	2	M-1B				3.1	Petroleum-like odor
	M-1D (24-36") Brown fine SAND, some fine gravel, concrete (dry) [FILL]	3	M-1C				0.0	
		4		MC	36/60		0.0	Sample SB108R_E1_2-3 collected.
		5	M-1D				7.9	Sample SB108R_E1_3-4 collected.
	M-2A (0-12") Dark brown fine SAND, some silt, trace fine gravel (wet)	6					0.0	Sample SB108R_E1_4-5 collected.
	M-2B (12-24") Light brown fine SAND, some silt (wet)	7	M-2A				0.0	Sample SB108R_E1_5-6 collected.
		8		MC	24/60		0.0	Sample SB108R_E1_6-7 collected.
		9	M-2B				0.0	
		10					0.0	
		11					0.0	E.O.B. at 10'
		12					0.0	Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		13					0.0	
		14					0.0	
		15					0.0	
		16					0.0	
		17					0.0	
		18					0.0	
		19					0.0	
		20					0.0	
		21					0.0	
		22					0.0	

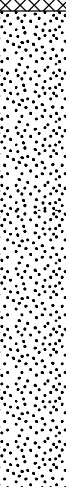
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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed 2	
Casing Diameter (in) NA				Casing Depth (ft) NA		Undisturbed NA	
Casing Hammer NA				Weight (lbs) NA		Drop (in) NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Weight (lbs) NA		Drop (in) NA	
				Field Engineer Michael Au			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-12") 1-foot-thick asphalt and concrete pavement	0					0.0	
	M-1B (12-36") Brown fine SAND, some medium sand, trace fine gravel, brick (dry)[FILL]	1	M-1A				0.0	
		2					0.0	
		3	MC	36/60		0.0		
		4	M-1B			0.0		
	M-2A (0-12") Dark brown fine SAND, some silt, brick (wet)[FILL]	5					0.0	Sample SB108R_E1_2-3 collected. Sample SB108R_E2_3-4 collected. Sample SB108R_E2_4-5 collected. Sample MS/MSD-SO01_062121 collected. Sample SB108R_E2_5-6 collected. Sample SB108R_E2_6-7 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
	M-2B (12-30") Brown fine SAND, trace fine gravel (wet)	6	M-2A				0.0	
		7					0.0	
		8	MC	30/60		0.0		
		9				0.0		
		10	M-2B			0.0		
		11				0.0		
		12				0.0		
		13				0.0		
		14				0.0		
		15						
		16						
		17						
		18						
		19						
		20						
		21						
		22						

Sheet 1 of 1

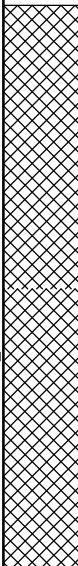
Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				NA			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				6/21/21		6/21/21	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				15 ft			
Size and Type of Bit				Number of Samples		Disturbed	
2" Direct Push				3		Undisturbed	
Casing Diameter (in)				Water Level (ft.)		Completion	
NA				First		24 HR.	
Casing Depth (ft)				NA		NA	
NA				NA		NA	
Casing Hammer				Drilling Foreman			
NA				Ron Dixon			
Weight (lbs)				Field Engineer			
NA				Tyler Zorn			
Drop (in)							
NA							
Sampler							
5" Macrocore 2" diameter							
Sampler Hammer							
NA							
Weight (lbs)							
NA							
Drop (in)							
NA							

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BL/in	PID Reading (ppm)		
	M-1A (0-36") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	36/60		57.6	Started Drilling at 6/21/2021 9:09 AM	
		1					78.2		
		2					102.6		
		3					61.7		
		4					56.3		
		5					52.4		
		6					49.1		
		7							
		8							
		9							
	M-2A (0-18") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL]	10	M-2A	MC	30/60		58.4	Sample SB108R_I_2-3 collected.	
		11					36.7		
		12					15.2		
		13					10.5		
		14					8.4		
		15					8.1		
		16					0.0		
		17					0.0		
		18					0.0		
		19					0.0		
	M-2B (18-30") Dark gray fine SAND, some medium sand, trace silt (wet)	20	M-2B	MC	60/60		0.0	Sample SB108R_I_3-4 collected.	
		21					0.0		
		22					0.0		
		23					0.0		
		24					0.0		
		25					0.0		
		26					0.0		
		27					0.0		
		28					0.0		
		29					0.0		
	M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)	30	M-3A	MC	60/60		0.0	Sample SB108R_I_4-5 collected.	
		31					0.0		
		32					0.0		
		33					0.0		
		34					0.0		
		35					0.0		
		36					0.0		
		37					0.0		
		38					0.0		
		39					0.0		
	M-3B (60-120") Brown fine SAND, trace silt, trace medium sand (wet)	40	M-3B	MC	60/60		0.0	Sample SB108R_I_5-6 collected.	
		41					0.0		
		42					0.0		
		43					0.0		
		44					0.0		
		45					0.0		
		46					0.0		
		47					0.0		
		48					0.0		
		49					0.0		
	M-3C (120-180") Brown fine SAND, trace silt, trace medium sand (wet)	50	M-3C	MC	60/60		0.0	Sample SB108R_I_6-7 collected.	
		51					0.0		
		52					0.0		
		53					0.0		
		54					0.0		
		55					0.0		
		56					0.0		
		57					0.0		
		58					0.0		
		59					0.0		
	M-3D (180-240") Brown fine SAND, trace silt, trace medium sand (wet)	60	M-3D	MC	60/60		0.0	Sample SB108R_I_10-11 collected.	
		61					0.0		
		62					0.0		
		63					0.0		
		64					0.0		
		65					0.0		
		66					0.0		
		67					0.0		
		68					0.0		
		69					0.0		
	M-3E (240-300") Brown fine SAND, trace silt, trace medium sand (wet)	70	M-3E	MC	60/60		0.0	Sample SB108R_I_11-12 collected.	
		71					0.0		
		72					0.0		
		73					0.0		
		74					0.0		
		75					0.0		
		76					0.0		
		77					0.0		
		78					0.0		
		79					0.0		
	M-3F (300-360") Brown fine SAND, trace silt, trace medium sand (wet)	80	M-3F	MC	60/60		0.0	Sample SB108R_I_12-13 collected.	
		81					0.0		
		82					0.0		
		83					0.0		
		84					0.0		
		85					0.0		
		86					0.0		
		87					0.0		
		88					0.0		
		89					0.0		
	M-3G (360-420") Brown fine SAND, trace silt, trace medium sand (wet)	90	M-3G	MC	60/60		0.0	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	
		91					0.0		
		92					0.0		
		93					0.0		
		94					0.0		
		95					0.0		
		96					0.0		
		97					0.0		
		98					0.0		
		99					0.0		

Sheet 1 of 1

Project						Project No.								
475 Bay Street and 31 Wave Street						170610601								
Location						Elevation and Datum								
Staten Island, NY						NA								
Drilling Company						Date Started				Date Finished				
AARCO Environmental Services, Corp.						6/21/21				6/21/21				
Drilling Equipment						Completion Depth				Rock Depth				
Geoprobe 7822 DT						10 ft								
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core		
2" Direct Push								2		NA		NA		
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.		
NA				NA		▽		5		▼		NA		
Casing Hammer		Weight (lbs)		Drop (in)		Drilling Foreman								
NA		NA		NA		Ron Dixon								
Sampler						Field Engineer								
5' Macrocore 2" diameter						Tyler Zorn								
Sampler Hammer		Weight (lbs)		Drop (in)										
NA		NA		NA										
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
	M-1A (0-18") Reddish-brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete, (moist)[FILL]					0	M-1A	MC	18/60			PID Reading (ppm)	Sample SB108R_N1_2-3 collected. Sample SB108R_N1_3-4 collected. Sample SB108R_N1_4-5 collected. Sample SB108R_N1_5-6 collected. Sample SB108R_N1_6-7 collected.	
						0.0								
						0.0								
						0.0								
						0.0								
						1								
						2								
						3								
						4								
						5								
	M-2A (0-24") Reddish-brown to gray fine SAND, some medium sand, trace fine gravel, brick, wood (wet)[FILL]					5	M-2A					0.0		
						6								
						7								
						8								
						9								
						10								
						11								
						12								
						13								
						14								
	M-2B (24-30") Brown to dark gray fine SAND, some medium sand, trace silt (wet)					15	M-2B	MC	30/60			0.0		
						16								
						17								
						18								
						19								
						20								
						21								
						22								
						23								
						24								
25														
						26						0.0		
						27								
						28								
						29								
						30								
						31								
						32								
						33								
						34								
						35								

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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)	
	M-1A (0-36") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	36/60		0.0	Sample SB108R_N2_2-3 collected. Sample SB108R_N2_3-4 collected. Sample SB108R_N2_4-5 collected. Sample SODUP03_062121 collected. Sample SB108R_N2_5-6 collected. Sample SB108R_N2_6-7 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		1					0.0	
		2					0.0	
		3					0.0	
		4					0.0	
	M-2A (0-18") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	5	M-2A	MC	18/60		0.0	
		6					0.0	
		7					0.0	
		8					0.0	
		9					0.0	
10						0.0		
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 2		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 5		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Michael Au			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)		
	M-1A (0-4") 4-inch-thick asphalt and concrete pavement	0	M-1A	MC	48/60			0.0	Sample SB108R_S2_2-3 collected. Sample SB108R_S2_3-4 collected. Sample SB108R_S2_4-5 collected. Sample SB108R_S2_5-6 collected. Sample SB108R_S2_6-7 collected. E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
	M-1B (4-16") Brown fine SAND, trace fine gravel, brick (dry)[FILL]	1	M-1B					0.0	
	M-1C (16-24") Dark brown fine SAND, some medium sand, trace fine gravel (dry)[FILL]	2	M-1C					0.0	
	M-1D (24-48") Light brown SAND, some silt, trace fine gravel (moist)[FILL]	3						0.0	
	M-2A (0-24") Light brown SAND, some silt, trace fine gravel, brick (wet)[FILL]	4	M-1D	0.0					
		5	M-2A	0.0					
	M-2B (24-36") Dark brown fine SAND, some silt (moist)	6		0.0					
		7	M-2B	0.0					
		8		0.0					
		9		0.0					
	10		0.0						
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								
	19								
	20								
	21								
	22								

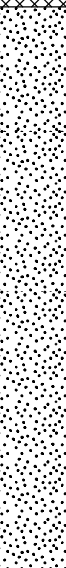
Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 2		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 4		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-24") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (moist)[FILL]	0						
		1	M-1A					
	M-1B (24-36") Brown to dark gray fine SAND, some medium sand, trace fine gravel (moist)	2		MC	36/60			Sample SB108R_W1_2-3 collected.
		3						Sample SB108R_W1_3-4 collected.
		4	M-1B					Sample SB108R_W1_4-5 collected.
		5						Sample SB108R_W1_5-6 collected.
	M-2A (0-24") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet)	6	M-2A					Sample SB108R_W1_6-7 collected.
		7		MC	36/60			
	M-2B (24-36") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet)	8						
		9	M-2B					
		10						
		11						E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 10 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples 2		Disturbed NA	
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First 3		Completion NA	
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		24 HR. NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-30") Brown to dark gray fine SAND, some medium sand, trace fine gravel, asphalt, concrete (moist)[FILL]	0					0.0	Sample SB108R_W2_2-3 collected.
		1					0.0	
		2					0.0	
		3					0.0	
		4					0.0	
	M-2A (0-12") Brown to dark gray fine SAND, some medium sand, trace fine gravel, concrete (wet)[FILL]	5	M-2A	MC	30/60			Sample SODUP02_062121 collected. Sample SB108R_W2_5-6 collected. Sample SB108R_W2_6-7 collected.
		6						
		7						
		8						
		9						
	M-2B (12-30") Brown to dark gray fine SAND, some medium sand, trace silt (wet)	10					0.0	E.O.B. at 10' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		11					0.0	
		12					0.0	
		13					0.0	
		14					0.0	
		15					0.0	
		16					0.0	
		17					0.0	
		18					0.0	
		19					0.0	
		20					0.0	
		21					0.0	
22					0.0			

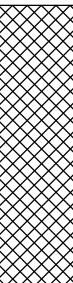
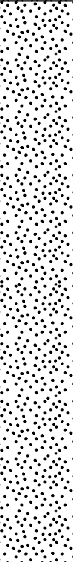
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Project					Project No.						
475 Bay Street and 31 Wave Street					170610601						
Location					Elevation and Datum						
Staten Island, NY					NA						
Drilling Company					Date Started			Date Finished			
AARCO Environmental Services, Corp.					6/18/21			6/18/21			
Drilling Equipment					Completion Depth			Rock Depth			
Geoprobe 7822 DT					15 ft						
Size and Type of Bit					Number of Samples		Disturbed		Undisturbed	Core	
2" Direct Push					3		NA		NA		
Casing Diameter (in)				Casing Depth (ft)	Water Level (ft.)		First	Completion	24 HR.		
NA				NA	▽		3	▽	NA		
Casing Hammer		Weight (lbs)		Drop (in)	Drilling Foreman						
NA		NA		NA	Ron Dixon						
Sampler					Field Engineer						
5' Macrocore 2" diameter					Tyler Zorn						
Sampler Hammer		Weight (lbs)		Drop (in)							
NA		NA		NA							
MATERIAL SYMBOL	Sample Description				Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
						Number	Type	Recov. (in)	Penetr. resist	BLU/in	
	M-1A (0-42") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (moist)[FILL]				0	M-1A	MC	42/60		0.0	Sample SB109R_GRAB15_0-1 collected. Sample SB109R_GRAB15_1-2 collected. Sample WC15_GRAB_3-4 collected. Sample WC_SODUP02_061821 collected. Sample SB109R_GRAB15_4-5 collected. Sample SB109R_GRAB15_5-6 collected. Sample SB109R_GRAB15_6-7 collected. Sample SB109R_7-8 collected. Sample SODUP02_061821 collected. Sample SB109R_8-9 collected. Sample SB109R_GRAB15_9-10 collected. Sample SB109R_9-10 collected.
					1					1.4	
					2					5.6	
					3					6.3	
					4					10.7	
	M-2A (0-26") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet) M-2B (26-32") Brown fine SAND, some silt (wet) M-3A (0-54") Brown fine SAND, some silt, trace medium sand (wet)				5	M-2A	MC	32/60		6.7	
					6					5.9	
					7						
					8						
					9						
					10						
					11						
					12						
					13						
					14						
					15	M-3A	MC	54/60		2.1	
					16					1.4	
					17					1.2	
					18					1.3	
					19					1.4	
					20					1.2	
					21					0.1	
					22					0.1	

Project						Project No.													
475 Bay Street and 31 Wave Street						170610601													
Location						Elevation and Datum													
Staten Island, NY						NA													
Drilling Company						Date Started			Date Finished										
AARCO Environmental Services, Corp.						6/16/21			6/16/21										
Drilling Equipment						Completion Depth			Rock Depth										
Geoprobe 7822 DT						20 ft													
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core							
2" Direct Push								4		NA		NA							
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.							
NA				NA		▽		5		▼		NA							
Casing Hammer			Weight (lbs)		Drop (in)		Drilling Foreman												
NA			NA		NA		Ron Dixon												
Sampler						Field Engineer													
5' Macrocore 2" diameter						Tyler Zorn													
Sampler Hammer			Weight (lbs)		Drop (in)														
NA			NA		NA														
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)							
	M-1A (0-38") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, plastic (moist)[FILL]					0	M-1A	MC	38/60			0.0	Sample SB10R_GRAB08_2-3 collected.						
						1						0.0							
						2						0.1							
						3						0.1							
						4						0.2							
	M-2A (0-26") Brown to dark gray fine SAND, trace silt, trace medium sand (wet)					5	M-2A	MC	26/60			0.0	Sample SB10R_GRAB08_5-6 collected. Sample SB10R_GRAB08_6-7 collected. Sample SB10R_GRAB08_7-8 collected. Sample SB10R_7-8 collected. Sample SB10R_GRAB08_8-9 collected. Sample WC08_GRAB_8-9 collected.						
						6						0.1							
						7						0.1							
						8						0.0							
						9						0.0							
						M-3A (0-54") Brown fine SAND, trace silt, trace medium sand (wet)						10		M-3A	MC	54/60			0.0
												11							0.0
												12							0.0
												13							0.0
14	0.0																		
M-4A (0-60") Brown to gray fine SAND, some silt, trace clay (wet)	15	M-4A	MC	60/60			0.0	Sample SB10R_18-20 collected.											
	16						0.0												
	17						0.0												
	18						0.0												
	19						0.0												
	20						0.0												
	21						0.0												
						0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.												

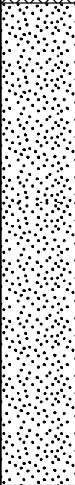
Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				NA			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				6/17/21		6/17/21	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				10 ft			
Size and Type of Bit				Number of Samples		Disturbed	
2" Direct Push				2		NA	
Casing Diameter (in)				Water Level (ft.)		Completion	
NA				First ▽		NA	
Casing Hammer				Weight (lbs)		Drop (in)	
NA				NA		NA	
Sampler				Drilling Foreman			
5' Macrocore 2" diameter				Ron Dixon			
Sampler Hammer				Field Engineer			
NA				Tyler Zorn			
Weight (lbs)				Drop (in)			
NA				NA			
MATERIAL SYMBOL				Sample Description			
M-1A (0-30") Reddish-brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete, wood (moist)[FILL]				Depth Scale			
M-2A (0-18") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL]				Sample Data			
M-2B (18-20") Brown fine SAND, some medium sand, trace silt (wet)				Remarks			
				(Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)			
				0.0			
				0.0			
				0.1			
				0.4			
				0.2			
				0.1			
				1.6			
				2.8			
				2.4			
				1.3			
				Sample SB110R_7-8 collected.			
				Sample SB110R_8-9 collected.			
				Sample SB110R_9-10 collected.			
				E.O.B. at 10'			
				Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.			

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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	
	M-1A (0-40") Dark brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	40/60		0.0	Sample SB111R_E1_6-7 collected. Sample SB111R_E1_7-8 collected. Sample SB111R_E1_8-9 collected. Sample SB111R_E1_9-10 collected. Sample SB111R_E1_10-11 collected. E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		1					0.0	
		2					0.0	
		3					0.0	
		4					0.0	
	M-2A (0-18") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet)	5	M-2A	MC	18/60		0.0	
		6						
		7						
		8						
		9					0.0	
	M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)	10	M-3A	MC	60/60		0.0	
		11					0.0	
		12					0.0	
		13					0.0	
		14					0.0	
		15					0.0	
		16						
		17						
		18						
		19						
		20						
		21						
		22						

Tyler Zorn

Remarks
(Drilling Fluid, Depth of Casing,
Fluid Loss, Drilling Resistance, etc.)

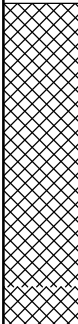
Project				Project No.						
475 Bay Street and 31 Wave Street				170610601						
Location				Elevation and Datum						
Staten Island, NY				NA						
Drilling Company				Date Started		Date Finished				
AARCO Environmental Services, Corp.				6/21/21		6/21/21				
Drilling Equipment				Completion Depth		Rock Depth				
Geoprobe 7822 DT				15 ft						
Size and Type of Bit				Number of Samples		Disturbed	Undisturbed	Core		
2" Direct Push				3		NA	NA	NA		
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)		First	Completion	24 HR.		
NA			NA	5		NA	NA	NA		
Casing Hammer		Weight (lbs)	Drop (in)	Drilling Foreman						
NA		NA	NA	Ron Dixon						
Sampler				Field Engineer						
5' Macrocore 2" diameter				Tyler Zorn						
Sampler Hammer		Weight (lbs)	Drop (in)							
NA		NA	NA							
MATERIAL SYMBOL	Sample Description			Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
					Number	Type	Recov. (in)	Penetr. resist BL/6in		PID Reading (ppm)
	M-1A (0-32") Brown to dark brown fine SAND, some medium sand, trace fine gravel, concrete (moist)[FILL]			0					0.0	Sample SB111R_I_6-7 collected. Sample SB111R_I_7-8 collected. Sample SB111R_I_8-9 collected. Sample MS/MSD-SO02_062121 collected. Sample SB111R_I_9-10 collected. Sample SB111R_10-11 collected. Sample SB111R_I_10-11 collected. Sample MS/MSD-SO03_062121 collected. Sample SB111R_11-12 collected. Sample SB111R_12-13 collected. E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
				1					0.0	
				2	M-1A	MC	32/60		0.0	
				3					0.0	
				4					0.0	
	M-2A (0-18") Brown to dark brown fine SAND, some medium sand, trace fine gravel, concrete, wood (wet)[FILL]			5					0.0	
				6	M-2A					
				7						
				8					0.0	
				9	M-2B	MC	32/60		0.0	
	M-2B (18-32") Brown to dark gray fine SAND, some medium sand, trace silt (wet)			10					0.0	
				11					0.0	
				12					0.0	
				13	M-3A	MC	48/60		0.0	
				14					0.0	
	M-3A (0-48") Brown fine SAND, some medium sand, trace silt (wet)			15					0.0	
				16						
				17						
				18						
				19						
				20						
				21						
				22						
				23						

Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 15 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples	Disturbed 2	Undisturbed NA	Core NA
Casing Diameter (in) NA			Casing Depth (ft) NA	Water Level (ft.) First 5	Completion NA	24 HR. NA	
Casing Hammer NA		Weight (lbs) NA	Drop (in) NA	Drilling Foreman Ron Dixon			
Sampler 5' Macrocore 2" diameter				Field Engineer Michael Au			
Sampler Hammer NA		Weight (lbs) NA	Drop (in) NA				

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BLU/in	PID Reading (ppm)	
	M-1A (0-12") 1-foot-thick asphalt and concrete pavement	0					0.0	
		1	M-1A				0.0	
	M-1B (12-24") Brown fine SAND, some fine gravel, brick (dry)[FILL]	2		MC	24/60		0.0	
		3					0.0	
		4	M-1B				0.0	
		5						
	M-2A (0-48") Brown medium-fine SAND, some silt, trace fine gravel (wet)	6					0.0	
		7	M-2A	MC	48/60		0.0	Sample SB111R_N1_6-7 collected.
		8					0.0	Sample SB111R_N1_7-8 collected.
		9					0.0	Sample SB111R_N1_8-9 collected.
		10					0.0	Sample SODUP04_062121 collected.
		11					0.0	Sample SB111R_N1_9-10 collected.
		12					0.0	Sample SB111R_N1_10-11 collected.
		13						
		14						
		15						E.O.B. at 15'
		16						Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		17						
		18						
		19						
		20						
		21						
		22						

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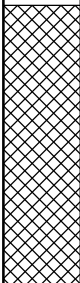
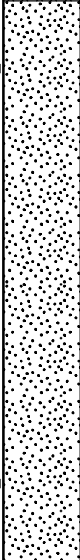
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
			Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)		
	M-1A (0-32") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	32/60		0.0	Sample SB111R_N2_6-7 collected. Sample SB111R_N2_7-8 collected. Sample SB111R_N2_8-9 collected. Sample SODUP05_062121 collected. Sample SB111R_N2_9-10 collected. Sample SB111R_N2_10-11 collected. Sample MS/MSD-SO04_062121 collected. E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	
		1					0.0		
		2					0.0		
		3					0.0		
		4					0.0		
	M-2A (0-8") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL] M-2B (8-24") Gray to dark gray fine SAND, some medium sand, trace silt (wet)	5	M-2A	MC	24/60				0.0
		6	M-2B						0.0
		7							0.0
		8							0.0
		9							0.0
	M-3A (0-36") Brown fine SAND, some medium sand, trace silt (wet)	10	M-3A	MC	36/60				0.0
		11							0.0
		12							0.0
		13							0.0
		14							0.0
15		0.0							
16									
17									
18									
19									
20									
21									
22									

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Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																																
Location Staten Island, NY				Elevation and Datum NA																																																																																																																
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21																																																																																																														
Drilling Equipment Geoprobe 7822 DT				Completion Depth 15 ft		Rock Depth																																																																																																														
Size and Type of Bit 2" Direct Push				Number of Samples 3		Disturbed NA																																																																																																														
Casing Diameter (in) NA				Casing Depth (ft) NA		Core NA																																																																																																														
Casing Hammer NA				Weight (lbs) NA		Drop (in) NA																																																																																																														
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon																																																																																																																
Sampler Hammer NA				Field Engineer Tyler Zorn																																																																																																																
<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="5">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="5"></td> <td rowspan="5">M-1A (0-32") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]</td> <td>0</td> <td rowspan="5">M-1A</td> <td rowspan="5">MC</td> <td rowspan="5">32/60</td> <td rowspan="5"></td> <td>0.0</td> <td rowspan="5"></td> </tr> <tr><td>1</td><td>0.0</td></tr> <tr><td>2</td><td>0.0</td></tr> <tr><td>3</td><td>0.0</td></tr> <tr><td>4</td><td>0.0</td></tr> <tr> <td rowspan="5"></td> <td rowspan="5">M-2A (0-6") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL] M-2B (6-42") Brown to gray fine SAND, some medium sand, trace silt (wet)</td> <td>5</td> <td>M-2A</td> <td rowspan="5">42/60</td> <td rowspan="5"></td> <td rowspan="5"></td> <td>0.0</td> <td rowspan="5">Sample SB111R_S2_6-7 collected.</td> </tr> <tr><td>6</td><td rowspan="4">MC</td><td>0.0</td></tr> <tr><td>7</td><td>0.0</td></tr> <tr><td>8</td><td>0.0</td></tr> <tr> <td rowspan="5"></td> <td rowspan="5">M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)</td> <td>9</td> <td>M-2B</td> <td rowspan="5">60/60</td> <td rowspan="5"></td> <td rowspan="5"></td> <td>0.0</td> <td rowspan="5">Sample SB111R_S2_8-9 collected.</td> </tr> <tr><td>10</td><td rowspan="4">MC</td><td>0.0</td></tr> <tr><td>11</td><td>0.0</td></tr> <tr><td>12</td><td>0.0</td></tr> <tr> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td>13</td> <td>0.0</td> <td rowspan="5">Sample SB111R_S2_9-10 collected.</td> </tr> <tr><td>14</td><td>0.0</td></tr> <tr><td>15</td><td>0.0</td></tr> <tr><td>16</td><td>0.0</td></tr> <tr><td>17</td><td>0.0</td></tr> <tr> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td rowspan="5"></td> <td>18</td> <td>0.0</td> <td rowspan="5">Sample SB111R_S2_10-11 collected.</td> </tr> <tr><td>19</td><td>0.0</td></tr> <tr><td>20</td><td>0.0</td></tr> <tr><td>21</td><td>0.0</td></tr> <tr><td>22</td><td>0.0</td></tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.</td> </tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)		M-1A (0-32") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	32/60		0.0		1	0.0	2	0.0	3	0.0	4	0.0		M-2A (0-6") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL] M-2B (6-42") Brown to gray fine SAND, some medium sand, trace silt (wet)	5	M-2A	42/60			0.0	Sample SB111R_S2_6-7 collected.	6	MC	0.0	7	0.0	8	0.0		M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)	9	M-2B	60/60			0.0	Sample SB111R_S2_8-9 collected.	10	MC	0.0	11	0.0	12	0.0							13	0.0	Sample SB111R_S2_9-10 collected.	14	0.0	15	0.0	16	0.0	17	0.0									18	0.0	Sample SB111R_S2_10-11 collected.	19	0.0	20	0.0	21	0.0	22	0.0									E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data								Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																									
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	M-1A (0-32") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	32/60		0.0																																																																																																													
		1					0.0																																																																																																													
		2					0.0																																																																																																													
		3					0.0																																																																																																													
		4					0.0																																																																																																													
	M-2A (0-6") Brown to gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL] M-2B (6-42") Brown to gray fine SAND, some medium sand, trace silt (wet)	5	M-2A	42/60			0.0	Sample SB111R_S2_6-7 collected.																																																																																																												
		6	MC				0.0																																																																																																													
		7					0.0																																																																																																													
		8					0.0																																																																																																													
							M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)		9	M-2B	60/60			0.0	Sample SB111R_S2_8-9 collected.																																																																																																					
10	MC		0.0																																																																																																																	
11			0.0																																																																																																																	
12			0.0																																																																																																																	
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								18	0.0	Sample SB111R_S2_10-11 collected.																																																																																																										
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MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
			Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)			
	M-1A (0-48") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0	M-1A	MC	48/60			0.0		
		1						0.0		
		2						0.0		
		3						0.0		
		4						0.0		
	M-2A (0-44") Dark brown to dark gray fine SAND, some medium sand, trace silt (wet)	5	M-2A	MC	44/60			0.0	Sample SB111R_W1_6-7 collected.	
		6						0.0		
		7						0.0		
		8						0.0		
		9						0.0		
		M-3A (0-60") Brown fine SAND, trace silt, trace medium sand (wet)	10	M-3A	MC	60/60			0.0	Sample SB111R_W1_8-9 collected.
			11						0.0	
			12						0.0	
			13						0.0	
			14						0.0	
			15						0.0	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
			16							
			17							
			18							
			19							
	20									
	21									

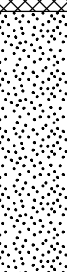
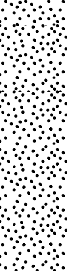
Project 475 Bay Street and 31 Wave Street				Project No. 170610601			
Location Staten Island, NY				Elevation and Datum NA			
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/21/21		Date Finished 6/21/21	
Drilling Equipment Geoprobe 7822 DT				Completion Depth 15 ft		Rock Depth	
Size and Type of Bit 2" Direct Push				Number of Samples		Disturbed 3	
Casing Diameter (in) NA				Casing Depth (ft) NA		Undisturbed NA	
Casing Hammer NA				Weight (lbs) NA		Drop (in) NA	
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon			
Sampler Hammer NA				Weight (lbs) NA		Drop (in) NA	
				Field Engineer Tyler Zorn			

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist	PID Reading (ppm)	
	M-1A (0-36") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0					0.0	Sample SB111R_W2_6-7 collected. Sample SB111R_W2_7-8 collected. Sample SB111R_W2_8-9 collected. Sample SB111R_W2_9-10 collected. Sample SB111R_W2_10-11 collected.
		1					0.0	
		2					0.0	
		3	M-1A	MC	36/60		0.0	
		4					0.0	
	M-2A (0-12") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (wet)[FILL]	5						
		6	M-2A					
	M-2B (12-32") Brown to dark gray fine SAND, some medium sand, trace silt, trace fine gravel (wet)	7						
		8					0.0	
		9					0.0	
		10	M-2B				0.0	
		11					0.0	
		12					0.0	
		13					0.0	
		14					0.0	
		15					0.0	
		16					0.0	
	M-3A (0-58") Brown fine SAND, trace silt, trace medium sand (wet)	17						
		18						
		19						
		20						
		21						
		22						
		23						

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SB-11R

Sheet 1 of 1

Project				Project No.				
475 Bay Street and 31 Wave Street				170610601				
Location				Elevation and Datum				
Staten Island, NY				NA				
Drilling Company				Date Started		Date Finished		
AARCO Environmental Services, Corp.				6/17/21		6/17/21		
Drilling Equipment				Completion Depth		Rock Depth		
Geoprobe 7822 DT				20 ft				
Size and Type of Bit				Number of Samples		Disturbed		
2" Direct Push				4		Undisturbed		
Casing Diameter (in)				Water Level (ft.)		Completion		
NA				First ▽ 5		NA		
Casing Depth (ft)				Drilling Foreman		24 HR.		
NA				Ron Dixon		NA		
Casing Hammer				Field Engineer				
Weight (lbs)				Tyler Zorn				
Drop (in)								
Sampler								
5' Macrocore 2" diameter								
Sampler Hammer								
NA								
Weight (lbs)								
Drop (in)								
NA								
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist. BL/in	PID Reading (ppm)	
	M-1A (0-54") Brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]	0					0.0	Sample SB11R_GRAB10_0-1 collected.
		1					0.0	
		2					0.0	
		3	M-1A	MC	54/60		0.1	
		4					0.2	
		5					0.1	
		6					0.1	
		7					0.0	
		8					0.1	
		9					0.0	
	M-2A (0-30") Brown to gray fine SAND, some medium sand, trace silt, trace fine gravel, wood (wet)[FILL]	10					0.0	Sample SB11R_GRAB10_2-3 collected.
		11					0.1	
		12					0.0	
		13					0.1	
		14					0.0	
		15					0.1	
		16					0.0	
		17					0.1	
		18					0.0	
		19					0.0	
	M-3A (0-60") Brown fine SAND, trace clay, trace silt (wet)	20					0.0	Sample SB11R_GRAB10_4-5 collected.
		21					0.0	
		22					0.0	
		23					0.0	
		24					0.0	
		25					0.0	
		26					0.0	
		27					0.0	
		28					0.0	
		29					0.0	
	M-4A (0-14") Brown to gray fine SAND, trace silt, trace fine gravel (wet) M-4B (14-28") Orangish-brown to reddish-gray fine SAND, some silt, trace fine gravel (wet)	30					0.0	Sample SB11R_11-12 collected.
		31					0.0	
		32					0.0	
		33					0.0	
		34					0.0	
		35					0.0	
		36					0.0	
		37					0.0	
		38					0.0	
		39					0.0	
	M-4A (0-14") Brown to gray fine SAND, trace silt, trace fine gravel (wet) M-4B (14-28") Orangish-brown to reddish-gray fine SAND, some silt, trace fine gravel (wet)	40					0.0	Sample SB11R_18-20 collected.
		41					0.0	
		42					0.0	
		43					0.0	
		44					0.0	
		45					0.0	
		46					0.0	
		47					0.0	
		48					0.0	
		49					0.0	
	M-4A (0-14") Brown to gray fine SAND, trace silt, trace fine gravel (wet) M-4B (14-28") Orangish-brown to reddish-gray fine SAND, some silt, trace fine gravel (wet)	50					0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		51					0.0	
		52					0.0	

Project					Project No.								
475 Bay Street and 31 Wave Street					170610601								
Location					Elevation and Datum								
Staten Island, NY					NA								
Drilling Company					Date Started			Date Finished					
AARCO Environmental Services, Corp.					6/16/21			6/16/21					
Drilling Equipment					Completion Depth			Rock Depth					
Geoprobe 7822 DT					20 ft								
Size and Type of Bit					Number of Samples		Disturbed		Undisturbed		Core		
2" Direct Push					4		NA		NA		NA		
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.	
NA				NA		▽ 6.5		▽ NA		▽ NA		NA	
Casing Hammer			Weight (lbs)		Drop (in)		Drilling Foreman						
NA			NA		NA		Ron Dixon						
Sampler							Field Engineer						
5' Macrocore 2" diameter							Tyler Zorn						
Sampler Hammer			Weight (lbs)		Drop (in)								
NA			NA		NA								
MATERIAL SYMBOL													
Sample Description					Depth Scale		Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
M-1A (0-42") Reddish brown to dark gray fine SAND, brick, concrete, wood, some medium sand, trace fine gravel (moist)[FILL]					0		0.0					Sample SB12R_GRAB07_1-2 collected.	
					1		0.0						
					2		0.0						
					3		0.0						
					4		0.0						
M-2A (0-18") Gray to dark gray fine SAND, brick, some medium sand, trace silt (moist)[FILL]					5		0.0					Sample WC07_GRAB_4-5 collected.	
					6		0.0						
					7		0.0						
M-2B (18-40") Brown fine SAND, some silt, trace medium sand (wet)					8		0.0					Sample SB12R_8-9 collected.	
M-2C (40-54") Brown SILT, some trace fine sand, some clay (wet)					9		0.0						
					10		0.0						
					11		0.0						
M-3A (0-42") Gray to dark gray fine SAND, some silt, trace medium sand, trace clay (moist)					12		0.0						
					13		0.0						
					14		0.0						
					15		0.0						
					16		0.0						
M-4A (0-32") Brown to dark gray fine SAND, some medium sand, some silt (moist)					17		0.0					Sample SB12R_18-20 collected.	
					18		0.0						
					19		0.0						
					20		0.0						
					21		0.0						
					22		0.0					E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	

SB-13R

Sheet 1 of 1

Project						Project No.								
475 Bay Street and 31 Wave Street						170610601								
Location						Elevation and Datum								
Staten Island, NY						NA								
Drilling Company						Date Started				Date Finished				
AARCO Environmental Services, Corp.						6/16/21				6/16/21				
Drilling Equipment						Completion Depth				Rock Depth				
Geoprobe 7822 DT						20 ft								
Size and Type of Bit						Number of Samples		Disturbed		Undisturbed		Core		
2" Direct Push								4		NA		NA		
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)		First		Completion		24 HR.		
NA				NA				5				NA		
Casing Hammer		Weight (lbs)		Drop (in)		Drilling Foreman								
NA		NA		NA		Ron Dixon								
Sampler						Field Engineer								
5" Macrocore 2" diameter						Tyler Zorn								
Sampler Hammer		Weight (lbs)		Drop (in)										
NA		NA		NA										
MATERIAL SYMBOL	Sample Description					Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
	M-1A (0-42") Light brown to dark gray fine SAND, some medium sand, trace fine gravel, brick, concrete (moist)[FILL]					0	M-1A	MC	42/60			0.0	Sample SB13R_GRAB08_0-1 collected.	
						1						0.0		
						2						0.1		
						3						0.1		
						4						0.0		
						5						3.1		
						6						1.2		
						7						0.9		
						8								
	M-2A (0-12") Brown to dark gray fine SAND, some sand, trace fine gravel, brick, concrete (wet)[FILL] M-2B (12-38") Brown to dark gray fine SAND, some silt, trace medium sand (wet)					5	M-2A	MC	38/60			0.0	Sample WC08_GRAB_3-4 collected. Sample SB13R_GRAB08_4-5 collected. Sample SB13R_GRAB08_6-7 collected. Sample SB13R_7-8 collected. Sample SB13R_8-9 collected. Sample SB13R_GRAB08_9-10 collected. Sample SB13R_9-10 collected.	
						6						0.0		
						7						0.0		
						8						0.0		
						9						0.0		
						10						0.0		
						11						0.0		
						12						0.0		
						13						0.0		
	M-3A (0-58") Brown fine SAND, some silt, trace medium sand (wet) M-4A (0-30") Brown to dark gray SILT, some fine sand, trace clay (wet)					10	M-2B	MC	58/60			0.0	Sample SB13R_18-20 collected.	
						11						0.0		
						12						0.0		
						13						0.0		
						14						0.0		
						15						0.0		
						16						0.0		
						17						0.0		
						18						0.0		
						15	M-3A	MC	30/60			0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	
						16						0.0		
						17						0.0		
						18						0.0		
						19						0.0		
						20						0.0		
						21						0.0		
						22						0.0		

Project 475 Bay Street and 31 Wave Street				Project No. 170610601																																																																																																																																																																
Location Staten Island, NY				Elevation and Datum NA																																																																																																																																																																
Drilling Company AARCO Environmental Services, Corp.				Date Started 6/15/21		Date Finished 6/15/21																																																																																																																																																														
Drilling Equipment Geoprobe 7822 DT				Completion Depth 20 ft		Rock Depth																																																																																																																																																														
Size and Type of Bit 2" Direct Push				Number of Samples 4		Disturbed NA																																																																																																																																																														
Casing Diameter (in) NA		Casing Depth (ft) NA		Water Level (ft.) First ∇ 0.7		Completion ∇ NA																																																																																																																																																														
Casing Hammer NA		Weight (lbs) NA		Drop (in) NA		Core NA																																																																																																																																																														
Sampler 5' Macrocore 2" diameter				Drilling Foreman Ron Dixon																																																																																																																																																																
Sampler Hammer NA				Field Engineer Michael Au																																																																																																																																																																
<table border="1"> <thead> <tr> <th rowspan="2">MATERIAL SYMBOL</th> <th rowspan="2">Sample Description</th> <th rowspan="2">Depth Scale</th> <th colspan="4">Sample Data</th> <th rowspan="2">Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)</th> </tr> <tr> <th>Number</th> <th>Type</th> <th>Recov. (in)</th> <th>Penetr. resist. BLU/in</th> <th>PID Reading (ppm)</th> </tr> </thead> <tbody> <tr> <td rowspan="4"></td> <td>M-1A (0-4") Tannish-brown medium SAND, some fine gravel, brick, concrete (dry)[FILL]</td> <td>0</td> <td>M-1A</td> <td rowspan="4">MC</td> <td rowspan="4">13/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Sample SB14R_GRAB05_1-2 collected.</td> </tr> <tr> <td>M-1B (4-8") Dark gray fine GRAVEL (dry)[FILL]</td> <td>1</td> <td>M-1B</td> <td>0.0</td> </tr> <tr> <td>M-1C (8-13") Black medium SAND, some fine sand (wet)[FILL]</td> <td>2</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td rowspan="4"></td> <td>M-2A (0-12") Dark gray medium SAND, some coarse sand, trace fine gravel, brick (wet)[FILL]</td> <td>4</td> <td>M-1C</td> <td></td> <td></td> <td></td> <td></td> <td rowspan="4">Sample SB14R_GRAB05_2-3 collected. Sample WC05_GRAB_2-3 collected.</td> </tr> <tr> <td></td> <td>5</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>6</td> <td>M-2A</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="4"></td> <td>M-2B (12-38") Brown medium SAND, some fine sand, some silt (wet)</td> <td>8</td> <td></td> <td rowspan="4">MC</td> <td rowspan="4">38/60</td> <td rowspan="4"></td> <td>0.0</td> <td rowspan="4">Sample SB14R_GRAB05_7-8 collected. Sample WC05_GRAB_7-8 collected. Sample SB14R_7-8 collected. Sample SODUP01_20210615 collected. Sample WC_SODUP01_20210615 collected. Sample MS/MSD-SO01_20210615 collected. Sample SB14R_GRAB05_9-10 collected.</td> </tr> <tr> <td></td> <td>9</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>10</td> <td>M-2B</td> <td>0.0</td> </tr> <tr> <td></td> <td>11</td> <td></td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-3A (0-2") Grayish-brown medium-fine SAND (wet)</td> <td>12</td> <td>M-3A</td> <td></td> <td></td> <td></td> <td>0.0</td> <td rowspan="4">Sample SB14R_18-20 collected.</td> </tr> <tr> <td>M-3B (2-33") Brown silty fine SAND, trace fine gravel (wet)</td> <td>13</td> <td></td> <td rowspan="4">MC</td> <td rowspan="4">33/60</td> <td rowspan="4"></td> <td>0.0</td> </tr> <tr> <td></td> <td>14</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>15</td> <td>M-3B</td> <td>0.0</td> </tr> <tr> <td rowspan="4"></td> <td>M-4A (0-4") Brown silty fine SAND (wet)</td> <td>16</td> <td>M-4A</td> <td></td> <td></td> <td></td> <td>0.0</td> <td rowspan="4">E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.</td> </tr> <tr> <td>M-4B (4-18") Dark gray silty fine SAND, trace fine gravel (wet)</td> <td>17</td> <td></td> <td rowspan="4">MC</td> <td rowspan="4">18/60</td> <td rowspan="4"></td> <td>0.0</td> </tr> <tr> <td></td> <td>18</td> <td></td> <td>0.0</td> </tr> <tr> <td></td> <td>19</td> <td>M-4B</td> <td>0.0</td> </tr> <tr> <td></td> <td></td> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td>0.0</td> <td></td> </tr> <tr> <td></td> <td></td> <td>21</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>22</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)		M-1A (0-4") Tannish-brown medium SAND, some fine gravel, brick, concrete (dry)[FILL]	0	M-1A	MC	13/60		0.0	Sample SB14R_GRAB05_1-2 collected.	M-1B (4-8") Dark gray fine GRAVEL (dry)[FILL]	1	M-1B	0.0	M-1C (8-13") Black medium SAND, some fine sand (wet)[FILL]	2		0.0		3				M-2A (0-12") Dark gray medium SAND, some coarse sand, trace fine gravel, brick (wet)[FILL]	4	M-1C					Sample SB14R_GRAB05_2-3 collected. Sample WC05_GRAB_2-3 collected.		5						6	M-2A					7						M-2B (12-38") Brown medium SAND, some fine sand, some silt (wet)	8		MC	38/60		0.0	Sample SB14R_GRAB05_7-8 collected. Sample WC05_GRAB_7-8 collected. Sample SB14R_7-8 collected. Sample SODUP01_20210615 collected. Sample WC_SODUP01_20210615 collected. Sample MS/MSD-SO01_20210615 collected. Sample SB14R_GRAB05_9-10 collected.		9		0.0		10	M-2B	0.0		11		0.0		M-3A (0-2") Grayish-brown medium-fine SAND (wet)	12	M-3A				0.0	Sample SB14R_18-20 collected.	M-3B (2-33") Brown silty fine SAND, trace fine gravel (wet)	13		MC	33/60		0.0		14		0.0		15	M-3B	0.0		M-4A (0-4") Brown silty fine SAND (wet)	16	M-4A				0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.	M-4B (4-18") Dark gray silty fine SAND, trace fine gravel (wet)	17		MC	18/60		0.0		18		0.0		19	M-4B	0.0			20					0.0				21									22						
MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)																																																																																																																																																													
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	M-1A (0-4") Tannish-brown medium SAND, some fine gravel, brick, concrete (dry)[FILL]	0	M-1A	MC	13/60		0.0	Sample SB14R_GRAB05_1-2 collected.																																																																																																																																																												
	M-1B (4-8") Dark gray fine GRAVEL (dry)[FILL]	1	M-1B				0.0																																																																																																																																																													
	M-1C (8-13") Black medium SAND, some fine sand (wet)[FILL]	2					0.0																																																																																																																																																													
		3																																																																																																																																																																		
	M-2A (0-12") Dark gray medium SAND, some coarse sand, trace fine gravel, brick (wet)[FILL]	4	M-1C					Sample SB14R_GRAB05_2-3 collected. Sample WC05_GRAB_2-3 collected.																																																																																																																																																												
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	M-2B (12-38") Brown medium SAND, some fine sand, some silt (wet)	8		MC	38/60		0.0	Sample SB14R_GRAB05_7-8 collected. Sample WC05_GRAB_7-8 collected. Sample SB14R_7-8 collected. Sample SODUP01_20210615 collected. Sample WC_SODUP01_20210615 collected. Sample MS/MSD-SO01_20210615 collected. Sample SB14R_GRAB05_9-10 collected.																																																																																																																																																												
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	M-3A (0-2") Grayish-brown medium-fine SAND (wet)	12	M-3A				0.0	Sample SB14R_18-20 collected.																																																																																																																																																												
	M-3B (2-33") Brown silty fine SAND, trace fine gravel (wet)	13		MC	33/60		0.0																																																																																																																																																													
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	M-4A (0-4") Brown silty fine SAND (wet)	16	M-4A							0.0	E.O.B. at 20' Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.																																																																																																																																																									
	M-4B (4-18") Dark gray silty fine SAND, trace fine gravel (wet)	17		MC	18/60		0.0																																																																																																																																																													
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Project				Project No.			
475 Bay Street and 31 Wave Street				170610601			
Location				Elevation and Datum			
Staten Island, NY				NA			
Drilling Company				Date Started		Date Finished	
AARCO Environmental Services, Corp.				6/14/21		6/14/21	
Drilling Equipment				Completion Depth		Rock Depth	
Geoprobe 7822 DT				20 ft			
Size and Type of Bit				Number of Samples		Disturbed	
2" Direct Push				4		Undisturbed	
Casing Diameter (in)				First		Core	
NA				2		NA	
Casing Hammer				Water Level (ft.)		Completion	
NA				2		NA	
Weight (lbs)				Drilling Foreman			
NA				Ron Dixon			
Drop (in)				Field Engineer			
NA				Michael Au			
Sampler							
5' Macrocore 2" diameter							
Sampler Hammer							
NA							
Weight (lbs)							
NA							
Drop (in)							
NA							

MATERIAL SYMBOL	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
			Number	Type	Recov. (in)	Penetr. resist BLU6in	PID Reading (ppm)	
	M-1A (0-8") 8-inch-thick asphalt and concrete pavement	0	M-1A				0.0	Sample SB15R_GRAB02_0-1 collected.
	M-1B (8-18") Brown medium SAND, some fine gravel, brick (dry)[FILL]	1	M-1B				0.0	Sample SB15R_GRAB02_1-2 collected.
	M-1C (18-24") Dark brown silty fine SAND, some medium sand, some clay, brick (dry)[FILL]	2	M-1C				0.0	
	M-1D (24-42") Dark brown CLAY, some silt, brick (wet)[FILL]	3		MC	42/60		0.0	Sample SB15R_GRAB02_3-4 collected.
		4	M-1D				0.0	
	M-2A (0-18") Dark brown silty fine SAND, trace fine gravel, brick (wet)[FILL]	5						Sample SB15R_GRAB02_5-6 collected.
	M-2B (18-42") Dark brown silty fine SAND, brick (wet)[FILL]	6	M-2A				0.0	Sample WC02_GRAB_5-6 collected.
		7		MC	42/60		0.0	Sample SB15R_GRAB02_6-7 collected.
		8					0.0	Sample SB15R_6-7 collected.
		9	M-2B				0.0	
		10					0.0	Sample 15R_GRAB02_9-10 collected.
	M-3A (0-12") Dark brown silty fine SAND, trace fine gravel (wet)	11	M-3A				0.0	
	M-3B (12-18") Brown coarse SAND, some medium sand (wet)	12	M-3B				0.0	
	M-3C (18-48") Brown silty fine SAND, trace fine gravel (wet)	13		MC	48/60		0.0	
		14	M-3C				0.0	
		15					0.0	
	M-4A (0-12") Dark brown silty fine SAND (wet)	16	M-4A				0.0	
	M-4B (12-36") Grayish brown silty CLAY (wet)	17		MC	36/60		0.0	
		18					0.0	Sample SB15R_18-20 collected.
		19	M-4B				0.0	
		20					0.0	E.O.B. at 20'
		21						Backfilled with drill cuttings and No. 2 sand and capped at grade with cold patch.
		22						

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APPENDIX E
WELL CONSTRUCTION LOGS

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-01

PROJECT			PROJECT NO.		
475 Bay Street and 31 Wave Street			170610601		
LOCATION			ELEVATION AND DATUM		
Staten Island, New York			el. 10.02 NAVD88		
DRILLING AGENCY			DATE STARTED		DATE FINISHED
AARCO Environmental Services, Corp.			5/5/2020		5/5/2020
DRILLING EQUIPMENT			DRILLER		
Geoprobe® 7822 DT			Thomas Harer		
SIZE AND TYPE OF BIT			INSPECTOR		
4-inch Direct Push			Ethan Smith		
BOREHOLE DIAMETER			TYPE OF WELL (OVERBURDEN / BEDROCK)		
2-1/4 inch			Overburden		
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL			
PVC	2-Inch	Sand			
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL		
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite		
METHOD OF INSTALLATION					
A Geoprobe 7822 was used to advance the boring to approximately 12 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 2 to 12 feet bgs with riser from about grade surface to about 2 feet bgs. The annulus was filled with sand to 1 foot bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.					
WELL DEVELOPMENT DATA					
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible	DEVELOPMENT CONFIRMATION	
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM	Well Developed on 5/5/202 until groundwater was no longer turbid	
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal		
TOP OF CASING	ELEVATION 9.78	DEPTH (ft) N/A	WELL DETAILS		SUMMARY SOIL CLASSIFICATION
TOP OF SEAL	ELEVATION 9.52	DEPTH (ft) 0.5	Cover Riser	No. 2 Sand	0.0
TOP OF FILTER	ELEVATION 9.0	DEPTH (ft) 1.0			
TOP OF SCREEN	ELEVATION 8.0	DEPTH (ft) 2.0			
BOTTOM OF BORING	ELEVATION -1.98	DEPTH (ft) 12			
SCREEN LENGTH		LENGTH (ft) 10.0			0.5
SLOT SIZE	No. 10 Slot; 0.010 Inches				1.0
GROUNDWATER ELEVATIONS			PVC Screen	2.0	
ELEVATION 5.74	DATE 5/6/2020	DEPTH TO WATER 4.04 ft bToc			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER		12	
ELEVATION	DATE	DEPTH TO WATER		EOB	
LANGAN Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York					

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

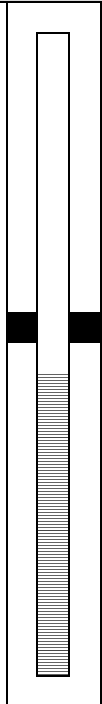
MW-02

PROJECT			PROJECT NO.		
475 Bay Street and 31 Wave Street			170610601		
LOCATION			ELEVATION AND DATUM		
Staten Island, New York			el. 9.75 NAVD88		
DRILLING AGENCY			DATE STARTED		DATE FINISHED
AARCO Environmental Services, Corp.			5/5/2020		5/5/2020
DRILLING EQUIPMENT			DRILLER		
Geoprobe® 7822 DT			Thomas Harer		
SIZE AND TYPE OF BIT			INSPECTOR		
4-inch Direct Push			Ethan Smith		
BOREHOLE DIAMETER			TYPE OF WELL (OVERBURDEN / BEDROCK)		
2-1/4 inch			Overburden		
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL			
PVC	2-Inch	Sand			
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL		
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite		
METHOD OF INSTALLATION					
A Geoprobe 7822 was used to advance the boring to approximately 12 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 2 to 12 feet bgs with riser from about grade surface to about 2 feet bgs. The annulus was filled with sand to 1 foot bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.					
WELL DEVELOPMENT DATA					
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible	DEVELOPMENT CONFIRMATION	
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM	Well Developed on 5/5/202 until groundwater was no longer turbid	
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal		
TOP OF CASING	ELEVATION 9.51	DEPTH (ft) N/A	WELL DETAILS		SUMMARY SOIL CLASSIFICATION
TOP OF SEAL	ELEVATION 9.25	DEPTH (ft) 0.5	Cover Riser PVC Screen	No. 2 Sand	0.0
TOP OF FILTER	ELEVATION 8.8	DEPTH (ft) 1.0			
TOP OF SCREEN	ELEVATION 7.8	DEPTH (ft) 2.0			
BOTTOM OF BORING	ELEVATION -2.25	DEPTH (ft) 12			
SCREEN LENGTH		LENGTH (ft) 10			
SLOT SIZE	No. 10 Slot; 0.010 Inches				0.5
GROUNDWATER ELEVATIONS					1.0
ELEVATION 6	DATE 5/6/2020	DEPTH TO WATER 3.51 ft bToc			2.0
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			12
					EOB
LANGAN Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C.					
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York					

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-05

PROJECT		PROJECT NO.	
475 Bay Street and 31 Wave Street		170610601	
LOCATION		ELEVATION AND DATUM	
Staten Island, New York		el. 9.29 NAVD88	
DRILLING AGENCY		DATE STARTED	DATE FINISHED
AARCO Environmental Services, Corp.		4/28/2020	4/28/2020
DRILLING EQUIPMENT		DRILLER	
Geoprobe® 7822 DT		Thomas Harer	
SIZE AND TYPE OF BIT		INSPECTOR	
4-inch Direct Push		Deirdre Casey	
BOREHOLE DIAMETER		TYPE OF WELL (OVERBURDEN / BEDROCK)	
2-1/4 inch		Overburden	
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL	
PVC	2-Inch	Sand	
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite
METHOD OF INSTALLATION			
A Geoprobe 7822DT was used to advance the boring to approximately 20 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 4 to 14 feet bgs with riser from about grade surface to about 4 feet bgs. The annulus was filled with sand to 3 feet bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.			
WELL DEVELOPMENT DATA			
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal
TOP OF CASING	ELEVATION 8.79	DEPTH (ft) N/A	Cover Riser Bentonite Seal PVC Screen  No. 2 Sand Bentonite Seal
TOP OF SEAL	ELEVATION 6.79	DEPTH (ft) 2.5	
TOP OF FILTER	ELEVATION 6.29	DEPTH (ft) 3.0	
TOP OF SCREEN	ELEVATION 5.3	DEPTH (ft) 4.0	
BOTTOM OF BORING	ELEVATION -4.71	DEPTH (ft) 14	
SCREEN LENGTH	10 ft		
SLOT SIZE	No. 10 Slot; 0.010 Inches		
GROUNDWATER ELEVATIONS			
ELEVATION -1.45	DATE 4/30/2020	DEPTH TO WATER (ft bgs) 10.24	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
WELL DETAILS			SUMMARY SOIL CLASSIFICATION
			0.0
			2.5
			3.0
			4.0
			14
LANGAN Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York			

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-06

PROJECT		PROJECT NO.	
475 Bay Street and 31 Wave Street		170610601	
LOCATION		ELEVATION AND DATUM	
Staten Island, New York		el. 9.71 NAVD88	
DRILLING AGENCY		DATE STARTED	DATE FINISHED
AARCO Environmental Services, Corp.		4/29/2020	4/29/2020
DRILLING EQUIPMENT		DRILLER	
Geoprobe® 7822 DT		Thomas Harer	
SIZE AND TYPE OF BIT		INSPECTOR	
4-inch Direct Push		Deirdre Casey	
BOREHOLE DIAMETER		TYPE OF WELL (OVERBURDEN / BEDROCK)	
2-1/4 inch		Overburden	
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL	
PVC	2-Inch	Sand	
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite
METHOD OF INSTALLATION			
A Geoprobe 7822DT was used to advance the boring to approximately 12 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 2 to 12 feet bgs with riser from grade surface to about 2 feet bgs. The annulus was filled with sand to 1 foot bgs and sealed with hydrated bentonite to surface grade.			
WELL DEVELOPMENT DATA			
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal
DEVELOPMENT CONFIRMATION	Well Developed on 4/29/2020 until groundwater was no longer turbid		
TOP OF CASING	ELEVATION 9.44	DEPTH (ft) N/A	WELL DETAILS SUMMARY SOIL CLASSIFICATION DEPTH (FT)
TOP OF SEAL	ELEVATION 9.71	DEPTH (ft) 0.0	
TOP OF FILTER	ELEVATION 8.71	DEPTH (ft) 1.0	
TOP OF SCREEN	ELEVATION 7.7	DEPTH (ft) 2.0	
BOTTOM OF BORING	ELEVATION -2.29	DEPTH (ft) 12	
SCREEN LENGTH	10 ft		
SLOT SIZE	No. 10 Slot; 0.010 Inches		
GROUNDWATER ELEVATIONS			
ELEVATION 5.88	DATE 4/30/2020	DEPTH TO WATER (ft bgs) 3.56	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER (ft bgs)	
ELEVATION	DATE	DEPTH TO WATER	
COVER RISER BENTONITE SEAL NO. 2 SAND PVC SCREEN			12 EOB
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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-08

PROJECT		PROJECT NO.			
475 Bay Street and 31 Wave Street		170610601			
LOCATION		ELEVATION AND DATUM			
Staten Island, New York		el. 10.12 NAVD88			
DRILLING AGENCY		DATE STARTED	DATE FINISHED		
AARCO Environmental Services, Corp.		4/28/2020	4/29/2020		
DRILLING EQUIPMENT		DRILLER			
Geoprobe® 420 M		Julio Yoloza			
SIZE AND TYPE OF BIT		INSPECTOR			
2-inch Direct Push		Deirdre Casey			
BOREHOLE DIAMETER		TYPE OF WELL (OVERBURDEN / BEDROCK)			
1-1/4 inch		Overburden			
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL			
PVC	1-Inch	Sand			
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL		
PVC No. 10 Slot	1-Inch	No. 2 Sand	Bentonite		
METHOD OF INSTALLATION					
A Geoprobe 420M was used to advance the boring to approximately 15 feet below grade surface (bgs). A permanent 1-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 1" PVC riser. Well screen was installed from approximately 1 to 11 feet bgs with riser from about grade surface to about 1 foot bgs. The annulus was filled with sand to 0.5 foot bgs and sealed with hydrated bentonite to surface grade.					
WELL DEVELOPMENT DATA					
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Peristaltic		
DRILLER OR LANGAN	Driller	MAX PUMP RATE	0.4 LPM		
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~5 Gal		
DEVELOPMENT CONFIRMATION	Well Developed on 4/29/2020 until groundwater was no longer turbid				
TOP OF CASING	ELEVATION 9.82	DEPTH (ft) N/A	COVER RISER BENTONITE SEAL NO. 2 SAND PVC SCREEN	SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
TOP OF SEAL	ELEVATION 10.12	DEPTH (ft) 0.0			
TOP OF FILTER	ELEVATION 9.62	DEPTH (ft) 0.5			
TOP OF SCREEN	ELEVATION 9.1	DEPTH (ft) 1.0			
BOTTOM OF BORING	ELEVATION -0.88	DEPTH (ft) 11			
SCREEN LENGTH	10 ft				
SLOT SIZE	No. 10 Slot; 0.010 Inches				
GROUNDWATER ELEVATIONS					
ELEVATION 6.09	DATE 4/30/2020	DEPTH TO WATER (ft bgs) 3.73			
ELEVATION	DATE	DEPTH TO WATER (ft bgs)			
ELEVATION	DATE	DEPTH TO WATER (ft bgs)			
ELEVATION	DATE	DEPTH TO WATER (ft bgs)			
ELEVATION	DATE	DEPTH TO WATER (ft bgs)			
ELEVATION	DATE	DEPTH TO WATER (ft bgs)			
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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-10

PROJECT			PROJECT NO.		
475 Bay Street and 31 Wave Street			170610601		
LOCATION			ELEVATION AND DATUM		
Staten Island, New York			el. 10.27 NAVD88		
DRILLING AGENCY			DATE STARTED		DATE FINISHED
AARCO Environmental Services, Corp.			5/6/2020		5/6/2020
DRILLING EQUIPMENT			DRILLER		
Geoprobe® 7822 DT			Thomas Harer		
SIZE AND TYPE OF BIT			INSPECTOR		
4-inch Direct Push			Ethan Smith		
BOREHOLE DIAMETER			TYPE OF WELL (OVERBURDEN / BEDROCK)		
2-1/4 inch			Overburden		
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL			
PVC	2-Inch	Sand			
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL		
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite		
METHOD OF INSTALLATION					
A Geoprobe 7822 was used to advance the boring to approximately 13 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 3 to 13 feet bgs with riser from grade surface to about 3 feet bgs. The annulus was filled with sand to 2 feet bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.					
WELL DEVELOPMENT DATA					
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible	DEVELOPMENT CONFIRMATION	
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM	Well Developed on 5/6/202 until groundwater was no longer turbid	
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal		
TOP OF CASING	ELEVATION 10.09	DEPTH (ft) N/A	WELL DETAILS		SUMMARY SOIL CLASSIFICATION
TOP OF SEAL	ELEVATION 9.8	DEPTH (ft) 0.5	Cover Riser Bentonite Seal PVC Screen	No. 2 Sand	0.0
TOP OF FILTER	ELEVATION 8.3	DEPTH (ft) 2.0			
TOP OF SCREEN	ELEVATION 7.3	DEPTH (ft) 3.0			
BOTTOM OF BORING	ELEVATION -2.73	DEPTH (ft) 13			
SCREEN LENGTH		LENGTH (ft) 10			0.5
SLOT SIZE	No. 10 Slot; 0.010 Inches				2.0
GROUNDWATER ELEVATIONS					
ELEVATION 6.31	DATE 5/6/2020	DEPTH TO WATER 3.78 ft bToc			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
					13
					EOB
LANGAN Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York					

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-11

PROJECT		PROJECT NO.																																																																	
475 Bay Street and 31 Wave Street		170610601																																																																	
LOCATION		ELEVATION AND DATUM																																																																	
Staten Island, New York		el. 10.28 NAVD88																																																																	
DRILLING AGENCY		DATE STARTED	DATE FINISHED																																																																
AARCO Environmental Services, Corp.		4/30/2020	5/4/2020																																																																
DRILLING EQUIPMENT		DRILLER																																																																	
Geoprobe® 7822 DT		Thomas Harer																																																																	
SIZE AND TYPE OF BIT		INSPECTOR																																																																	
4-inch Direct Push		Deirdre Casey and Ethan Smith																																																																	
BOREHOLE DIAMETER		TYPE OF WELL (OVERBURDEN / BEDROCK)																																																																	
2-1/4 Inch		Overburden																																																																	
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL																																																																	
PVC	2-Inch	Sand																																																																	
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL																																																																
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite																																																																
METHOD OF INSTALLATION																																																																			
A Geoprobe 7822 DT was used to advance the boring to approximately 16 feet bgs. A permanent 2-inch PVC monitoring well was installed which consisted of 10 feet of well screen, and 2 feet of riser. Well screen was installed from approximately 2 feet bgs to 12 feet bgs with riser from surface to about 1 foot bgs. The annulus was filled with sand to 1 feet bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.																																																																			
WELL DEVELOPMENT DATA																																																																			
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible																																																																
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM																																																																
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal																																																																
DEVELOPMENT CONFIRMATION		Well Developed on 5/4/2020 until groundwater was no longer turbid																																																																	
TOP OF CASING	ELEVATION	DEPTH (ft)	<table border="1"> <thead> <tr> <th colspan="2">WELL DETAILS</th> <th>SUMMARY SOIL CLASSIFICATION</th> <th>DEPTH (FT)</th> </tr> </thead> <tbody> <tr> <td>Cover</td> <td rowspan="5"> </td> <td rowspan="5"></td> <td>0.0</td> </tr> <tr> <td>TOP OF SEAL</td> <td>ELEVATION</td> <td>DEPTH (ft)</td> </tr> <tr> <td>TOP OF FILTER</td> <td>ELEVATION</td> <td>DEPTH (ft)</td> </tr> <tr> <td>TOP OF SCREEN</td> <td>ELEVATION</td> <td>DEPTH (ft)</td> </tr> <tr> <td>BOTTOM OF BORING</td> <td>ELEVATION</td> <td>DEPTH (ft)</td> </tr> <tr> <td>SCREEN LENGTH</td> <td></td> <td>LENGTH (ft)</td> <td>0.5</td> </tr> <tr> <td>SLOT SIZE</td> <td colspan="2">No. 10 Slot; 0.010 Inches</td> <td>1.0</td> </tr> <tr> <td colspan="3"></td> <td>2.0</td> </tr> <tr> <td colspan="3">GROUNDWATER ELEVATIONS</td> <td></td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td></td> </tr> <tr> <td>5.12</td> <td>5/6/2020</td> <td>4.92 ft bToc</td> <td></td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td></td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td></td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td></td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td>12</td> </tr> <tr> <td>ELEVATION</td> <td>DATE</td> <td>DEPTH TO WATER</td> <td></td> </tr> </tbody> </table>	WELL DETAILS		SUMMARY SOIL CLASSIFICATION	DEPTH (FT)	Cover			0.0	TOP OF SEAL	ELEVATION	DEPTH (ft)	TOP OF FILTER	ELEVATION	DEPTH (ft)	TOP OF SCREEN	ELEVATION	DEPTH (ft)	BOTTOM OF BORING	ELEVATION	DEPTH (ft)	SCREEN LENGTH		LENGTH (ft)	0.5	SLOT SIZE	No. 10 Slot; 0.010 Inches		1.0				2.0	GROUNDWATER ELEVATIONS				ELEVATION	DATE	DEPTH TO WATER		5.12	5/6/2020	4.92 ft bToc		ELEVATION	DATE	DEPTH TO WATER		ELEVATION	DATE	DEPTH TO WATER		ELEVATION	DATE	DEPTH TO WATER		ELEVATION	DATE	DEPTH TO WATER	12	ELEVATION	DATE	DEPTH TO WATER	
WELL DETAILS		SUMMARY SOIL CLASSIFICATION		DEPTH (FT)																																																															
Cover				0.0																																																															
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TOP OF SCREEN				ELEVATION	DEPTH (ft)																																																														
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SCREEN LENGTH		LENGTH (ft)		0.5																																																															
SLOT SIZE	No. 10 Slot; 0.010 Inches			1.0																																																															
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TOP OF SEAL	ELEVATION	DEPTH (ft)																																																																	
9.78		0.5																																																																	
TOP OF FILTER	ELEVATION	DEPTH (ft)																																																																	
9.3		1.0																																																																	
TOP OF SCREEN	ELEVATION	DEPTH (ft)																																																																	
8.3		2.0																																																																	
BOTTOM OF BORING	ELEVATION	DEPTH (ft)																																																																	
-1.72		12																																																																	
SCREEN LENGTH		LENGTH (ft)	10.0																																																																
SLOT SIZE	No. 10 Slot; 0.010 Inches																																																																		
GROUNDWATER ELEVATIONS																																																																			
ELEVATION	DATE	DEPTH TO WATER																																																																	
5.12	5/6/2020	4.92 ft bToc																																																																	
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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-13

PROJECT			PROJECT NO.			
475 Bay Street and 31 Wave Street			170610601			
LOCATION			ELEVATION AND DATUM			
Staten Island, New York			el. 10.66 NAVD88			
DRILLING AGENCY			DATE STARTED		DATE FINISHED	
AARCO Environmental Services, Corp.			5/4/2020		5/4/2020	
DRILLING EQUIPMENT			DRILLER			
Geoprobe® 7822 DT			Thomas Harer			
SIZE AND TYPE OF BIT			INSPECTOR			
4-inch Direct Push			Ethan Smith			
BOREHOLE DIAMETER			TYPE OF WELL (OVERBURDEN / BEDROCK)			
2-1/4 inch			Overburden			
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL				
PVC	2-Inch	Sand				
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL			
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite			
METHOD OF INSTALLATION						
A Geoprobe 7822 was used to advance the boring to approximately 13 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 3 to 13 feet bgs with riser from grade surface to about 3 feet bgs. The annulus was filled with sand to 1 foot bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.						
WELL DEVELOPMENT DATA						
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible	DEVELOPMENT CONFIRMATION		
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM	Well Developed on 5/4/202 until groundwater was no longer turbid		
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal			
TOP OF CASING	ELEVATION 10.37	DEPTH (ft) N/A	WELL DETAILS		SUMMARY SOIL CLASSIFICATION	
TOP OF SEAL	ELEVATION 10.2	DEPTH (ft) 0.5	Cover Riser No. 2 Sand Bentonite Seal PVC Screen		DEPTH (FT) 0.0	
TOP OF FILTER	ELEVATION 9.7	DEPTH (ft) 1.0				
TOP OF SCREEN	ELEVATION 7.7	DEPTH (ft) 3.0				
BOTTOM OF BORING	ELEVATION -2.34	DEPTH (ft) 13				
SCREEN LENGTH		LENGTH (ft) 10				
SLOT SIZE	No. 10 Slot; 0.010 Inches					
GROUNDWATER ELEVATIONS						
ELEVATION 6.05	DATE 5/6/2020	DEPTH TO WATER 4.32 ft bToc				
ELEVATION	DATE	DEPTH TO WATER				
ELEVATION	DATE	DEPTH TO WATER				
ELEVATION	DATE	DEPTH TO WATER				
ELEVATION	DATE	DEPTH TO WATER				
ELEVATION	DATE	DEPTH TO WATER				
ELEVATION	DATE	DEPTH TO WATER				
LANGAN Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York						

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No.

MW-16

PROJECT			PROJECT NO.		
475 Bay Street and 31 Wave Street			170610601		
LOCATION			ELEVATION AND DATUM		
Staten Island, New York			el. 10.24 NAVD88		
DRILLING AGENCY			DATE STARTED		DATE FINISHED
AARCO Environmental Services, Corp.			5/4/2020		5/4/2020
DRILLING EQUIPMENT			DRILLER		
Geoprobe® 7822 DT			Thomas Harer		
SIZE AND TYPE OF BIT			INSPECTOR		
4-inch Direct Push			Ethan Smith		
BOREHOLE DIAMETER			TYPE OF WELL (OVERBURDEN / BEDROCK)		
2-1/4 inch			Overburden		
RISER MATERIAL	DIAMETER	TYPE OF BACKFILL MATERIAL			
PVC	2-Inch	Sand			
TYPE OF SCREEN	DIAMETER	TYPE OF WELL PACK	TYPE OF SEAL MATERIAL		
PVC No. 10 Slot	2-Inch	No. 2 Sand	Bentonite		
METHOD OF INSTALLATION					
A Geoprobe 7822 was used to advance the boring to approximately 12 feet below grade surface (bgs). A permanent 2-inch PVC monitoring well was installed, which consisted of 10' of 10-slot (0.010-inch) well screen, and a solid 2" PVC riser. Well screen was installed from approximately 2 to 12 feet bgs with riser from grade surface to about 2 feet bgs. The annulus was filled with sand to 1 feet bgs, sealed with hydrated bentonite, and completed to surface grade with clean sand.					
WELL DEVELOPMENT DATA					
SURGE BLOCK DIAMETER	N/A	TYPE PUMP	Submersible	DEVELOPMENT CONFIRMATION	
DRILLER OR LANGAN	Driller	MAX PUMP RATE	1 LPM	Well Developed on 5/6/2020 until groundwater was no longer turbid	
NUMBER OF SURGE CYCLES	N/A	TOTAL VOLUME	~10 Gal		
TOP OF CASING	ELEVATION 10.02	DEPTH (ft) N/A	WELL DETAILS		SUMMARY SOIL CLASSIFICATION
TOP OF SEAL	ELEVATION 9.74	DEPTH (ft) 0.5	Cover Riser PVC Screen	No. 2 Sand	0.0
TOP OF FILTER	ELEVATION 9.24	DEPTH (ft) 1.0			
TOP OF SCREEN	ELEVATION 8.2	DEPTH (ft) 2.0			
BOTTOM OF BORING	ELEVATION -1.76	DEPTH (ft) 12			
SCREEN LENGTH		LENGTH (ft) 10 ft			
SLOT SIZE	No. 10 Slot; 0.010 Inches				
GROUNDWATER ELEVATIONS					
ELEVATION 5.93	DATE 5/6/2020	DEPTH TO WATER 4.09 ft bToc			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
ELEVATION	DATE	DEPTH TO WATER			
					12
					EOB
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APPENDIX F
GROUNDWATER SAMPLING LOGS

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Groundwater Sampling Logs

[illegible]

Groundwater Sampling Logs

[illegible]

Groundwater Sampling Logs

[illegible]

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. PPM = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mS/cm = milli-Siemens per centimeter
10. NTU = Nephelometric Turbidity Unit

[illegible]

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APPENDIX G

SOIL VAPOR CONSTRUCTION AND SAMPLING LOGS

SUB-SLAB SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SS08

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601																																	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a																																	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 4/28/2020	DATE FINISHED: 4/28/2020																																
INSTALLATION FOREMAN: Ron Dixon		SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020																																
INSTALLATION EQUIPMENT: Geoprobe® 420 M		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister																																	
INSPECTOR: Deirdre Casey		SAMPLER: Luke McCartney																																	
POTENTIAL SAMPLE INTERFERENCES: None observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 54-58°F Wind: 16-24 mph SE Precipitation: Rain/cloudy Pressure: 1015-1019 MB																																	
METHOD OF INSTALLATION AND PURGING: AARCO advanced subslab vapor point to 14-inches below the top of the slab. A small amount of No. 2 sand was backfilled into the borehole to set the vapor tubing. No. 2 sand was backfilled around the tubing to 3 inches bgs, and the remainder of the borehole was sealed with bentonite.																																			
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite																																	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite																																	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand																																	
PURGE VOLUME (L): 0.067 PURGE FLOW RATE (ML/MIN): 200 PID AFTER PURGE (PPM): 0 HELIUM TESTS <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Pre-sampling</th> <th style="width: 25%; text-align: center;">Post-sampling</th> </tr> <tr> <td>HELIUM TEST IN BUCKET(%):</td> <td style="text-align: center;">21.2%</td> <td style="text-align: center;">19.7%</td> </tr> <tr> <td>HELIUM TEST IN TUBE (PPM):</td> <td style="text-align: center;">0.0%</td> <td style="text-align: center;">0.0%</td> </tr> </table> SAMPLE START TIME: 9:13 SAMPLE STOP TIME: 17:13 TOTAL SAMPLE TIME (MIN): 480 REGULATOR FLOW RATE (L/MIN): 0.009673 VOLUME OF SAMPLE (LITERS): 6 PID AFTER SAMPLE (PPM): 0 SAMPLE MOISTURE CONTENT: n/a CAN SERIAL NUMBER: 16956 REGULATOR SERIAL NUMBER: 5610 CAN START VACUUM PRESS. (" HG): -29.75 CAN STOP VACUUM PRESS. (" HG): -7			Pre-sampling	Post-sampling	HELIUM TEST IN BUCKET(%):	21.2%	19.7%	HELIUM TEST IN TUBE (PPM):	0.0%	0.0%	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">IMPLANT/PROBE DETAILS</th> <th style="text-align: center;">DEPTH</th> <th rowspan="2" style="text-align: center;">NOTES</th> </tr> <tr> <th style="width: 10%;">SURFACE</th> <th style="width: 50%;">(SEAL, FILTER, ETC.)</th> <th style="width: 20%;">(INCHES FROM SURFACE)</th> </tr> <tr> <td style="text-align: center;">SURFACE</td> <td style="text-align: center;">SURFACE</td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Top of Seal</td> <td style="text-align: center;">0.0</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Top of Pack</td> <td style="text-align: center;">3.0</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Probe Depth</td> <td style="text-align: center;">14.0</td> <td></td> </tr> </table>		IMPLANT/PROBE DETAILS		DEPTH	NOTES	SURFACE	(SEAL, FILTER, ETC.)	(INCHES FROM SURFACE)	SURFACE	SURFACE				Top of Seal	0.0			Top of Pack	3.0			Probe Depth	14.0	
	Pre-sampling	Post-sampling																																	
HELIUM TEST IN BUCKET(%):	21.2%	19.7%																																	
HELIUM TEST IN TUBE (PPM):	0.0%	0.0%																																	
IMPLANT/PROBE DETAILS		DEPTH	NOTES																																
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	Top of Seal	0.0																																	
	Top of Pack	3.0																																	
	Probe Depth	14.0																																	
SAMPLE LOCATION SKETCH		NOTES																																	
See Sample Location Plan		Sample Name: SS08_043020																																	

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SUB-SLAB SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SS09

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 4/28/2020	DATE FINISHED: 4/28/2020
INSTALLATION FOREMAN: Ron Dixon		SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020
INSTALLATION EQUIPMENT: Geoprobe® 420 M		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Deirdre Casey		SAMPLER: Luke McCartney	
POTENTIAL SAMPLE INTERFERENCES: None observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 54-58°F Wind: 16-24 mph SE Precipitation: Rain/cloudy Pressure: 1015-1019 MB	
METHOD OF INSTALLATION AND PURGING: AARCO advanced subslab vapor point to 14-inches below the top of the slab. A small amount of No. 2 sand was backfilled into the borehole to set the vapor tubing. No. 2 sand was backfilled around the tubing to 2 inches bgs, and the remainder of the borehole was sealed with bentonite.			
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand	
PURGE VOLUME (L):	0.067		
PURGE FLOW RATE (ML/MIN):	200		
PID AFTER PURGE (PPM):	0.4		
HELIUM TESTS			
	Pre-sampling Post-sampling		
HELIUM TEST IN BUCKET(%):	18.5% 23.4%		
HELIUM TEST IN TUBE (PPM):	0.0% 0.0%		
SAMPLE START TIME:	9:12		
SAMPLE STOP TIME:	17:12		
TOTAL SAMPLE TIME (MIN):	480		
REGULATOR FLOW RATE (L/MIN):	0.01151		
VOLUME OF SAMPLE (LITERS):	6		
PID AFTER SAMPLE (PPM):	0.2		
SAMPLE MOISTURE CONTENT:	n/a		
CAN SERIAL NUMBER:	18302		
REGULATOR SERIAL NUMBER:	Y15		
CAN START VACUUM PRESS. (" HG):	-31.5		
CAN STOP VACUUM PRESS. (" HG):	-7		
SAMPLE LOCATION SKETCH		NOTES Sample Name: SS09_043020	
See Sample Location Plan			
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Sample Number: SV04

Page 3 of 15

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV07

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services Corp.		INSTALLATION DATE STARTED: 4/29/2020	DATE FINISHED: 4/29/2020
INSTALLATION FOREMAN: Ron Dixon		SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Deirdre Casey		SAMPLER: Luke McCartney	
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 54-58°F Wind: 16-24 mph SE Precipitation: Rain/cloudy Pressure: 1015-1019 MB	
METHOD OF INSTALLATION AND PURGING: Advance Geoprobe 7822DT to 2 feet below grade surface (bgs), install 2-inch polyethylene probe, backfill with No. 2 sand to 1 feet bgs, and sealed with hydrated bentonite to surface with hydrated bentonite.			
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: None		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand	
PURGE VOLUME (L):	0.067	IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	
PURGE FLOW RATE (ML/MIN):	200		
PID AFTER PURGE (PPM):	0	DEPTH (FEET FROM SURFACE)	
HELIUM TESTS	Pre-sampling Post-sampling		
HELIUM TEST IN BUCKET(%):	25.1% 15.5%	NOTES	
HELIUM TEST IN TUBE (PPM):	0.0% 0.0%		
SAMPLE START TIME:	12:30		
SAMPLE STOP TIME:	14:30		
TOTAL SAMPLE TIME (MIN):	120		
REGULATOR FLOW RATE (L/MIN):	0.004435		
VOLUME OF SAMPLE (LITERS):	6		
PID AFTER SAMPLE (PPM):	0		
SAMPLE MOISTURE CONTENT:	n/a		
CAN SERIAL NUMBER:	23996		
REGULATOR SERIAL NUMBER:	6878		
CAN START VACUUM PRESS. (" HG):	-31.5		
CAN STOP VACUUM PRESS. (" HG):	-7.75		
SAMPLE LOCATION SKETCH			
See Sample Location Plan		NOTES	
		Sample Name: SV07_043020	
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INDOOR AIR SAMPLING LOG SHEET Sample Number: <u>IA08</u>																												
PROJECT: 475 Bay Street and 31 Wave Street	PROJECT NO.: 170610601																											
LOCATION: Staten Island, New York	SURFACE ELEVATION AND DATUM: N/A																											
SAMPLER: Luke McCartney	SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020																										
INSPECTOR: Luke McCartney	TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister																											
POTENTIAL SAMPLE INTERFERENCES: None Observed	WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 2px;">Temp:</td> <td style="padding: 2px;">54-58°F</td> </tr> <tr> <td style="padding: 2px;">Wind:</td> <td style="padding: 2px;">16-24 mph SE</td> </tr> <tr> <td style="padding: 2px;">Precipitation:</td> <td style="padding: 2px;">Rain/cloudy</td> </tr> <tr> <td style="padding: 2px;">Pressure:</td> <td style="padding: 2px;">1015-1019 MB</td> </tr> </table>		Temp:	54-58°F	Wind:	16-24 mph SE	Precipitation:	Rain/cloudy	Pressure:	1015-1019 MB																		
Temp:	54-58°F																											
Wind:	16-24 mph SE																											
Precipitation:	Rain/cloudy																											
Pressure:	1015-1019 MB																											
METHOD OF INSTALLATION AND SAMPLING: Langan field screened the sample location with a MiniRAE 3000 photoionization detector prior to sampling. Sample consisted of 6L Summa canister fitted with an 8-hour flow control valve. The flow controller was zeroed and valve opened to initiate the 8-hour sample collection. The sample and flow controller were checked each hour during sampling to ensure proper operation.																												
SAMPLE DETAILS	SAMPLE LOCATION SKETCH																											
<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">HEIGHT ABOVE GROUND (FT):</td><td style="border-bottom: 1px solid black; text-align: center;">3.5</td></tr> <tr><td>PID BEFORE SAMPLE (PPM):</td><td style="border-bottom: 1px solid black; text-align: center;">0.0</td></tr> <tr><td>SAMPLE START TIME:</td><td style="border-bottom: 1px solid black; text-align: center;">9:12</td></tr> <tr><td>SAMPLE STOP TIME:</td><td style="border-bottom: 1px solid black; text-align: center;">17:12</td></tr> <tr><td>TOTAL SAMPLE TIME (MIN):</td><td style="border-bottom: 1px solid black; text-align: center;">480</td></tr> <tr><td>REGULATOR FLOW RATE (L/MIN):</td><td style="border-bottom: 1px solid black; text-align: center;">0.01105</td></tr> <tr><td>VOLUME OF SAMPLE (LITERS):</td><td style="border-bottom: 1px solid black; text-align: center;">6</td></tr> <tr><td>PID AFTER SAMPLE (PPM):</td><td style="border-bottom: 1px solid black; text-align: center;">0.0</td></tr> <tr><td>SAMPLE MOISTURE CONTENT:</td><td style="border-bottom: 1px solid black; text-align: center;">n/a</td></tr> <tr><td>CAN SERIAL NUMBER:</td><td style="border-bottom: 1px solid black; text-align: center;">18295</td></tr> <tr><td>REGULATOR SERIAL NUMBER:</td><td style="border-bottom: 1px solid black; text-align: center;">Y34</td></tr> <tr><td>CAN START VACUUM PRESS. (" HG):</td><td style="border-bottom: 1px solid black; text-align: center;">-30</td></tr> <tr><td>CAN STOP VACUUM PRESS. (" HG):</td><td style="border-bottom: 1px solid black; text-align: center;">-6</td></tr> </table>	HEIGHT ABOVE GROUND (FT):	3.5	PID BEFORE SAMPLE (PPM):	0.0	SAMPLE START TIME:	9:12	SAMPLE STOP TIME:	17:12	TOTAL SAMPLE TIME (MIN):	480	REGULATOR FLOW RATE (L/MIN):	0.01105	VOLUME OF SAMPLE (LITERS):	6	PID AFTER SAMPLE (PPM):	0.0	SAMPLE MOISTURE CONTENT:	n/a	CAN SERIAL NUMBER:	18295	REGULATOR SERIAL NUMBER:	Y34	CAN START VACUUM PRESS. (" HG):	-30	CAN STOP VACUUM PRESS. (" HG):	-6	See Sample Location Plan Paired with SS08_043020	
HEIGHT ABOVE GROUND (FT):	3.5																											
PID BEFORE SAMPLE (PPM):	0.0																											
SAMPLE START TIME:	9:12																											
SAMPLE STOP TIME:	17:12																											
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REGULATOR FLOW RATE (L/MIN):	0.01105																											
VOLUME OF SAMPLE (LITERS):	6																											
PID AFTER SAMPLE (PPM):	0.0																											
SAMPLE MOISTURE CONTENT:	n/a																											
CAN SERIAL NUMBER:	18295																											
REGULATOR SERIAL NUMBER:	Y34																											
CAN START VACUUM PRESS. (" HG):	-30																											
CAN STOP VACUUM PRESS. (" HG):	-6																											
NOTES																												
Sample Name: <u>IA08_042030</u>																												
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INDOOR AIR SAMPLING LOG SHEET Sample Number: <u>IA09</u>																												
PROJECT: 475 Bay Street and 31 Wave Street	PROJECT NO.: 170610601																											
LOCATION: Staten Island, New York	SURFACE ELEVATION AND DATUM: N/A																											
SAMPLER: Luke McCartney	SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020																										
INSPECTOR: Luke McCartney	TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister																											
POTENTIAL SAMPLE INTERFERENCES: None Observed	WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 2px;">Temp:</td> <td style="padding: 2px;">54-58°F</td> </tr> <tr> <td style="padding: 2px;">Wind:</td> <td style="padding: 2px;">16-24 mph SE</td> </tr> <tr> <td style="padding: 2px;">Precipitation:</td> <td style="padding: 2px;">Rain/cloudy</td> </tr> <tr> <td style="padding: 2px;">Pressure:</td> <td style="padding: 2px;">1015-1019 MB</td> </tr> </table>		Temp:	54-58°F	Wind:	16-24 mph SE	Precipitation:	Rain/cloudy	Pressure:	1015-1019 MB																		
Temp:	54-58°F																											
Wind:	16-24 mph SE																											
Precipitation:	Rain/cloudy																											
Pressure:	1015-1019 MB																											
METHOD OF INSTALLATION AND SAMPLING: Langan field screened the sample location with a MiniRAE 3000 photoionization detector prior to sampling. Sample consisted of 6L Summa canister fitted with an 8-hour flow control valve. The flow controller was zeroed and valve opened to initiate the 8-hour sample collection. The sample and flow controller were checked each hour during sampling to ensure proper operation.																												
SAMPLE DETAILS	SAMPLE LOCATION SKETCH																											
<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%;">HEIGHT ABOVE GROUND (FT):</td><td style="border-bottom: 1px solid black; text-align: center;">3.5</td></tr> <tr><td>PID BEFORE SAMPLE (PPM):</td><td style="border-bottom: 1px solid black; text-align: center;">0.0</td></tr> <tr><td>SAMPLE START TIME:</td><td style="border-bottom: 1px solid black; text-align: center;">9:23</td></tr> <tr><td>SAMPLE STOP TIME:</td><td style="border-bottom: 1px solid black; text-align: center;">17:23</td></tr> <tr><td>TOTAL SAMPLE TIME (MIN):</td><td style="border-bottom: 1px solid black; text-align: center;">480</td></tr> <tr><td>REGULATOR FLOW RATE (L/MIN):</td><td style="border-bottom: 1px solid black; text-align: center;">0.00977</td></tr> <tr><td>VOLUME OF SAMPLE (LITERS):</td><td style="border-bottom: 1px solid black; text-align: center;">6</td></tr> <tr><td>PID AFTER SAMPLE (PPM):</td><td style="border-bottom: 1px solid black; text-align: center;">0.0</td></tr> <tr><td>SAMPLE MOISTURE CONTENT:</td><td style="border-bottom: 1px solid black; text-align: center;">n/a</td></tr> <tr><td>CAN SERIAL NUMBER:</td><td style="border-bottom: 1px solid black; text-align: center;">Y3</td></tr> <tr><td>REGULATOR SERIAL NUMBER:</td><td style="border-bottom: 1px solid black; text-align: center;">28316</td></tr> <tr><td>CAN START VACUUM PRESS. (" HG):</td><td style="border-bottom: 1px solid black; text-align: center;">-29.9</td></tr> <tr><td>CAN STOP VACUUM PRESS. (" HG):</td><td style="border-bottom: 1px solid black; text-align: center;">-8</td></tr> </table>	HEIGHT ABOVE GROUND (FT):	3.5	PID BEFORE SAMPLE (PPM):	0.0	SAMPLE START TIME:	9:23	SAMPLE STOP TIME:	17:23	TOTAL SAMPLE TIME (MIN):	480	REGULATOR FLOW RATE (L/MIN):	0.00977	VOLUME OF SAMPLE (LITERS):	6	PID AFTER SAMPLE (PPM):	0.0	SAMPLE MOISTURE CONTENT:	n/a	CAN SERIAL NUMBER:	Y3	REGULATOR SERIAL NUMBER:	28316	CAN START VACUUM PRESS. (" HG):	-29.9	CAN STOP VACUUM PRESS. (" HG):	-8	See Sample Location Plan Paired with SS09_043020	
HEIGHT ABOVE GROUND (FT):	3.5																											
PID BEFORE SAMPLE (PPM):	0.0																											
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NOTES																												
Sample Name: <u>IA09_043020</u>																												
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727																												

AMBIENT AIR SAMPLING LOG SHEET Sample Number: <u>AA01</u>			
PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: N/A	
SAMPLER: Luke McCartney		SAMPLE DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020
INSPECTOR: Luke McCartney		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):	
		Temp:	54-58°F
		Wind:	16-24 mph SE
		Precipitation:	Rain/cloudy
		Pressure:	1015-1019 MB
METHOD OF INSTALLATION AND SAMPLING: Langan field screened the sample location with a MiniRAE 3000 photoionization detector prior to sampling. Sample consisted of 6L Summa canister fitted with a 2-hour flow control valve. The flow controller was zeroed and valve opened to initiate the 2-hour sample collection. The sample and flow controller were checked each hour during sampling to ensure proper operation.			
SAMPLE DETAILS		SAMPLE LOCATION SKETCH	
HEIGHT ABOVE GROUND (FT): <u>3.5</u> PID BEFORE SAMPLE (PPM): <u>0.0</u> SAMPLE START TIME: <u>12:35</u> SAMPLE STOP TIME: <u>14:31</u> TOTAL SAMPLE TIME (MIN): <u>116</u> REGULATOR FLOW RATE (L/MIN): <u>0.04393</u> VOLUME OF SAMPLE (LITERS): <u>6</u> PID AFTER SAMPLE (PPM): <u>0.0</u> SAMPLE MOISTURE CONTENT: <u>n/a</u> CAN SERIAL NUMBER: <u>15529</u> REGULATOR SERIAL NUMBER: <u>7361</u> CAN START VACUUM PRESS. (" HG): <u>-28</u> CAN STOP VACUUM PRESS. (" HG): <u>-4.25</u>		See Sample Location Plan Ambient air sample was centrally located in parking area between SV04 and SV07	
NOTES			
Sample Name: AA01_043020			
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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV01

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.		INSTALLATION DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION FOREMAN: Thomas Harer		SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Ethan Smith		SAMPLER: Ethan Smith	
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012	
METHOD OF INSTALLATION AND PURGING: Advanced Geoprobe® 7822 DT to 3 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.			
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand	
PURGE VOLUME (L): 0.067		IMPLANT/PROBE DETAILS	
PURGE FLOW RATE (ML/MIN): 200		(SEAL, FILTER, ETC.)	
PID AFTER PURGE (PPM): 0		DEPTH	
HELIUM TESTS		NOTES	
Pre-sampling Post-sampling		SURFACE SURFACE	
HELIUM TEST IN BUCKET(%): 12.8% 16.9%			
HELIUM TEST IN TUBE (PPM): 0.0% 0.0%			
SAMPLE START TIME: 11:59			
SAMPLE STOP TIME: 13:56			
TOTAL SAMPLE TIME (MIN): 117			
REGULATOR FLOW RATE (L/MIN): 6			
VOLUME OF SAMPLE (LITERS): 0			
PID AFTER SAMPLE (PPM): n/a			
SAMPLE MOISTURE CONTENT: 17350			
CAN SERIAL NUMBER: 7090			
REGULATOR SERIAL NUMBER: -28		Top of Seal 0.00	
CAN START VACUUM PRESS. (" HG): -4		Top of Pack 0.50	
CAN STOP VACUUM PRESS. (" HG): -4		Probe Depth 3.00	
SAMPLE LOCATION SKETCH		NOTES	
See Sample Location Plan		Sample name: SV01_050520	
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727			

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV02

PROJECT: 475 Bay Street and 31 Wave Street	PROJECT NO.: 170610601	
LOCATION: Staten Island, New York	SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	INSTALLATION DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION FOREMAN: Thomas Harer	SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Ethan Smith	SAMPLER: Ethan Smith	
POTENTIAL SAMPLE INTERFERENCES: None Observed	WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012	

METHOD OF INSTALLATION AND PURGING:
Advanced Geoprobe® 7822 DT to 2 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite
BOREHOLE DIAMETER: 2-inch	FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand

PURGE VOLUME (L):	0.067	IMPLANT/PROBE DETAILS		DEPTH	NOTES
PURGE FLOW RATE (ML/MIN):	200	(SEAL, FILTER, ETC.)		(FEET FROM SURFACE)	
PID AFTER PURGE (PPM):	0	SURFACE	SURFACE		
HELIUM TESTS	Pre-sampling	Post-sampling			
HELIUM TEST IN BUCKET(%):	18.7%	17.6%			
HELIUM TEST IN TUBE (PPM):	0.0%	0.0%			
SAMPLE START TIME:	12:00				
SAMPLE STOP TIME:	14:00				
TOTAL SAMPLE TIME (MIN):	120				
REGULATOR FLOW RATE (L/MIN):					
VOLUME OF SAMPLE (LITERS):	6				
PID AFTER SAMPLE (PPM):	0				
SAMPLE MOISTURE CONTENT:	n/a				
CAN SERIAL NUMBER:	16976				
REGULATOR SERIAL NUMBER:	440				
CAN START VACUUM PRESS. (" HG):	-30				
CAN STOP VACUUM PRESS. (" HG):	-4				

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

Sample name: SV02_050520

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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV03

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.		INSTALLATION DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION FOREMAN: Thomas Harer		SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Ethan Smith		SAMPLER: Ethan Smith	
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012	
METHOD OF INSTALLATION AND PURGING: Advanced Geoprobe® 7822 DT to 3 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.			
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite	
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite	
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand	
PURGE VOLUME (L):	0.067	IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	
PURGE FLOW RATE (ML/MIN):	200		
PID AFTER PURGE (PPM):	0	DEPTH (FEET FROM SURFACE)	NOTES
HELIUM TESTS			
	Pre-sampling Post-sampling		
HELIUM TEST IN BUCKET(%):	15.2% 14.7%		
HELIUM TEST IN TUBE (PPM):	0.0% 0.0%		
SAMPLE START TIME:	12:02		
SAMPLE STOP TIME:	13:45		
TOTAL SAMPLE TIME (MIN):	103		
REGULATOR FLOW RATE (L/MIN):			
VOLUME OF SAMPLE (LITERS):	6		
PID AFTER SAMPLE (PPM):	0		
SAMPLE MOISTURE CONTENT:	n/a		
CAN SERIAL NUMBER:	16953		
REGULATOR SERIAL NUMBER:	6864		
CAN START VACUUM PRESS. (" HG):	-28.5		
CAN STOP VACUUM PRESS. (" HG):	-4.5		
SAMPLE LOCATION SKETCH			
See Sample Location Plan		NOTES	
		Sample Name: SV03_050520	
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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV11

PROJECT: 475 Bay Street and 31 Wave Street	PROJECT NO.: 170610601	
LOCATION: Staten Island, New York	SURFACE ELEVATION AND DATUM: n/a	
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	INSTALLATION DATE STARTED: 4/30/2020	DATE FINISHED: 4/30/2020
INSTALLATION FOREMAN: Thomas Harer	SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
INSPECTOR: Deirdre Casey	SAMPLER: Ethan Smith	
POTENTIAL SAMPLE INTERFERENCES: None Observed	WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012	

METHOD OF INSTALLATION AND PURGING:
Advanced Geoprobe® 7822 DT to 3 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite
BOREHOLE DIAMETER: 2-inch	FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand

PURGE VOLUME (L): 0.067	IMPLANT/PROBE DETAILS		DEPTH	NOTES
PURGE FLOW RATE (ML/MIN): 200	(SEAL, FILTER, ETC.)		(FEET FROM SURFACE)	
PID AFTER PURGE (PPM): 0	SURFACE			
HELIUM TESTS	Pre-sampling	Post-sampling		
HELIUM TEST IN BUCKET(%):	12.8%	21.6%		
HELIUM TEST IN TUBE (PPM):	0.0%	0.0%		
SAMPLE START TIME: 12:03				
SAMPLE STOP TIME: 13:59				
TOTAL SAMPLE TIME (MIN): 116				
REGULATOR FLOW RATE (L/MIN): 0.051				
VOLUME OF SAMPLE (LITERS): 6				
PID AFTER SAMPLE (PPM): 0				
SAMPLE MOISTURE CONTENT: n/a				
CAN SERIAL NUMBER: 34496				
REGULATOR SERIAL NUMBER: 3351				
CAN START VACUUM PRESS. (" HG): -29				
CAN STOP VACUUM PRESS. (" HG): -4.5				

SAMPLE LOCATION SKETCH

See Sample Location Plan	NOTES	
	Sample Name: SV11_050520	

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Sample Number: SV13

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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV15

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601																							
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a																							
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.		INSTALLATION DATE STARTED: 5/4/2020	DATE FINISHED: 5/4/2020																						
INSTALLATION FOREMAN: Thomas Harer		SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020																						
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister																							
INSPECTOR: Ethan Smith		SAMPLER: Ethan Smith																							
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012																							
METHOD OF INSTALLATION AND PURGING: Advanced Geoprobe® 7822 DT to 3 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.																									
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite																							
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite																							
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand																							
PURGE VOLUME (L):	0.067	<table border="1"> <thead> <tr> <th colspan="2">IMPLANT/PROBE DETAILS</th> <th rowspan="2">DEPTH (FEET FROM SURFACE)</th> <th rowspan="2">NOTES</th> </tr> <tr> <th colspan="2">(SEAL, FILTER, ETC.)</th> </tr> </thead> <tbody> <tr> <td>SURFACE</td> <td>SURFACE</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Top of Seal</td> <td>0.00</td> </tr> <tr> <td></td> <td></td> <td>Top of Pack</td> <td>0.50</td> </tr> <tr> <td></td> <td></td> <td>Probe Depth</td> <td>3.00</td> </tr> </tbody> </table>		IMPLANT/PROBE DETAILS		DEPTH (FEET FROM SURFACE)	NOTES	(SEAL, FILTER, ETC.)		SURFACE	SURFACE					Top of Seal	0.00			Top of Pack	0.50			Probe Depth	3.00
IMPLANT/PROBE DETAILS				DEPTH (FEET FROM SURFACE)	NOTES																				
(SEAL, FILTER, ETC.)																									
SURFACE	SURFACE																								
				Top of Seal	0.00																				
				Top of Pack	0.50																				
				Probe Depth	3.00																				
PURGE FLOW RATE (ML/MIN):	200																								
PID AFTER PURGE (PPM):	0																								
HELIUM TESTS																									
	Pre-sampling Post-sampling																								
HELIUM TEST IN BUCKET(%):	19.5% 21.7%																								
HELIUM TEST IN TUBE (PPM):	0.0% 0.0%																								
SAMPLE START TIME:	12:06																								
SAMPLE STOP TIME:	14:03																								
TOTAL SAMPLE TIME (MIN):	117																								
REGULATOR FLOW RATE (L/MIN):	0.051																								
VOLUME OF SAMPLE (LITERS):	6																								
PID AFTER SAMPLE (PPM):	0																								
SAMPLE MOISTURE CONTENT:	n/a																								
CAN SERIAL NUMBER:	24109																								
REGULATOR SERIAL NUMBER:	5608																								
CAN START VACUUM PRESS. (" HG):	-28.5																								
CAN STOP VACUUM PRESS. (" HG):	-4																								
SAMPLE LOCATION SKETCH		NOTES																							
See Sample Location Plan		Sample Name: SV15_050520																							
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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV16

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601			
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: n/a			
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.		INSTALLATION DATE STARTED: 5/4/2020	DATE FINISHED: 5/4/2020		
INSTALLATION FOREMAN: Thomas Harer		SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020		
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister			
INSPECTOR: Ethan Smith		SAMPLER: Ethan Smith			
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.): Temp: 58-69°F Wind: 2-6 mph NNE Precipitation: None Pressure: 1012			
METHOD OF INSTALLATION AND PURGING: Advanced Geoprobe® 7822 DT to 3 feet below grade surface (bgs), installed 2-inch polyethylene soil vapor probe; backfilled with No. 2 sand to 0.5 feet bgs, sealed to surface with hydrated bentonite, purged using MultiRAE (0.2 L/min); integrity of seal was tested via a helium tracer test.					
TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing		TYPE OF MATERIAL ABOVE SEAL: Hydrated bentonite			
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe		SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.): Bentonite			
BOREHOLE DIAMETER: 2-inch		FILTER PACK MATERIAL (Sand or Glass Beads): No. 2 Sand			
PURGE VOLUME (L):	0.067	IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)			
PURGE FLOW RATE (ML/MIN):	200				
PID AFTER PURGE (PPM):	0	DEPTH (FEET FROM SURFACE)			
HELIUM TESTS	Pre-sampling Post-sampling				
HELIUM TEST IN BUCKET(%):	26.1 % 19.2 %	NOTES			
HELIUM TEST IN TUBE (PPM):	0.0 % 0.0 %				
SAMPLE START TIME:	12:05				
SAMPLE STOP TIME:	13:53				
TOTAL SAMPLE TIME (MIN):	108				
REGULATOR FLOW RATE (L/MIN):	0.055				
VOLUME OF SAMPLE (LITERS):	6				
PID AFTER SAMPLE (PPM):	0				
SAMPLE MOISTURE CONTENT:	n/a				
CAN SERIAL NUMBER:	481				
REGULATOR SERIAL NUMBER:	7076				
CAN START VACUUM PRESS. (" HG):	-28				
CAN STOP VACUUM PRESS. (" HG):	-4				
SAMPLE LOCATION SKETCH				NOTES	
See Sample Location Plan					
Sample Name: SV16_050520					
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727					

AMBIENT AIR SAMPLING LOG SHEET
Sample Number: AA02

PROJECT: 475 Bay Street and 31 Wave Street		PROJECT NO.: 170610601	
LOCATION: Staten Island, New York		SURFACE ELEVATION AND DATUM: N/A	
SAMPLER: Ethan Smith		SAMPLE DATE STARTED: 5/5/2020	DATE FINISHED: 5/5/2020
INSPECTOR: Ethan Smith		TYPE OF SAMPLING DEVICE: 6-Liter Summa Canister	
POTENTIAL SAMPLE INTERFERENCES: None Observed		WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):	
		Temp:	58-69°F
		Wind:	2-6 mph NNE
		Precipitation:	None
		Pressure:	1012
METHOD OF INSTALLATION AND SAMPLING: Langan field screened the sample location with a MiniRAE 3000 photoionization detector prior to sampling. Sample consisted of 6L Summa canister fitted with a 2-hour flow control valve. The flow controller was zeroed and valve opened to initiate the 2-hour sample collection. The sample and flow controller were checked each hour during sampling to ensure proper operation.			
SAMPLE DETAILS		SAMPLE LOCATION SKETCH	
HEIGHT ABOVE GROUND (FT):	4.5	See Sample Location Plan Ambient air sample was centrally located in the 475 Bay Street property	
PID BEFORE SAMPLE (PPM):	0.0		
SAMPLE START TIME:	12:06		
SAMPLE STOP TIME:	14:06		
TOTAL SAMPLE TIME (MIN):	120		
REGULATOR FLOW RATE (L/MIN):	0.05		
VOLUME OF SAMPLE (LITERS):	6		
PID AFTER SAMPLE (PPM):	0.0		
SAMPLE MOISTURE CONTENT:	n/a		
CAN SERIAL NUMBER:	28299		
REGULATOR SERIAL NUMBER:	5707		
CAN START VACUUM PRESS. (" HG):	-29		
CAN STOP VACUUM PRESS. (" HG):	-5		
NOTES			
Sample Name: AA02_050520			
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727			

APPENDIX H

DATA USABILITY SUMMARY REPORTS

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Dina Palazzolo, Langan Senior Staff Scientist

From: Emily Strake, Langan Senior Project Chemist

Date: July 22, 2020

Re: Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
Staten Island, New York
April and May 2020 Groundwater Samples
Langan Project No.: 170610601

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of groundwater samples collected in April and May 2020 by Langan Engineering and Environmental Services ("Langan") at the 475 Bay Street and 31 Wave Street site ("the site"). The samples were analyzed York Analytical Laboratories, Inc. (NYSDOH NELAP registration # 10854 and 12058) for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), per- and polyfluoroalkyl substances (PFAS), herbicides, polychlorinated biphenyls (PCBs), pesticides, total and dissolved metals including mercury (Hg), cyanide (CN), hexavalent chromium (CrVI), and trivalent chromium (CrIII) by the methods specified below.

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D and 8270D SIM
- 1,4-Dioxane by 8270D with SIM
- PFAS by USEPA Method 537M
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Metals by SW-846 Method 6010B and 6020
- Mercury by SW-846 Method 7473
- Cyanide by SW-846 Method 9012B
- Hexavalent Chromium by SW-846 Method 7196A
- Trivalent Chromium (calculated)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Technical Memorandum

Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
Staten Island, New York
April and May 2020 Groundwater Samples
Langan Project No.: 170610601
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TABLE 1: SAMPLE SUMMARY

<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20D0850	20D0850-13	MW05_043020	4/30/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-14	GWDUP01_043020	4/30/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-11	MW06_043020	4/30/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-12	MW08_043020	4/30/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-15	GWFB01_043020	4/30/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-16	GWTB01_043020	4/30/2020	VOCs
20E0198	20E0198-02	MW01_050720	5/7/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0198	20E0198-01	MW16_050720	5/7/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0198	20E0198-04	MW10_050720	5/7/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0198	20E0198-03	MW02_050720	5/7/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0198	20E0198-05	TB01_050720	5/7/2020	VOCs

Technical Memorandum

Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
Staten Island, New York
April and May 2020 Groundwater Samples
Langan Project No.: 170610601
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<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20E0279	20E0279-01	MW13_051120	5/11/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0279	20E0279-02	MW11_051120	5/11/2020	VOCs, SVOCs, 1,4-Dioxane, SVOC SIM, PFAS, Herbicides, PCBs, Pesticides, Total Metals, Dissolved Metals, Hg, CN, CrVI, CrIII
20E0279	20E0279-03	Trip Blank	5/11/2020	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34A, "Trace Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-33A, "Low/Medium Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-35A, "Semivolatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-17, "Validating Chlorinated Herbicides" (December 2010, Revision 3.1), USEPA Region II SOP #HW-37A, "Polychlorinated Biphenyl (PCB) Aroclor Data Validation" (June 2015, Revision 0), USEPA Region II SOP #HW-36A, "Pesticide Data Validation" (October 2016, Revision 1), USEPA Region II SOP #HW-3a, "ICP-AES Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3b, "ICP-MS Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3c, "Mercury and Cyanide Data Validation" (September 2016, Revision 1), the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017), the USEPA Contract Laboratory Program "National Functional Guidelines for Inorganic Superfund Methods Data Review" (EPA-540-R-2017-001, January 2017) and the specifics of the methods employed.

EPA Method 537 was developed and validated for the analysis of finished drinking water from surface water and groundwater sources. Laboratories have modified Method 537 to enable the analysis of groundwater and soil, and to incorporate PFAS analytes not currently addressed by the promulgated method. NYSDOH offers certification for PFOA and PFOS in the drinking water category. Non-potable water and soil certification is not available; however, the method describes acceptable modifications. EPA recommends that modified methods be assessed relative to project goals and data quality objectives.

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Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, isotope dilution recoveries, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, field blank, and trip blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- R** – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- J** – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- U** – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- NJ** – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

<i>Client Sample ID</i>	<i>Analysis</i>	<i>CAS #</i>	<i>Analyte</i>	<i>Validator Qualifier</i>
MW10_050720	SW6020	7440-41-7	Beryllium (dissolved)	UJ
MW11_051120	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ

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<i>Client Sample ID</i>	<i>Analysis</i>	<i>CAS #</i>	<i>Analyte</i>	<i>Validator Qualifier</i>
MW06_043020	SW8270D	65-85-0	Benzoic Acid	UJ
MW16_050720	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
MW13_051120	SW8270D	100-02-7	4-Nitrophenol	UJ
MW05_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
MW16_050720	SW8260C	74-87-3	Chloromethane	UJ
MW02_050720	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW01_050720	SW8260C	107-02-8	Acrolein	UJ
MW02_050720	SW8270D	100-52-7	Benzaldehyde	UJ
GWTB01_043020	SW8260C	74-87-3	Chloromethane	UJ
MW10_050720	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
MW16_050720	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW02_050720	SW8260C	74-87-3	Chloromethane	UJ
MW06_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
MW02_050720	SW8270D	92-87-5	Benzidine	UJ
MW01_050720	E537M	375-22-4	Perfluorobutanoic Acid	U (10.5)
MW06_043020	SW8260C	67-64-1	Acetone	J
TB01_050720	SW8260C	108-90-7	Chlorobenzene	UJ
MW10_050720	SW6010B	7429-90-5	Aluminum (dissolved)	J
MW11_051120	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW13_051120	SW8270D	65-85-0	Benzoic Acid	UJ
MW16_050720	SW8260C	75-25-2	Bromoform	UJ
MW11_051120	SW8270D	100-52-7	Benzaldehyde	UJ
MW05_043020	SW8260C	74-87-3	Chloromethane	UJ
TB01_050720	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
TRIP BLANK_051120	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
TRIP BLANK_051120	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW10_050720	SW6020	7440-36-0	Antimony (dissolved)	J
MW10_050720	SW8260C	75-25-2	Bromoform	UJ
MW02_050720	E537M	375-22-4	Perfluorobutanoic Acid	U (9.93)
MW06_043020	SW8270D	100-52-7	Benzaldehyde	UJ
GWDUP01_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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GWDUP01_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW06_043020	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
MW08_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW10_050720	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (2.31)
MW10_050720	E537M	375-22-4	Perfluorobutanoic Acid	U (13.6)
MW10_050720	SW8260C	74-87-3	Chloromethane	UJ
MW08_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
GWDUP01_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW02_050720	SW8270D	88-75-5	2-Nitrophenol	UJ
MW16_050720	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
MW05_043020	SW8270D	92-87-5	Benzidine	UJ
GWFB01_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW01_050720	SW6020	7440-36-0	Antimony (dissolved)	UJ
MW08_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW13_051120	SW6010B	7439-95-4	Magnesium (dissolved)	J
GWFB01_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW01_050720	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
MW10_050720	SW8260C	107-02-8	Acrolein	UJ
MW10_050720	SW8270D	100-52-7	Benzaldehyde	UJ
GWFB01_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW13_051120	E537M	375-22-4	Perfluorobutanoic Acid	U (8.58)
GWTB01_043020	SW8260C	107-02-8	Acrolein	UJ
TB01_050720	SW8260C	107-02-8	Acrolein	UJ
MW16_050720	SW6020	7440-36-0	Antimony (dissolved)	UJ
MW16_050720	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
GWDUP01_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
MW16_050720	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
TB01_050720	SW8260C	78-87-5	1,2-Dichloropropane	UJ
MW08_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
MW10_050720	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ

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MW02_050720	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW11_051120	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
GWDUP01_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
MW10_050720	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
GWDUP01_043020	SW8260C	67-64-1	Acetone	UJ
TB01_050720	SW8260C	56-23-5	Carbon Tetrachloride	UJ
MW13_051120	SW6010B	7439-96-5	Manganese (dissolved)	J
GWDUP01_043020	SW8260C	107-02-8	Acrolein	UJ
MW05_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
MW13_051120	SW6010B	7440-23-5	Sodium	J
MW08_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
MW16_050720	SW8260C	108-90-7	Chlorobenzene	UJ
MW02_050720	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
MW01_050720	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (6.65)
TRIP BLANK_051120	SW8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
MW05_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW06_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW13_051120	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW02_050720	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
GWTB01_043020	SW8260C	75-00-3	Chloroethane	UJ
MW01_050720	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW10_050720	SW8270D	100-02-7	4-Nitrophenol	UJ
TB01_050720	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW16_050720	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW05_043020	SW8270D	65-85-0	Benzoic Acid	UJ
MW13_051120	SW6010B	7440-09-7	Potassium (dissolved)	J
MW16_050720	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW01_050720	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
MW02_050720	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (2.79)
MW08_043020	SW8260C	67-64-1	Acetone	UJ
MW16_050720	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ

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MW01_050720	SW8260C	87-61-6	1,2,3-Trichlorobenzene	J
MW08_043020	SW8260C	107-02-8	Acrolein	UJ
GWDUP01_043020	SW8270D	100-52-7	Benzaldehyde	UJ
MW10_050720	SW8260C	75-69-4	Trichlorofluoromethane	UJ
GWDUP01_043020	SW8270D	92-87-5	Benzidine	UJ
MW05_043020	SW8270D	100-52-7	Benzaldehyde	UJ
MW13_051120	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
MW06_043020	SW8260C	107-02-8	Acrolein	UJ
MW10_050720	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW16_050720	SW8270D	92-87-5	Benzidine	UJ
MW16_050720	E537M	375-22-4	Perfluorobutanoic Acid	U (10.5)
MW13_051120	SW8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
MW10_050720	SW8260C	56-23-5	Carbon Tetrachloride	UJ
GWDUP01_043020	SW8270D	65-85-0	Benzoic Acid	UJ
MW01_050720	SW8260C	78-87-5	1,2-Dichloropropane	UJ
MW16_050720	SW8260C	56-23-5	Carbon Tetrachloride	UJ
MW06_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW10_050720	SW8270D	88-75-5	2-Nitrophenol	UJ
MW13_051120	SW8270D	100-52-7	Benzaldehyde	UJ
MW01_050720	SW8270D	88-75-5	2-Nitrophenol	UJ
MW13_051120	SW6010B	7439-95-4	Magnesium	J
MW10_050720	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW01_050720	SW8270D	100-02-7	4-Nitrophenol	UJ
GWDUP01_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
MW05_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW02_050720	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (3.73)
MW02_050720	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW10_050720	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW02_050720	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
MW11_051120	SW8270D	65-85-0	Benzoic Acid	UJ
MW02_050720	SW6020	7440-36-0	Antimony (dissolved)	UJ

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MW13_051120	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
GWFB01_043020	SW8260C	67-64-1	Acetone	UJ
MW11_051120	SW8260C	74-83-9	Bromomethane	UJ
MW06_043020	SW8260C	110-82-7	Cyclohexane	UJ
MW10_050720	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (4.8)
MW08_043020	SW8270D	100-52-7	Benzaldehyde	UJ
MW11_051120	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW01_050720	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
MW10_050720	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW06_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
MW08_043020	SW8270D	92-87-5	Benzidine	UJ
MW11_051120	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
GWDUP01_043020	SW8270D	105-60-2	Caprolactam	UJ
MW13_051120	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
MW11_051120	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ
MW08_043020	SW8270D	65-85-0	Benzoic Acid	UJ
GWFB01_043020	SW6010B	7440-70-2	Calcium	J
MW13_051120	SW6010B	7440-23-5	Sodium (dissolved)	J
MW05_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
GWDUP01_043020	SW8260C	75-00-3	Chloroethane	UJ
GWFB01_043020	SW8270D	105-60-2	Caprolactam	UJ
MW10_050720	SW8270DSIM	129-00-0	Pyrene	UJ
TB01_050720	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
GWDUP01_043020	SW8260C	74-87-3	Chloromethane	UJ
GWFB01_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
MW02_050720	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (3.29)
MW01_050720	SW8260C	108-90-7	Chlorobenzene	UJ
MW16_050720	SW8270DSIM	129-00-0	Pyrene	J
MW01_050720	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
MW01_050720	SW8270D	100-52-7	Benzaldehyde	UJ
MW10_050720	SW6010B	7440-23-5	Sodium (dissolved)	J

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MW13_051120	SW6010B	7440-70-2	Calcium (dissolved)	J
MW08_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
MW01_050720	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
GWDUP01_043020	SW8260C	110-82-7	Cyclohexane	UJ
MW11_051120	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
MW16_050720	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
TB01_050720	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW08_043020	SW8270D	105-60-2	Caprolactam	UJ
MW01_050720	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW13_051120	SW6010B	7439-89-6	Iron	J
TB01_050720	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ
MW16_050720	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (5.91)
MW13_051120	SW8270D	92-87-5	Benzidine	UJ
MW02_050720	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
MW16_050720	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (2.36)
MW08_043020	SW8260C	75-00-3	Chloroethane	UJ
MW08_043020	SW8260C	74-87-3	Chloromethane	UJ
MW11_051120	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW13_051120	SW8260C	74-83-9	Bromomethane	UJ
MW13_051120	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
GWFB01_043020	SW6010B	7440-22-4	Silver (dissolved)	UJ
MW16_050720	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (2.23)
MW10_050720	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW06_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW01_050720	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
TRIP BLANK_051120	SW8260C	74-83-9	Bromomethane	UJ
MW08_043020	SW8260C	110-82-7	Cyclohexane	UJ
MW02_050720	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW16_050720	SW8260C	107-02-8	Acrolein	UJ
GWFB01_043020	SW8260C	107-02-8	Acrolein	UJ

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MW16_050720	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW06_043020	SW8260C	74-87-3	Chloromethane	UJ
TB01_050720	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
MW13_051120	SW6010B	7439-96-5	Manganese	J
MW02_050720	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ
MW10_050720	SW6010B	7439-96-5	Manganese (dissolved)	J
MW01_050720	SW8260C	74-87-3	Chloromethane	UJ
MW01_050720	SW8260C	56-23-5	Carbon Tetrachloride	UJ
TRIP BLANK_051120	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW10_050720	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
MW16_050720	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ
MW10_050720	SW6010B	7440-09-7	Potassium (dissolved)	J
MW11_051120	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW16_050720	SW8270D	88-75-5	2-Nitrophenol	UJ
MW05_043020	SW8260C	110-82-7	Cyclohexane	UJ
GWFB01_043020	SW8260C	74-87-3	Chloromethane	UJ
MW10_050720	SW6010B	7439-95-4	Magnesium (dissolved)	J
MW10_050720	SW8260C	108-90-7	Chlorobenzene	UJ
MW10_050720	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ
MW16_050720	SW8270D	100-02-7	4-Nitrophenol	UJ
MW06_043020	SW6010B	7440-22-4	Silver	UJ
MW11_051120	SW8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
MW02_050720	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ
MW16_050720	SW8260C	78-87-5	1,2-Dichloropropane	UJ
MW10_050720	SW8270D	92-87-5	Benzidine	UJ
GWDUP01_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
GWFB01_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW06_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
MW06_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
GWFB01_043020	SW8260C	110-82-7	Cyclohexane	UJ

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MW16_050720	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (4.49)
MW11_051120	E537M	375-22-4	Perfluorobutanoic Acid	U (11.3)
MW01_050720	SW8260C	75-69-4	Trichlorofluoromethane	UJ
MW01_050720	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ
MW10_050720	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
MW05_043020	SW8270D	105-60-2	Caprolactam	UJ
MW16_050720	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ
MW08_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW06_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW13_051120	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ
MW11_051120	SW8270D	92-87-5	Benzidine	UJ
MW13_051120	SW6020	7440-41-7	Beryllium (dissolved)	UJ
MW11_051120	SW8260C	79-20-9	Methyl Acetate	UJ
MW02_050720	SW8260C	56-23-5	Carbon Tetrachloride	UJ
GWDUP01_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
TB01_050720	SW8260C	75-69-4	Trichlorofluoromethane	UJ
MW08_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
GWFB01_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
TRIP BLANK_051120	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
GWTB01_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW01_050720	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (5.16)
MW16_050720	SW8270D	100-52-7	Benzaldehyde	UJ
MW10_050720	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW13_051120	SW6010B	7439-89-6	Iron (dissolved)	J
GWTB01_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW02_050720	SW8260C	75-69-4	Trichlorofluoromethane	UJ
MW13_051120	SW6020	7440-36-0	Antimony	UJ
GWFB01_043020	SW8260C	75-00-3	Chloroethane	UJ

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TB01_050720	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW01_050720	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW01_050720	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
MW16_050720	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
MW02_050720	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW11_051120	SW8270DSIM	98-95-3	Nitrobenzene	UJ
MW13_051120	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
MW02_050720	SW8260C	78-87-5	1,2-Dichloropropane	UJ
MW13_051120	SW8270DSIM	98-95-3	Nitrobenzene	UJ
MW02_050720	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
MW10_050720	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
MW11_051120	SW8270D	100-02-7	4-Nitrophenol	UJ
MW16_050720	SW8260C	75-69-4	Trichlorofluoromethane	UJ
TB01_050720	SW8260C	75-25-2	Bromoform	UJ
MW11_051120	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
TB01_050720	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
GWFB01_043020	SW8270D	92-87-5	Benzidine	UJ
MW13_051120	SW6010B	7440-39-3	Barium (dissolved)	J
MW06_043020	SW8270D	105-60-2	Caprolactam	UJ
GWFB01_043020	SW8270D	65-85-0	Benzoic Acid	UJ
MW13_051120	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
MW02_050720	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05_043020	SW8260C	67-64-1	Acetone	J
MW13_051120	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
MW13_051120	SW6010B	7440-70-2	Calcium	J
MW10_050720	SW6010B	7440-70-2	Calcium (dissolved)	J
GWFB01_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
MW02_050720	SW8260C	75-25-2	Bromoform	UJ
MW10_050720	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (4.61)
MW05_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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MW06_043020	SW6010B	7440-22-4	Silver (dissolved)	UJ
GWFB01_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
GWDUP01_043020	SW6010B	7440-22-4	Silver	UJ
GWDUP01_043020	SW6010B	7440-22-4	Silver (dissolved)	UJ
MW02_050720	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
TRIP BLANK_051120	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
MW11_051120	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
GWTB01_043020	SW8260C	67-64-1	Acetone	UJ
MW08_043020	SW6010B	7440-22-4	Silver (dissolved)	UJ
MW05_043020	SW8260C	107-02-8	Acrolein	UJ
TRIP BLANK_051120	SW8260C	79-20-9	Methyl Acetate	UJ
MW08_043020	SW6010B	7440-22-4	Silver	UJ
MW02_050720	SW8270D	100-02-7	4-Nitrophenol	UJ
MW01_050720	SW8270D	92-87-5	Benzidine	UJ
MW01_050720	SW8270D	86-30-6	N-Nitrosodiphenylamine	UJ
MW05_043020	SW6010B	7440-22-4	Silver	UJ
GWFB01_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
MW02_050720	SW8260C	107-02-8	Acrolein	UJ
MW05_043020	SW6010B	7440-22-4	Silver (dissolved)	UJ
GWFB01_043020	SW8270D	100-52-7	Benzaldehyde	UJ
TB01_050720	SW8260C	74-87-3	Chloromethane	UJ
MW01_050720	SW8270DSIM	129-00-0	Pyrene	J
GWTB01_043020	SW8260C	110-82-7	Cyclohexane	UJ
MW02_050720	SW8260C	108-90-7	Chlorobenzene	UJ
MW13_051120	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (5.51)
MW13_051120	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW05_043020	SW8260C	75-00-3	Chloroethane	UJ
MW10_050720	SW8260C	78-87-5	1,2-Dichloropropane	UJ
MW06_043020	SW8270D	92-87-5	Benzidine	UJ
GWFB01_043020	SW6010B	7440-22-4	Silver	UJ
MW01_050720	SW8260C	75-25-2	Bromoform	UJ

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MW02_050720	SW8270DSIM	129-00-0	Pyrene	J
MW16_050720	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
MW13_051120	SW6010B	7429-90-5	Aluminum	J
GWDUP01_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW01_050720	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW10_050720	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
MW08_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
MW06_043020	SW8260C	75-00-3	Chloroethane	UJ
MW13_051120	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW06_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
GWTB01_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
MW13_051120	SW8260C	79-20-9	Methyl Acetate	UJ

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. The section below describes the major deficiencies that were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260C

20E0279

The laboratory control sample (LCS) for batch BE00573 exhibited percent recoveries below the lower control limit (LCL) for 1,2,3-trichlorobenzene (74.2%) and 1,2,4-trichlorobenzene (72.2%). The associated results in sample MW11_051120, MW13_051120, and TRIP BLANK_051120 are qualified as "UJ" based on potential low bias.

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) for batch BE00573 exhibited a relative percent difference (RPD) above the control limit for 1,4-dioxane (59.9%). The

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associated results in sample MW11_051120, MW13_051120, and TRIP BLANK_051120 are qualified as "UJ" based on potential indeterminate bias.

The continuing calibration verification (CCV) analyzed on 5/14/2020 at 10:15 exhibited percent difference (%Ds) above the control limit for 1,2,4-trichlorobenzene (-23.6%), 1,2-dibromo-3-chloropropane (-20.2%), 1,4-dioxane (-90.5%), 4-methyl-2-pentanone (-27.5%), bromomethane (-22.8%), methyl acetate (-23.1%), and tert-butyl alcohol (TBA) (-28.1%). The associated results in sample MW11_051120, MW13_051120, and TRIP BLANK_051120 are qualified as "UJ" based on potential indeterminate bias.

20E0198

The LCS for batch BE00317 exhibited percent recoveries below the LCL for 1,1,2,2-tetrachloroethane (73.9%), 1,1,2-trichloroethane (74.7%), 1,2-dibromoethane (78.5%), 1,2-dichloropropane (75.5%), and chlorobenzene (87.5%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, MW16_050720, and TB01_050720 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00317 exhibited a percent recovery below the LCL for tetrachloroethylene (74.1%, 76.2%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, MW16_050720, and TB01_050720 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00317 exhibited RPDs above the control limit for 1,4-dioxane (30.4%), chloromethane (65.6%), and TBA (34.5%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, MW16_050720, and TB01_050720 are qualified as "UJ" based on potential indeterminate bias.

The initial calibration (ICA)L for instrument VOA No. 8 exhibited a response factor (RF) below the control limit for bromoform (0.06356625). The associated results in sample MW01_050720, MW02_050720, MW10_050720, MW16_050720, and TB01_050720 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/8/2020 at 10:31 exhibited %Ds above the control limit for 1,1,1-trichloroethane (25.6%), 1,2,3-trichlorobenzene (-66.7%), 1,4-dioxane (-44.6%), acrolein (-27.7%), carbon tetrachloride (29.1%), and trichlorofluoromethane (23%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, MW16_050720, and TB01_050720 are qualified as "J" or "UJ" based on potential indeterminate bias.

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20D0850

The LCS/LCSD for batch BE00042 exhibited percent recoveries below the LCL for bromomethane (19.5%, 14.9%) and cyclohexane (37.7%, 35.8%). The associated results in sample GWDUP01_043020, GWFB01_043020, GWTB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00042 exhibited RPDs above the control limit for chloroethane (33.5%) and vinyl chloride (32.2%). The associated results in sample GWDUP01_043020, GWFB01_043020, GWTB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/4/2020 at 11:24 exhibited %Ds above the control limit for 1,4-dioxane (41.4%), 4-methyl-2-pentanone (-20.4%), acetone (-33.5%), acrolein (-29.4%), bromomethane (-87%), chloromethane (-47.4%), and vinyl chloride (-26.8%). The associated results in sample GWFB01_043020, MW06_043020, MW05_043020, GWTB01_043020, SOFB02_043020, GWDUP01_043020, and MW08_043020 are qualified as "J" or "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D and 8270D SIM

20E0279

The ICAL for instrument BNA #1 exhibited a relative standard deviation (RSD) above the control limit for benzoic acid (21.00926%). The associated results in sample MW11_051120 and MW13_051120 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/15/2020 at 08:34 exhibited %Ds above the control limit for 2,3,4,6-tetrachlorophenol (26.6%), 2,4-dinitrophenol (53.3%), 4,6-dinitro-2-methylphenol (22.9%), 4-nitrophenol (33.4%), benzaldehyde (-52.6%), benzidine (-37.6%), di-n-octyl phthalate (20.9%), hexachlorocyclopentadiene (-25.9%), and n-nitrosodiphenylamine (-25.2%). The associated results in sample MW11_051120 and MW13_051120 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/15/2020 at 10:00 exhibited a %D above the control limit for nitrobenzene (44.7%). The associated results in sample MW11_051120 and MW13_051120 are qualified as "UJ" based on potential indeterminate bias.

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20E0198

The ICAL for instrument BNA #1 exhibited a RSD above the control limit for benzoic acid (21.00926%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 3/26/2020 at 10:16 exhibited %Ds above the control limit for 2,3,4,6-tetrachlorophenol (32.8%), 2,4-dinitrophenol (36.5%), 2-nitrophenol (23.7%), 4-nitrophenol (35%), benzaldehyde (-51.1%), benzidine (-32.6%), di-n-octyl phthalate (21.4%), hexachlorocyclopentadiene (-272.2%), and n-nitrosodiphenylamine (-26.8%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/15/2020 at 08:45 exhibited a %D above the control limit for pyrene (-30.2%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "J" or "UJ" based on potential indeterminate bias.

20E0198

The LCS/LCSD for batch BE00066 exhibited a percent recovery below the LCL for benzoic acid (24.4%, 23.7%). The associated results in sample GWDUP01_043020, GWFB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00066 exhibited percent recoveries below the LCL for 4-nitrophenol (24.1%) and caprolactam (49.6%). The associated results in sample GWDUP01_043020, GWFB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "UJ" based on potential low bias.

The CCV analyzed on 5/4/2020 at 13:59 exhibited %Ds above the control limit for 2,3,4,6-tetrachlorophenol (23.5%), 2,4-dinitrophenol (59%), 4,6-dinitro-2-methylphenol (26.6%), 4-nitrophenol (26.7%), benzaldehyde (-38.9%), benzidine (-22.3%), and bis(2-chloroisopropyl)ether (-29%). The associated results in sample GWDUP01_043020, SOFB02_043020, GWFB01_043020, MW05_043020, MW06_043020, and MW08_043020 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/4/2020 at 13:57 exhibited a %D above the control limit for nitrobenzene (40.8%). The associated results in sample MW05_043020, GWDUP01_043020, MW06_043020,

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SOFB02_043020, MW08_043020, and GWFB01_043020 are qualified as "UJ" based on potential indeterminate bias.

PFAS by USEPA Method 537M

20E0279

The method blank (MB) for batch BE00519-BLK1 exhibited detections of perfluoro-n-butanoic acid (PFBA) (2.24 ng/L) and perfluoropentanoic acid (PFPeA) (0.833 ng/L). The associated results in sample MW11_051120 and MW13_051120 are qualified as "U" at the sample concentration based on potential blank contamination.

20E0198

The MB for batch BE00419-BLK1 exhibited detections of perfluoroheptanoic acid (PFHpA) (0.661 ng/L), perfluorohexanoic acid (PFHxA) (0.665 ng/L), PFBA (2.19 ng/L), perfluorooctanoic acid (PFOA) (0.565 ng/L), and PFPeA (0.767 ng/L). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "U" at the sample concentration based on potential blank contamination.

Pesticides by SW-846 Method 8081B

20E0198

The CCV analyzed on 5/12/2020 at 15:36 exhibited a %D above the control limit for heptachlor epoxide (-21.7%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010B and 6020B

20E0279

The laboratory duplicate and parent sample (MW13_051120) exhibited a RPD above the control limit for aluminum (23.1%). The associated results are qualified as "J" based on potential indeterminate bias.

The serial dilution performed on sample MW13_051120 exhibited RPDs above the control limit for aluminum (544%), calcium (15%), iron (20.6%), magnesium (18.3%), manganese (27.3%), and sodium (21.2%). The associated results are qualified as "J" based on potential indeterminate bias.

The serial dilution performed on sample MW13_051120 exhibited RPDs above the control limit for barium (dissolved) (40.8%), calcium (dissolved) (18.1%), iron (dissolved) (24.9%), magnesium

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(dissolved) (23.8%), manganese (dissolved) (37.2%), potassium (dissolved) (28.3%), and sodium (dissolved) (20.6%). The associated results are qualified as "J" based on potential indeterminate bias.

The matrix spike (MS) for batch MW13_051120 exhibited a percent recovery below the LCL for antimony (62.7%). The associated results in sample MW13_051120 are qualified as "UJ" based on potential low bias.

The MS for batch MW13_051120 exhibited a percent recovery below the LCL for beryllium (dissolved) (64.1%). The associated results in sample MW13_051120 are qualified as "UJ" based on potential low bias.

20E0198

The serial dilution performed on sample MW10_050720 exhibited RPDs above the control limit for aluminum (dissolved) (770%), calcium (dissolved) (26.8%), magnesium (dissolved) (33.8%), manganese (dissolved) (44.4%), potassium (dissolved) (20.9%), and sodium (dissolved) (28%). The associated results are qualified as "J" based on potential indeterminate bias.

The MS for batch MW10_050720 exhibited a percent recovery below the LCL for beryllium (dissolved) (71.7%). The associated results in sample MW10_050720 are qualified as "UJ" based on potential low bias.

The LCS for batch BE00399 exhibited a percent recovery below the LCL for antimony (dissolved) (76%). The associated results in sample MW01_050720, MW02_050720, MW10_050720, and MW16_050720 are qualified as "J" or "UJ" based on potential low bias.

20D0850

The MS for batch GWFB01_043020 exhibited a percent recovery below the LCL for silver (39.1%). The associated results in sample GWFB01_043020 are qualified as "UJ" based on potential low bias.

The MS for batch GWFB01_043020 exhibited a percent recovery below the LCL for silver (dissolved) (41.9%). The associated results in sample GWFB01_043020 are qualified as "UJ" based on potential low bias.

The laboratory duplicate and parent sample (GWFB01_043020) exhibited a RPD above the control limit for calcium (52.5%). The associated results are qualified as "J" or "UJ" based on potential indeterminate bias.

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The LCS for batch BE00033 exhibited a percent recovery below the LCL for silver (44.3%). The associated results in sample GWDUP01_043020, GWFB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "UJ" based on potential low bias.

The LCS for batch BE00146 exhibited a percent recovery below the LCL for silver (dissolved) (44.8%). The associated results in sample GWDUP01_043020, GWFB01_043020, MW05_043020, MW06_043020, and MW08_043020 are qualified as "UJ" based on potential low bias.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260C

20E0279

The MS for batch MW13_051120 exhibited a percent recovery below the LCL for 1,1,1-trichloroethane (20.5%). Organic results are not qualified on the basis of MS recoveries alone. No qualification is necessary.

20D0850

The LCS/LCSD for batch BE00042 exhibited a percent recovery below the LCL for vinyl chloride (57.3%). The associated results were previously qualified. No further action is necessary.

SVOCs by SW-846 Method 8270D and 8270D SIM

20E0279

The MS for batch MW13_051120 exhibited percent recoveries above the UCL for 1,1-biphenyl (81.3%) and 2,6-dinitrotoluene (102%). Organic results are not qualified on the basis of MS recoveries alone. No qualification is necessary.

The LCS for batch BE00593 exhibited a percent recovery above the UCL for 2,3,4,6-tetrachlorophenol (140%). The associated results are non-detections. No qualification is necessary.

The sample MW13_051120 exhibited a percent recovery above the UCL for the surrogate 1,4-dioxane-d8 (128%). The associated results are non-detections. No qualification is necessary.

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20E0198

The LCS for batch BE00408 exhibited percent recoveries above the UCL for 2,3,4,6-tetrachlorophenol (141%) and 2-nitrophenol (119%). The associated results are non-detections. No qualification is necessary.

20D0850

The ICAL for instrument BNA #1 exhibited a RSD above the control limit for benzoic acid (21.00926%). The associated results were previously qualified. No further action is necessary.

The LCS for batch BE00066 exhibited a percent recovery above the UCL for nitrobenzene (125%). The associated results are non-detections. No qualification is necessary.

PFAS by USEPA Method 537M

20E0279

The sample MW13_051120 exhibited a percent recovery above the UCL for the isotope dilution standard sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-octane sulfonate (6:2) (324%). The associated results are non-detections. No qualification is necessary.

The sample MW11_051120 exhibited percent recoveries above the UCL for the isotope dilution standards sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-octane sulfonate (6:2) (365%) and sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-decane sulfonate (8:2) (165%). The associated results are non-detections. No qualification is necessary.

20E0198

The sample MW01_050720 exhibited a percent recovery above the UCL for the isotope dilution standard sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-octane sulfonate (6:2) (153%). The associated results are non-detections. No qualification is necessary.

The sample MW16_050720 exhibited a percent recovery above the UCL for the isotope dilution standard sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-octane sulfonate (6:2) (157%). The associated results are non-detections. No qualification is necessary.

PCBs by SW-846 Method 8082A

20E0198

The LCS/LCSD for batch BE00361 exhibited a percent recovery above the UCL for Aroclor 1260 (123%, 133%). The associated results are non-detections. No qualification is necessary.

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20D0850

The LCSD for batch BE00103 exhibited a percent recovery above the UCL for Aroclor 1260 (126%). The associated results are non-detections. No qualification is necessary.

Metals by SW-846 Method 6010B and 6020

20E0279

The MS/MSD for batch MW13_051120 exhibited percent recoveries above the UCL for calcium (-40.3%) and magnesium (74.7%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

COMMENTS:

One field duplicate and parent sample pair was collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than $\pm X$ the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 30% for groundwater. The following field duplicate and parent sample pair was compared to and met the precision criteria:

- MW08_043020 and GWDUP01_043020

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified, with the exception of the rejected results. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist

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To: Dina Palazzolo, Langan Senior Staff Scientist

From: Emily Strake, Langan Senior Project Chemist

Date: July 22, 2020

Re: Data Usability Summary Report
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This memorandum presents the findings of an analytical data validation of the data generated from the analysis of soil samples collected in April and May 2020 by Langan Engineering and Environmental Services ("Langan") at the 475 Bay Street and 31 Wave Street site ("the site"). The samples were analyzed by York Analytical Laboratories, Inc. (NYSDOH NELAP registration # 10854 and 12058) for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), per- and polyfluoroalkyl substances (PFAS), herbicides, polychlorinated biphenyls (PCBs), pesticides, metals including mercury (Hg), cyanide (CN), hexavalent chromium (CrVI), trivalent chromium (CrIII), and total solids (%S) by the methods specified below.

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D and 8270D SIM
- PFAS by USEPA Method 537M
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Metals by SW-846 Method 6010B and 6020
- Mercury by SW-846 Method 7470A
- Cyanide by SW-846 Method 9012B
- Hexavalent Chromium by SW-846 Method 7196A
- Trivalent Chromium (calculated)
- Total Solids by Standard Method 2540G

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

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TABLE 1: SAMPLE SUMMARY

<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20E0108	20E0108-01	SB01_0-2	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-09	SB11_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0055	20E0055-04	SB13_0-2	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-08	SB03_6-8	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-02	SB10_6-8	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-11	SB110_9-10	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0818	20D0818-10	SB07_8-10	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-01	SB16_0-2	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-01	SB09_0-2	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-10	SOFB_042820	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII
20E0108	20E0108-07	SB03_0-2	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-08	SOFB03_050620	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII
20E0134	20E0134-04	SB14_0-2	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

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SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
20D0818	20D0818-12	SODUP01_042920	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-02	SB01_6-8	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-13	SODUP04_052220	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0776	20D0776-05	SB05_6-8	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-07	SB11_0-2	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0055	20E0055-03	SB15_18-20	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-06	SB12_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-05	SB14_6-8	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-07	SB08_0-2	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0818	20D0818-04	SB04_18-20	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-04	SB05_0-2	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-07	SODUP03_050620	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0818	20D0818-01	SB04_0-2	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-03	SB01_18-20	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

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SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
20E0734	20E0734-09	SB109_4-5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0818	20D0818-07	SB06_12-14	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-03	SB09_13-15	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-02	SB102_4-5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20E0734	20E0734-05	SB105_4-5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0850	20D0850-02	SB16_14-16	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-01	SB101_3-4	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0818	20D0818-11	SB07_18-20	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-06	SB05_18-20	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-04	SB02_0-2	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-03	SB10_18-20	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-03	SB16_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-06	SB02_18-20	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-06	SB14_18-20	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

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SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
20D0818	20D0818-05	SB06_0-2	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-04	SB12_0-2	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-04	SB12_0-2	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-07	SB107_4.5-5.5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20E0055	20E0055-06	SB13_18-20	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-08	SB08_4-6	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-06	SB12_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-05	SB02_6-8	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0055	20E0055-07	SODUP02_050420	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-12	SB111_8-9	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0850	20D0850-05	SB12_8-10	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0108	20E0108-09	SB03_18-20	5/5/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0134	20E0134-01	SB10_0-2	5/6/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0818	20D0818-03	SB04_14-16	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

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SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
20D0818	20D0818-09	SB07_0-2	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0055	20E0055-05	SB13_5-7	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-03	SB103_2.5-3.5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0776	20D0776-02	SB09_4-6	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-08	SB108_7-9.5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0849	20D0849-05	SB12_8-10	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0850	20D0850-10	SOFB02_043020	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII
20D0850	20D0850-08	SB11_10-12	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-02	SB16_14-16	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0055	20E0055-01	SB15_0-2	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0776	20D0776-09	SB08_13-15	4/28/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-04	SB104_4.5-5.5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0850	20D0850-03	SB16_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0818	20D0818-06	SB06_5-7	4/29/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

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<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20E0134	20E0134-09	TRIP BLANK_050620	5/6/2020	VOCs
20D0849	20D0849-10	SOFB02_043020	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII
20E0734	20E0734-14	SOFB04_052220	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII
20E0055	20E0055-02	SB15_5-7	5/4/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-09	SB11_18-20	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20D0849	20D0849-08	SB11_10-12	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S
20E0734	20E0734-06	SB106_4.5-5.5	5/22/2020	VOCs, SVOCs, PCBs, Metals, Hg, CrVI, CrIII, %S
20D0849	20D0849-01	SB16_0-2	4/30/2020	VOCs, SVOCs, PFAS, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, %S

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34A, "Trace Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-33A, "Low/Medium Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-35A, "Semivolatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-17, "Validating Chlorinated Herbicides" (December 2010, Revision 3.1), USEPA Region II SOP #HW-37A, "Polychlorinated Biphenyl (PCB) Aroclor Data Validation" (June 2015, Revision 0), USEPA Region II SOP #HW-36A, "Pesticide Data Validation" (October 2016, Revision 1), USEPA Region II SOP #HW-3a, "ICP-AES Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3b, "ICP-MS Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3c, "Mercury and Cyanide Data Validation" (September 2016, Revision 1), the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017), the USEPA Contract Laboratory Program "National Functional Guidelines for

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Inorganic Superfund Methods Data Review” (EPA-540-R-2017-001, January 2017) and the specifics of the methods employed.

EPA Method 537 was developed and validated for the analysis of finished drinking water from surface water and groundwater sources. Laboratories have modified Method 537 to enable the analysis of groundwater and soil, and to incorporate PFAS analytes not currently addressed by the promulgated method. NYSDOH offers certification for PFOA and PFOS in the drinking water category. Non-potable water and soil certification is not available; however, the method describes acceptable modifications. EPA recommends that modified methods be assessed relative to project goals and data quality objectives.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, isotope dilution recoveries, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank sample results, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA’s guidelines and best professional judgment:

- R** – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- J** – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- U** – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- NJ** – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

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If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

<i>Client Sample ID</i>	<i>Analysis</i>	<i>CAS #</i>	<i>Analyte</i>	<i>Validator Qualifier</i>
SOFB_042820	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SOFB03_050620	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB05_6-8	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB102_4-5	SW8260C	110-82-7	Cyclohexane	UJ
SB05_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB14_18-20	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB101_3-4	SW8270D	92-87-5	Benzidine	UJ
SB108_7-9.5	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB10_6-8	SW6010B	7440-36-0	Antimony	UJ
SB111_8-9	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SOFB_042820	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB107_4.5-5.5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB104_4.5-5.5	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SB101_3-4	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB16_18-20	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB14_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB04_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8260C	108-88-3	Toluene	UJ
SB03_0-2	SW6010B	7440-02-0	Nickel	J
SB12_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB03_6-8	SW8270D	92-87-5	Benzidine	UJ
SB03_0-2	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB11_10-12	SW8260C	75-09-2	Methylene Chloride	UJ

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SB102_4-5	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB102_4-5	SW8270D	100-52-7	Benzaldehyde	UJ
SB12_8-10	SW8260C	75-15-0	Carbon Disulfide	UJ
SB14_0-2	E537M	375-95-1	Perfluorononanoic acid (PFNA)	U (0.557)
SB05_6-8	SW8270D	65-85-0	Benzoic Acid	UJ
SB11_10-12	SW8270D	100-52-7	Benzaldehyde	UJ
SB107_4.5-5.5	SW8270D	92-87-5	Benzidine	UJ
SB11_18-20	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB106_4.5-5.5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB03_0-2	SW6010B	7440-41-7	Beryllium	UJ
SB01_6-8	SW8081B	53494-70-5	Endrin Ketone	UJ
SB08_13-15	SW6010B	7440-22-4	Silver	UJ
SB13_0-2	SW8260C	67-64-1	Acetone	U (0.015)
SB05_6-8	SW8260C	591-78-6	2-Hexanone	UJ
SB12_0-2	SW8260C	107-02-8	Acrolein	UJ
SB14_18-20	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
SB109_4-5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
SB12_8-10	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB107_4.5-5.5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB14_18-20	SW8082A	12674-11-2	PCB-1016 (Aroclor 1016)	UJ
SOFB02_043020	SW8260C	107-02-8	Acrolein	UJ
SB110_9-10	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB101_3-4	SW8260C	79-20-9	Methyl Acetate	UJ
SOFB02_043020	SW8270D	100-02-7	4-Nitrophenol	UJ
SB14_18-20	E537M	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	U (0.556)
SOFB02_043020	SW8260C	75-00-3	Chloroethane	UJ
SOFB_042820	SW8260C	67-64-1	Acetone	J
SOFB02_043020	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
TRIP BLANK_050620	SW8260C	75-25-2	Bromoform	UJ
SODUP04_052220	SW8260C	75-35-4	1,1-Dichloroethene	UJ

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SB09_13-15	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB111_8-9	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB05_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB04_14-16	SW8260C	104-51-8	N-Butylbenzene	UJ
SOFB02_043020	SW8270D	100-52-7	Benzaldehyde	UJ
SB109_4-5	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SB08_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB02_0-2	SW8260C	75-00-3	Chloroethane	UJ
SB02_18-20	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB09_4-6	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SOFB_042820	SW8260C	10061-02-6	Trans-1,3-Dichloropropene	UJ
SB12_8-10	SW8260C	79-20-9	Methyl Acetate	UJ
SB105_4-5	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB108_7-9.5	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB04_0-2	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SOFB_042820	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB12_8-10	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB08_13-15	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB05_18-20	SW8270D	65-85-0	(	UJ
SB106_4.5-5.5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB16_18-20	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB07_0-2	SW8270D	92-87-5	Benzidine	UJ
SOFB_042820	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB15_18-20	E537M	375-22-4	Perfluorobutanoic Acid	U (0.615)
SB107_4.5-5.5	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB08_13-15	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB10_6-8	SW8081B	319-84-6	Alpha Bhc (Alpha Hexachlorocyclohexane)	UJ
SB11_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB08_4-6	SW8270D	88-74-4	2-Nitroaniline	UJ

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SB08_4-6	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB12_0-2	SW8270D	99-09-2	3-Nitroaniline	UJ
SB104_4.5-5.5	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB04_18-20	SW8270D	65-85-0	Benzoic Acid	UJ
SB14_18-20	SW8081B	5566-34-7	gamma-Chlordane	UJ
SB07_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB14_18-20	SW8081B	76-44-8	Heptachlor	UJ
SB05_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB103_2.5-3.5	SW8260C	67-64-1	Acetone	U (0.012)
SB07_18-20	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB15_0-2	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB06_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB04_14-16	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB110_9-10	SW8260C	107-13-1	Acrylonitrile	UJ
SOFB_042820	SW8260C	74-83-9	Bromomethane	UJ
SB07_18-20	SW8270D	92-87-5	Benzidine	UJ
SB04_0-2	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SOFB04_052220	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB03_0-2	SW6010B	7439-96-5	Manganese	J
SB105_4-5	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
GWDUP01_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB04_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB13_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB10_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB16_0-2	SW8270D	100-01-6	4-Nitroaniline	UJ
SB11_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
MW08_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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SOFB_042820	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB05_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB12_0-2	SW8270D	88-74-4	2-Nitroaniline	UJ
SB05_18-20	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	UJ
SB108_7-9.5	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB14_6-8	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB102_4-5	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB05_18-20	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB105_4-5	SW8270D	100-52-7	Benzaldehyde	UJ
SB04_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB107_4.5-5.5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB01_0-2	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB04_18-20	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.843)
SODUP01_042920	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB15_0-2	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.536)
SB05_0-2	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	J
SB11_0-2	SW8260C	107-13-1	Acrylonitrile	UJ
SB11_10-12	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB103_2.5-3.5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB08_4-6	SW8270D	100-52-7	Benzaldehyde	UJ
SB109_4-5	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB08_13-15	SW8270D	100-01-6	4-Nitroaniline	UJ
SOFB_042820	SW8260C	96-18-4	1,2,3-Trichloropropane	UJ
SB11_0-2	SW8260C	67-64-1	Acetone	UJ
SB109_4-5	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SODUP04_052220	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB14_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB08_13-15	SW8260C	67-64-1	Acetone	UJ
SB04_18-20	SW8260C	107-02-8	Acrolein	UJ
SOFB_042820	SW8260C	107-02-8	Acrolein	UJ

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SB101_3-4	SW8270D	99-09-2	3-Nitroaniline	UJ
SB15_0-2	E537M	2991-50-6	N-Ethyl-N- ((heptadecafluorooctyl)sulphonyl) glycine	U (0.536)
SB14_18-20	SW8082A	12672-29-6	PCB-1248 (Aroclor 1248)	UJ
SOFB03_050620	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SOFB03_050620	SW8260C	75-25-2	Bromoform	UJ
SB04_14-16	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.527)
SODUP01_042920	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB15_5-7	SW8270D	100-01-6	4-Nitroaniline	UJ
SOFB04_052220	SW8270D	65-85-0	Benzoic Acid	UJ
SB08_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB16_0-2	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB04_18-20	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB13_5-7	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
MW06_043020	E537M	754-91-6	Perfluorooctane Sulfonamide (FOSA)	U (2)
SB110_9-10	SW8260C	107-02-8	Acrolein	UJ
SB101_3-4	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB15_5-7	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SOFB03_050620	SW8270D	110-86-1	Pyridine	UJ
SB04_14-16	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB110_9-10	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB107_4.5-5.5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SODUP03_050620	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB101_3-4	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB09_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5- trichlorophenoxy)-	UJ
SB105_4-5	SW8260C	107-02-8	Acrolein	UJ
SB01_6-8	SW8082A	11104-28-2	PCB-1221 (Aroclor 1221)	UJ
SB111_8-9	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ

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SB10_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8260C	75-25-2	Bromoform	UJ
SB09_0-2	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB13_5-7	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB01_6-8	SW8082A	11141-16-5	PCB-1232 (Aroclor 1232)	UJ
SB14_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB104_4.5-5.5	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB13_5-7	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB14_18-20	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.556)
SODUP01_042920	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB106_4.5-5.5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB11_10-12	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB03_0-2	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB107_4.5-5.5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB12_8-10	SW8270D	100-52-7	Benzaldehyde	UJ
SB09_13-15	SW8260C	67-64-1	Acetone	J
SB108_7-9.5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SODUP02_050420	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SOFB_042820	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB104_4.5-5.5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB105_4-5	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SOFB_042820	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB13_5-7	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB107_4.5-5.5	SW8270D	100-52-7	Benzaldehyde	UJ
SB14_18-20	SW8270D	92-87-5	Benzidine	UJ
SODUP01_042920	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB03_050620	SW8270DSIM	87-86-5	Pentachlorophenol	UJ
SOFB04_052220	SW8260C	110-82-7	Cyclohexane	UJ
SOFB_042820	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ

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GWFB01_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB105_4-5	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB01_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8270D	92-87-5	Benzidine	UJ
SB15_0-2	SW8260C	67-64-1	Acetone	U (0.01)
SB108_7-9.5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB105_4-5	SW8260C	74-87-3	Chloromethane	UJ
SB108_7-9.5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB110_9-10	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB06_5-7	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB03_18-20	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB02_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
TRIP BLANK_050620	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
SB06_0-2	SW8270D	92-87-5	Benzidine	UJ
SOFB02_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB02_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB03_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB109_4-5	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB13_5-7	SW8270D	88-74-4	2-Nitroaniline	UJ
SB03_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB15_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB103_2.5-3.5	SW8270D	99-09-2	3-Nitroaniline	UJ
SODUP02_050420	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8260C	CYMP	P-Cymene (P-Isopropyltoluene)	UJ
SB106_4.5-5.5	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB09_4-6	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SODUP02_050420	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SODUP03_050620	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB08_4-6	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ

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SODUP02_050420	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB12_18-20	SW8260C	67-64-1	Acetone	UJ
SB13_5-7	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB13_5-7	SW8270D	99-09-2	3-Nitroaniline	UJ
SB102_4-5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB13_5-7	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB10_6-8	SW8081B	76-44-8	Heptachlor	UJ
SB06_5-7	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB01_0-2	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SODUP04_052220	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB01_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB09_0-2	SW8260C	67-64-1	Acetone	UJ
SODUP04_052220	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB05_6-8	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB03_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB15_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB06_5-7	SW8260C	67-64-1	Acetone	J
SB12_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB09_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB07_18-20	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB14_0-2	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.557)
SODUP04_052220	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SOFB_042820	SW8260C	104-51-8	N-Butylbenzene	UJ
SB16_14-16	SW8260C	79-20-9	Methyl Acetate	UJ
SB09_4-6	SW8260C	67-64-1	Acetone	UJ
SB12_18-20	SW8270D	100-01-6	4-Nitroaniline	UJ
SB108_7-9.5	SW8270D	99-09-2	3-Nitroaniline	UJ
SB102_4-5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB02_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SOFB_042820	SW8260C	156-59-2	Cis-1,2-Dichloroethylene	UJ

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SB110_9-10	SW8260C	75-25-2	Bromoform	UJ
SB108_7-9.5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB08_13-15	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB11_18-20	SW8270D	88-74-4	2-Nitroaniline	UJ
SB15_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB13_0-2	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.551)
SB09_13-15	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB111_8-9	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB105_4-5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB109_4-5	SW8260C	124-48-1	Dibromochloromethane	UJ
SODUP02_050420	SW8270D	88-74-4	2-Nitroaniline	UJ
SB05_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB10_0-2	SW8270D	92-87-5	Benzidine	UJ
SB16_14-16	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB02_043020	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB13_5-7	SW8270D	100-01-6	4-Nitroaniline	UJ
SB109_4-5	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB11_0-2	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB01_6-8	SW8081B	58-89-9	Gamma Bhc (Lindane)	UJ
SODUP02_050420	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB09_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB105_4-5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB08_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SODUP02_050420	SW8270D	99-09-2	3-Nitroaniline	UJ
SB102_4-5	SW8260C	79-20-9	Methyl Acetate	UJ
SB08_13-15	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB01_6-8	SW8082A	1336-36-3	Polychlorinated Biphenyl (PCBs)	UJ
SB07_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SODUP04_052220	SW8270D	99-09-2	3-Nitroaniline	UJ
SODUP02_050420	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ

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SB10_6-8	SW8081B	72-43-5	Methoxychlor	UJ
SB110_9-10	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB06_12-14	SW8270D	100-52-7	Benzaldehyde	UJ
SB07_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB101_3-4	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB11_10-12	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB04_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SOFB04_052220	SW8270D	100-02-7	4-Nitrophenol	UJ
SB01_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB13_5-7	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP04_052220	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SOFB_042820	SW8260C	75-34-3	1,1-Dichloroethane	UJ
SB13_5-7	SW8260C	67-64-1	Acetone	U (0.069)
SODUP02_050420	SW8270D	100-01-6	4-Nitroaniline	UJ
SB08_13-15	SW8270D	65-85-0	Benzoic Acid	UJ
SB06_12-14	SW8260C	104-51-8	N-Butylbenzene	UJ
SB14_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
GWFB01_043020	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (2)
SB15_0-2	SW8270D	88-74-4	2-Nitroaniline	UJ
SB09_4-6	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB01_0-2	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB03_18-20	SW8260C	75-00-3	Chloroethane	UJ
SB08_4-6	SW8270D	131-11-3	Dimethyl Phthalate	UJ
SB14_6-8	SW8260C	67-64-1	Acetone	U (0.023)
SB16_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB02_6-8	SW8260C	74-83-9	Bromomethane	UJ
SB108_7-9.5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB01_6-8	SW8081B	8001-35-2	Toxaphene	UJ
TRIP BLANK_050620	SW8260C	67-64-1	Acetone	UJ

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SB11_10-12	SW8082A	1336-36-3	Polychlorinated Biphenyl (PCBs)	UJ
SOFB02_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (2.78)
SOFB_042820	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB106_4.5-5.5	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	79-01-6	Trichloroethylene (TCE)	UJ
SOFB03_050620	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB14_18-20	SW8081B	72-55-9	P,P'-DDE	UJ
SB05_6-8	SW8260C	67-64-1	Acetone	J
SB108_7-9.5	SW8260C	67-64-1	Acetone	U (0.05)
SB13_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB01_6-8	SW8082A	12672-29-6	PCB-1248 (Aroclor 1248)	UJ
SB13_0-2	SW8270D	88-74-4	2-Nitroaniline	UJ
SB05_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB13_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB101_3-4	SW8260C	74-87-3	Chloromethane	UJ
SB08_4-6	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SODUP01_042920	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB12_0-2	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SODUP02_050420	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP03_050620	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB04_14-16	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.527)
SOFB02_043020	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SODUP02_050420	SW8260C	67-64-1	Acetone	U (0.12)
SB108_7-9.5	SW8260C	107-02-8	Acrolein	UJ
SB105_4-5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB104_4.5-5.5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB103_2.5-3.5	SW8260C	79-20-9	Methyl Acetate	UJ
SB07_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ

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SODUP03_050620	SW8260C	67-64-1	Acetone	U (0.018)
SB104_4.5-5.5	SW8260C	75-01-4	Vinyl Chloride	UJ
SB16_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB01_6-8	SW8081B	33213-65-9	Beta Endosulfan	UJ
SB108_7-9.5	SW8260C	107-13-1	Acrylonitrile	UJ
SB08_0-2	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	J
SB14_0-2	SW8260C	67-64-1	Acetone	U (0.012)
SB11_10-12	SW8260C	67-64-1	Acetone	J
SB01_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP04_052220	SW8270D	100-02-7	4-Nitrophenol	UJ
SB04_14-16	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SOFB_042820	SW8260C	107-13-1	Acrylonitrile	UJ
SB08_4-6	SW8270D	99-09-2	3-Nitroaniline	UJ
SB09_4-6	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB03_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB02_043020	SW8270D	105-60-2	Caprolactam	UJ
SOFB_042820	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB101_3-4	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SOFB_042820	E537M	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	UJ
SB01_6-8	SW8081B	959-98-8	Alpha Endosulfan	UJ
SB02_6-8	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SODUP04_052220	SW8260C	67-64-1	Acetone	U (0.049)
SB15_0-2	SW8270D	99-09-2	3-Nitroaniline	UJ
SB01_6-8	SW8081B	57-74-9	Chlordane	UJ
SB01_6-8	SW8081B	5103-71-9	cis-Chlordane	UJ
SB12_18-20	SW8260C	107-13-1	Acrylonitrile	UJ
SB12_8-10	SW8260C	107-13-1	Acrylonitrile	UJ
SB10_6-8	SW8270D	100-52-7	Benzaldehyde	UJ
TRIP BLANK_050620	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB01_6-8	SW8082A	12674-11-2	PCB-1016 (Aroclor 1016)	UJ

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SB14_0-2	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SODUP01_042920	SW6010B	7429-90-5	Aluminum	J
SOFB04_052220	SW8270D	100-52-7	Benzaldehyde	UJ
SB13_5-7	SW8270D	100-52-7	Benzaldehyde	UJ
SB09_13-15	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB15_5-7	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB08_4-6	SW8270D	122-39-4	Diphenylamine	UJ
SODUP03_050620	SW8270D	100-52-7	Benzaldehyde	UJ
SB08_4-6	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB07_0-2	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.538)
SB03_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB11_10-12	SW8270D	100-01-6	4-Nitroaniline	UJ
SB14_6-8	SW8270D	100-52-7	Benzaldehyde	UJ
SB14_18-20	SW8081B	33213-65-9	Beta Endosulfan	UJ
SB03_18-20	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB08_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB10_6-8	SW8081B	72-55-9	P,P'-DDE	UJ
SB02_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB02_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB105_4-5	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SODUP01_042920	SW6010B	7440-36-0	Antimony	UJ
SB109_4-5	SW8270D	92-87-5	Benzidine	UJ
SODUP01_042920	SW6010B	7440-38-2	Arsenic	J
SB108_7-9.5	SW8270D	100-52-7	Benzaldehyde	UJ
SB102_4-5	SW8270D	99-09-2	3-Nitroaniline	UJ
SB16_0-2	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB12_0-2	SW6010B	7440-66-6	Zinc	J
SB15_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB05_18-20	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB14_6-8	SW8270D	92-87-5	Benzidine	UJ

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SODUP01_042920	SW6010B	7440-39-3	Barium	J
SODUP01_042920	SW8270D	100-52-7	Benzaldehyde	UJ
SODUP03_050620	SW8270D	92-87-5	Benzidine	UJ
SB110_9-10	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SB10_18-20	SW8260C	67-64-1	Acetone	U (0.008)
SB14_18-20	SW8081B	50-29-3	P,P'-DDT	UJ
SB14_0-2	E537M	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	U (0.557)
SB102_4-5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB01_6-8	SW8081B	72-20-8	Endrin	UJ
SB06_12-14	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SOFB02_043020	SW8270D	65-85-0	Benzoic Acid	UJ
SB06_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB108_7-9.5	SW8270D	92-87-5	Benzidine	UJ
SB12_18-20	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SODUP02_050420	SW8270D	100-52-7	Benzaldehyde	UJ
SB08_4-6	SW8260C	67-64-1	Acetone	UJ
SB06_12-14	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.529)
SB01_6-8	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB110_9-10	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB15_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SODUP01_042920	SW8270D	92-87-5	Benzidine	UJ
SB03_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB13_18-20	SW8270D	88-74-4	2-Nitroaniline	UJ
SB02_18-20	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB03_0-2	SW8270D	92-87-5	Benzidine	UJ
SB01_18-20	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SOFB03_050620	SW8260C	107-02-8	Acrolein	UJ
SB08_13-15	SW8270D	131-11-3	Dimethyl Phthalate	UJ
SB10_6-8	SW8081B	5103-71-9	cis-Chlordane	UJ
SB08_0-2	SW8260C	67-64-1	Acetone	J
SB11_18-20	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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SB04_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB13_0-2	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB13_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB08_13-15	SW8270D	86-74-8	Carbazole	UJ
SB15_5-7	SW8270D	88-74-4	2-Nitroaniline	UJ
SB12_0-2	SW6010B	7440-36-0	Antimony	UJ
SODUP01_042920	SW8270D	65-85-0	Benzoic Acid	UJ
SB15_5-7	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB103_2.5-3.5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SOFB_042820	E537M	2991-50-6	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl)glycine	UJ
SB10_18-20	SW8270D	92-87-5	Benzidine	UJ
SB08_13-15	SW6010B	7440-36-0	Antimony	UJ
SB04_0-2	SW8270D	92-87-5	Benzidine	UJ
SB02_6-8	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB11_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
SB110_9-10	SW8260C	67-64-1	Acetone	U (0.017)
SODUP04_052220	SW6010B	7440-36-0	Antimony	J
SB04_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB12_8-10	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SODUP01_042920	SW6010B	7440-41-7	Beryllium	UJ
SB07_8-10	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.551)
SB04_14-16	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB10_6-8	SW6010B	7440-23-5	Sodium	J
SOFB04_052220	SW8260C	74-87-3	Chloromethane	UJ
SB109_4-5	SW8260C	74-87-3	Chloromethane	UJ
SB09_4-6	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	UJ
SOFB_042820	SW8260C	79-20-9	Methyl Acetate	UJ

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SB07_8-10	SW8260C	104-51-8	N-Butylbenzene	UJ
SB111_8-9	SW8260C	74-87-3	Chloromethane	UJ
SB110_9-10	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB05_0-2	SW8260C	67-64-1	Acetone	UJ
SB16_14-16	SW8270D	100-52-7	Benzaldehyde	UJ
SB11_10-12	SW8270D	99-09-2	3-Nitroaniline	UJ
SB06_5-7	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB11_18-20	SW8270D	99-09-2	3-Nitroaniline	UJ
SB03_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB13_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB105_4-5	SW8260C	124-48-1	Dibromochloromethane	UJ
SB02_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB07_18-20	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.63)
SB04_18-20	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB107_4.5-5.5	SW8270D	98-95-3	Nitrobenzene	UJ
SOFB02_043020	SW8270D	92-87-5	Benzidine	UJ
SODUP04_052220	SW6010B	7440-39-3	Barium	J
SB104_4.5-5.5	SW8260C	67-64-1	Acetone	U (0.018)
SB03_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB03_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB111_8-9	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB08_4-6	SW8270D	100-01-6	4-Nitroaniline	UJ
SB10_6-8	SW8081B	309-00-2	Aldrin	UJ
SODUP04_052220	SW8270D	100-52-7	Benzaldehyde	UJ
SB14_18-20	SW8081B	57-74-9	Chlordane	UJ
SB13_0-2	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB101_3-4	SW8270D	100-02-7	4-Nitrophenol	UJ
SB15_5-7	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.618)
SB106_4.5-5.5	SW8260C	74-87-3	Chloromethane	UJ
SB13_18-20	E537M	39108-34-4	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	U (0.706)

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SODUP01_042920	SW6010B	7440-43-9	Cadmium	J
SB01_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB104_4.5-5.5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB110_9-10	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SODUP01_042920	SW6010B	7440-70-2	Calcium	J
SODUP04_052220	SW8270D	92-87-5	Benzidine	UJ
SOFB_042820	SW8270D	65-85-0	Benzoic Acid	UJ
SB01_6-8	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
SOFB_042820	SW8260C	98-06-6	T-Butylbenzene	UJ
SB14_18-20	SW8082A	1336-36-3	Polychlorinated Biphenyl (PCBs)	UJ
SB101_3-4	SW8260C	110-82-7	Cyclohexane	UJ
SB14_18-20	SW8081B	53494-70-5	Endrin Ketone	UJ
SB02_6-8	SW8270D	100-52-7	Benzaldehyde	UJ
SB05_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB02_6-8	SW8270D	92-87-5	Benzidine	UJ
SB09_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB15_18-20	SW8270D	88-74-4	2-Nitroaniline	UJ
SB15_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SOFB02_043020	SW8260C	75-01-4	Vinyl Chloride	UJ
SB09_4-6	SW8270D	100-52-7	Benzaldehyde	UJ
SB12_0-2	SW8270D	100-01-6	4-Nitroaniline	UJ
SB02_18-20	SW8270D	92-87-5	Benzidine	UJ
SB08_13-15	SW8260C	591-78-6	2-Hexanone	UJ
SB01_6-8	SW8081B	72-55-9	P,P'-DDE	UJ
SB11_0-2	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB12_8-10	SW8260C	75-09-2	Methylene Chloride	UJ
SB13_5-7	SW8260C	74-83-9	Bromomethane	UJ
SB08_13-15	SW8270D	91-58-7	2-Chloronaphthalene	UJ
SB101_3-4	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB14_18-20	SW8082A	11096-82-5	PCB-1260 (Aroclor 1260)	UJ
SB14_18-20	SW8081B	5103-71-9	cis-Chlordane	UJ

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SB06_5-7	SW8270D	92-87-5	Benzidine	UJ
SOFB_042820	SW8260C	78-87-5	1,2-Dichloropropane	UJ
SB08_4-6	SW8270D	95-57-8	2-Chlorophenol	UJ
SOFB02_043020	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (2)
SB07_8-10	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB08_13-15	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB03_0-2	SW6010B	7440-38-2	Arsenic	J
SB10_6-8	SW6010B	7440-41-7	Beryllium	UJ
SB07_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SODUP03_050620	SW8260C	74-83-9	Bromomethane	UJ
SB15_18-20	SW8270D	99-09-2	3-Nitroaniline	UJ
SB01_6-8	SW8260C	74-83-9	Bromomethane	UJ
SB15_18-20	SW8270D	100-01-6	4-Nitroaniline	UJ
SB14_6-8	SW8260C	74-83-9	Bromomethane	UJ
SB01_18-20	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB14_0-2	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.557)
SB05_6-8	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	UJ
SB09_13-15	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB03_6-8	SW8270D	100-52-7	Benzaldehyde	UJ
SB02_6-8	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB15_5-7	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB02_18-20	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB102_4-5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB11_10-12	SW8082A	12674-11-2	PCB-1016 (Aroclor 1016)	UJ
SODUP02_050420	SW8260C	74-83-9	Bromomethane	UJ
SOFB_042820	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB07_8-10	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB105_4-5	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB106_4.5-5.5	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB16_14-16	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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SB101_3-4	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SB111_8-9	SW8270D	99-09-2	3-Nitroaniline	UJ
SB102_4-5	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB10_6-8	SW8081B	319-86-8	Delta BHC (Delta Hexachlorocyclohexane)	UJ
SB02_18-20	SW8260C	75-00-3	Chloroethane	UJ
SB106_4.5-5.5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB09_13-15	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB02_6-8	SW8270D	65-85-0	Benzoic Acid	UJ
SB12_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB08_13-15	SW8270D	100-52-7	Benzaldehyde	UJ
SB06_12-14	SW8270D	65-85-0	Benzoic Acid	UJ
SB01_6-8	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB08_13-15	SW6010B	7440-02-0	Nickel	J
SB05_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB01_6-8	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB108_7-9.5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB103_2.5-3.5	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SODUP04_052220	SW6010B	7440-41-7	Beryllium	UJ
SB03_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB12_0-2	SW6010B	7439-92-1	Lead	J
SB10_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	124-48-1	Dibromochloromethane	UJ
SB16_14-16	SW8260C	75-15-0	Carbon Disulfide	UJ
SB109_4-5	SW8260C	107-02-8	Acrolein	UJ
SB05_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB105_4-5	SW8260C	75-25-2	Bromoform	UJ
SB06_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB101_3-4	SW8270D	98-95-3	Nitrobenzene	UJ
SB108_7-9.5	SW8260C	75-27-4	Bromodichloromethane	UJ

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SOFB_042820	SW8260C	179601-23-1	m,p-Xylene	UJ
SB08_4-6	SW8270D	65794-96-9	M+P MethylPhenol	UJ
SB06_12-14	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB16_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB108_7-9.5	SW8260C	75-25-2	Bromoform	UJ
SB13_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SOFB_042820	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB15_18-20	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB08_4-6	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SODUP04_052220	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB104_4.5-5.5	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB01_6-8	SW8081B	72-54-8	P,P'-DDD	UJ
SB110_9-10	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB110_9-10	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB111_8-9	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB105_4-5	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB08_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB16_14-16	SW8270D	99-09-2	3-Nitroaniline	UJ
SB03_0-2	SW6010B	7440-47-3	Chromium, Total	J
SB03_0-2	SW6010B	7440-48-4	Cobalt	J
SB13_0-2	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.551)
SB105_4-5	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB10_6-8	SW8081B	57-74-9	Chlordane	UJ
SB09_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB01_6-8	SW8081B	319-84-6	Alpha Bhc (Alpha Hexachlorocyclohexane)	UJ
SB101_3-4	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SODUP01_042920	SW6010B	7440-47-3	Chromium, Total	J
SB106_4.5-5.5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB107_4.5-5.5	SW8270D	99-09-2	3-Nitroaniline	UJ

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SB11_10-12	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB08_4-6	SW8270D	86-74-8	Carbazole	UJ
SB02_18-20	SW8270D	65-85-0	Benzoic Acid	UJ
SB11_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB15_5-7	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB11_10-12	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB03_6-8	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB03_6-8	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB07_8-10	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB101_3-4	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB01_6-8	SW8081B	1031-07-8	Endosulfan Sulfate	UJ
SB03_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB12_18-20	SW8260C	79-20-9	Methyl Acetate	UJ
SB12_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB05_18-20	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB09_13-15	SW8270D	100-52-7	Benzaldehyde	UJ
SB01_6-8	SW8081B	309-00-2	Aldrin	UJ
SODUP01_042920	SW6010B	7440-48-4	Cobalt	J
SOFB_042820	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SB10_6-8	SW8081B	5566-34-7	gamma-Chlordane	UJ
SB07_8-10	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB14_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP01_042920	SW6010B	7440-50-8	Copper	J
SB10_0-2	E537M	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	U (0.528)
SB06_0-2	E537M	39108-34-4	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	U (0.538)
SB12_18-20	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB01_6-8	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB06_12-14	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB13_18-20	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ

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SB12_8-10	SW8270D	99-09-2	3-Nitroaniline	UJ
SB104_4.5-5.5	SW8270D	100-52-7	Benzaldehyde	UJ
SB12_8-10	SW8270D	100-01-6	4-Nitroaniline	UJ
SB08_13-15	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB08_13-15	SW8270D	95-57-8	2-Chlorophenol	UJ
SB110_9-10	SW8270D	100-02-7	4-Nitrophenol	UJ
SB07_8-10	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.551)
TRIP BLANK_050620	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB09_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB08_4-6	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB02_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB05_6-8	SW8270D	100-52-7	Benzaldehyde	UJ
SB109_4-5	SW8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
SB101_3-4	SW8270D	87-86-5	Pentachlorophenol	UJ
SOFB_042820	SW8270D	100-52-7	Benzaldehyde	UJ
SB11_10-12	SW8082A	12672-29-6	PCB-1248 (Aroclor 1248)	UJ
SB15_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB09_0-2	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	UJ
SOFB03_050620	SW8270D	65-85-0	Benzoic Acid	UJ
SB02_6-8	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB09_0-2	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB10_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8260C	107-02-8	Acrolein	UJ
SOFB03_050620	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8260C	124-48-1	Dibromochloromethane	UJ
SB104_4.5-5.5	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB13_0-2	SW8270D	100-01-6	4-Nitroaniline	UJ
SB108_7-9.5	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB14_18-20	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.556)

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SB109_4-5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB14_18-20	SW8082A	11141-16-5	PCB-1232 (Aroclor 1232)	UJ
SB11_0-2	SW8260C	79-20-9	Methyl Acetate	UJ
SB11_0-2	SW8270D	88-74-4	2-Nitroaniline	UJ
SOFB_042820	SW8260C	87-68-3	Hexachlorobutadiene	UJ
SB14_18-20	SW8081B	60-57-1	Dieldrin	UJ
SB106_4.5-5.5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB04_14-16	SW8270D	92-87-5	Benzidine	UJ
SB09_4-6	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB107_4.5-5.5	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SB06_5-7	SW8270D	65-85-0	Benzoic Acid	UJ
SB101_3-4	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB10_6-8	SW8081B	1031-07-8	Endosulfan Sulfate	UJ
SB01_6-8	SW8081B	319-86-8	Delta BHC (Delta Hexachlorocyclohexane)	UJ
SODUP01_042920	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SODUP04_052220	SW8260C	74-87-3	Chloromethane	UJ
SB13_18-20	SW8260C	67-64-1	Acetone	U (0.021)
SB08_4-6	SW8270D	91-58-7	2-Chloronaphthalene	UJ
SOFB02_043020	SW8260C	67-64-1	Acetone	UJ
SB106_4.5-5.5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SOFB_042820	E537M	39108-34-4	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	UJ
SB108_7-9.5	SW8260C	74-87-3	Chloromethane	UJ
SB10_6-8	SW8081B	60-57-1	Dieldrin	UJ
SB03_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB04_18-20	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.843)
SB102_4-5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB104_4.5-5.5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB01_6-8	SW8081B	5566-34-7	gamma-Chlordane	UJ
SB105_4-5	SW8260C	75-01-4	Vinyl Chloride	UJ

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SB11_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB109_4-5	SW8270D	87-86-5	Pentachlorophenol	UJ
SODUP04_052220	SW7196A	18540-29-9	Chromium, Hexavalent	UJ
SB14_18-20	SW8081B	319-84-6	Alpha Bhc (Alpha Hexachlorocyclohexane)	UJ
SOFB_042820	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SODUP04_052220	SW6010B	7440-47-3	Chromium, Total	J
SB103_2.5-3.5	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB07_8-10	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB105_4-5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB09_4-6	SW8270D	65-85-0	Benzoic Acid	UJ
SB10_6-8	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB15_18-20	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SOFB_042820	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB103_2.5-3.5	SW8260C	110-82-7	Cyclohexane	UJ
SB03_18-20	SW8270D	65-85-0	Benzoic Acid	UJ
SB01_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB15_18-20	SW8260C	67-64-1	Acetone	U (0.033)
SOFB04_052220	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB13_18-20	E537M	754-91-6	Perfluorooctane Sulfonamide (FOSA)	U (0.706)
SB12_18-20	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB05_0-2	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB104_4.5-5.5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB13_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB16_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB12_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB03_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB103_2.5-3.5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ

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SOFB02_043020	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SB09_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB02_6-8	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB10_0-2	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB13_18-20	SW8270D	99-09-2	3-Nitroaniline	UJ
SB105_4-5	SW8260C	107-13-1	Acrylonitrile	UJ
SB03_0-2	SW6010B	7439-95-4	Magnesium	J
SB07_8-10	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB04_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB16_0-2	SW8270D	99-09-2	3-Nitroaniline	UJ
SB08_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB11_10-12	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SOFB03_050620	SW8270D	92-87-5	Benzidine	UJ
SOFB_042820	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB102_4-5	SW8260C	74-87-3	Chloromethane	UJ
SB03_0-2	SW6010B	7440-39-3	Barium	J
SODUP04_052220	SW6010B	7440-50-8	Copper	J
SB07_0-2	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB03_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB08_0-2	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB12_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB01_6-8	SW8082A	11097-69-1	PCB-1254 (Aroclor 1254)	UJ
SODUP04_052220	SW8260C	110-82-7	Cyclohexane	UJ
SB09_13-15	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SOFB04_052220	SW8270DSIM	98-95-3	Nitrobenzene	UJ
SB04_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SOFB_042820	SW8260C	71-43-2	Benzene	UJ
SOFB03_050620	SW8270D	88-06-2	2,4,6-Trichlorophenol	UJ

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SB108_7-9.5	SW8260C	124-48-1	Dibromochloromethane	UJ
SODUP01_042920	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB09_4-6	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB103_2.5-3.5	SW8270D	100-52-7	Benzaldehyde	UJ
SB03_18-20	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB11_10-12	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB109_4-5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB14_18-20	SW8081B	1031-07-8	Endosulfan Sulfate	UJ
SB108_7-9.5	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB109_4-5	SW8260C	107-13-1	Acrylonitrile	UJ
SB105_4-5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SODUP01_042920	SW6010B	7439-89-6	Iron	J
SB109_4-5	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB109_4-5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SODUP01_042920	SW6010B	7439-92-1	Lead	J
SOFB_042820	SW8260C	98-82-8	Isopropylbenzene (Cumene)	UJ
SB05_18-20	SW8260C	67-64-1	Acetone	J
SB06_0-2	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB11_18-20	SW8270D	100-01-6	4-Nitroaniline	UJ
SB01_18-20	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SOFB_042820	SW9010	57-12-5	Cyanide	UJ
SB01_6-8	SW8081B	319-85-7	Beta Bhc (Beta Hexachlorocyclohexane)	UJ
SB08_13-15	SW8270D	99-09-2	3-Nitroaniline	UJ
SB13_18-20	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.706)
SB09_13-15	SW8270D	65-85-0	Benzoic Acid	UJ
SOFB_042820	SW8260C	95-63-6	1,2,4-Trimethylbenzene	UJ
SB109_4-5	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB10_0-2	SW8260C	67-64-1	Acetone	U (0.015)
SB106_4.5-5.5	SW8270D	92-87-5	Benzidine	UJ
SB03_6-8	SW8260C	75-00-3	Chloroethane	UJ

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SODUP01_042920	SW6010B	7439-95-4	Magnesium	J
SB02_6-8	SW8260C	75-00-3	Chloroethane	UJ
SB16_14-16	SW8260C	67-64-1	Acetone	U (0.0074)
SB13_18-20	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB111_8-9	SW8260C	110-82-7	Cyclohexane	UJ
SOFB03_050620	SW8270D	88-75-5	2-Nitrophenol	UJ
SB09_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SODUP01_042920	SW6010B	7439-96-5	Manganese	J
SB10_6-8	SW8260C	67-64-1	Acetone	U (0.019)
SB104_4.5-5.5	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB03_0-2	SW6010B	7440-50-8	Copper	J
SODUP04_052220	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB12_0-2	SW6010B	7440-22-4	Silver	UJ
SB110_9-10	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB15_5-7	SW8270D	99-09-2	3-Nitroaniline	UJ
SB06_0-2	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB05_18-20	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SOFB_042820	SW8270D	100-02-7	4-Nitrophenol	UJ
SB03_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB111_8-9	SW8260C	79-20-9	Methyl Acetate	UJ
SB108_7-9.5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB12_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB01_6-8	SW8082A	53469-21-9	PCB-1242 (Aroclor 1242)	UJ
SB16_14-16	SW8260C	75-09-2	Methylene Chloride	UJ
SOFB03_050620	SW8260C	67-64-1	Acetone	UJ
SB03_0-2	SW6010B	7440-66-6	Zinc	J
SB05_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB102_4-5	SW8270D	92-87-5	Benzidine	UJ
SOFB03_050620	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB107_4.5-5.5	SW8260C	74-87-3	Chloromethane	UJ

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SB05_6-8	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB103_2.5-3.5	SW8260C	74-87-3	Chloromethane	UJ
SOFB_042820	SW8260C	103-65-1	N-Propylbenzene	UJ
SB10_6-8	SW8081B	53494-70-5	Endrin Ketone	UJ
SB111_8-9	SW8270D	100-02-7	4-Nitrophenol	UJ
SB05_6-8	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB06_0-2	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.538)
SB106_4.5-5.5	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SB13_0-2	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB02_0-2	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB15_0-2	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB03_0-2	SW6010B	7440-09-7	Potassium	J
SB08_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB04_18-20	SW8270D	92-87-5	Benzidine	UJ
SB106_4.5-5.5	SW8260C	79-20-9	Methyl Acetate	UJ
SODUP01_042920	SW8260C	104-51-8	N-Butylbenzene	UJ
SB16_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB12_8-10	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB03_0-2	SW6010B	7439-92-1	Lead	J
SB11_10-12	SW8260C	107-13-1	Acrylonitrile	UJ
SOFB_042820	SW8260C	75-25-2	Bromoform	UJ
SB10_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SOFB04_052220	SW8260C	75-01-4	Vinyl Chloride	UJ
SB10_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	95-50-1	1,2-Dichlorobenzene	UJ
SB13_18-20	SW8270D	100-01-6	4-Nitroaniline	UJ
SB08_0-2	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB04_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB08_13-15	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB05_18-20	SW8270D	92-87-5	Benzidine	UJ

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SB12_8-10	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB13_0-2	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB11_10-12	SW8082A	11097-69-1	PCB-1254 (Aroclor 1254)	UJ
MW06_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (18.2)
SODUP01_042920	SW6010B	7440-02-0	Nickel	J
SB10_6-8	SW8081B	58-89-9	Gamma Bhc (Lindane)	UJ
SB15_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB01_6-8	SW8081B	76-44-8	Heptachlor	UJ
SB16_0-2	SW8260C	67-64-1	Acetone	U (0.013)
SOFB02_043020	SW8270DSIM	98-95-3	Nitrobenzene	UJ
SB02_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB01_6-8	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB103_2.5-3.5	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SB02_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB05_6-8	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB09_13-15	SW8260C	591-78-6	2-Hexanone	UJ
SB04_14-16	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB13_0-2	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (0.551)
SB13_5-7	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB12_18-20	SW8270D	88-74-4	2-Nitroaniline	UJ
SB14_18-20	SW8081B	72-43-5	Methoxychlor	UJ
SOFB_042820	SW8260C	106-46-7	1,4-Dichlorobenzene	UJ
SB03_0-2	SW6010B	7440-36-0	Antimony	UJ
SB07_0-2	SW8260C	67-64-1	Acetone	UJ
SB08_13-15	SW8270D	88-74-4	2-Nitroaniline	UJ
SB15_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB14_18-20	SW8081B	72-54-8	P,P'-DDD	UJ
SB15_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB04_14-16	SW8270D	100-52-7	Benzaldehyde	UJ
SB05_18-20	SW8260C	591-78-6	2-Hexanone	UJ

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SB11_10-12	SW8260C	75-15-0	Carbon Disulfide	UJ
SB110_9-10	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB10_6-8	SW8081B	33213-65-9	Beta Endosulfan	UJ
SB10_0-2	E537M	39108-34-4	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	U (0.528)
SB107_4.5-5.5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SOFB04_052220	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB08_4-6	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB13_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB111_8-9	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SODUP02_050420	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB06_5-7	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.589)
SB08_0-2	SW8270D	92-87-5	Benzidine	UJ
SB105_4-5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB08_13-15	SW6010B	7440-38-2	Arsenic	J
SB14_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB06_0-2	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.538)
MW05_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB107_4.5-5.5	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB107_4.5-5.5	SW8260C	79-20-9	Methyl Acetate	UJ
SB14_18-20	SW8082A	11104-28-2	PCB-1221 (Aroclor 1221)	UJ
SB14_0-2	SW8270D	92-87-5	Benzidine	UJ
SB07_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB102_4-5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB14_18-20	SW8081B	319-86-8	Delta BHC (Delta Hexachlorocyclohexane)	UJ
SB14_0-2	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.557)
SB16_14-16	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB05_6-8	SW8270D	92-87-5	Benzidine	UJ
SB103_2.5-3.5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB15_5-7	SW8260C	74-83-9	Bromomethane	UJ
SB08_13-15	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ

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SB05_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB08_4-6	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SOFB02_043020	SW8260C	110-82-7	Cyclohexane	UJ
SB10_6-8	SW8081B	319-85-7	Beta Bhc (Beta Hexachlorocyclohexane)	UJ
SOFB_042820	SW8260C	75-00-3	Chloroethane	UJ
SB106_4.5-5.5	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB13_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB12_18-20	SW8260C	75-09-2	Methylene Chloride	UJ
SB08_13-15	SW8270D	122-39-4	Diphenylamine	UJ
SB103_2.5-3.5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB01_0-2	SW8260C	75-00-3	Chloroethane	UJ
SB13_0-2	SW8270D	99-09-2	3-Nitroaniline	UJ
SB14_6-8	SW8082A	12674-11-2	PCB-1016 (Aroclor 1016)	UJ
SB03_6-8	SW8260C	74-83-9	Bromomethane	UJ
SB03_6-8	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB105_4-5	SW8260C	75-27-4	Bromodichloromethane	UJ
SB12_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB107_4.5-5.5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB10_0-2	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.528)
SB08_4-6	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8260C	75-27-4	Bromodichloromethane	UJ
SB109_4-5	SW8270D	98-95-3	Nitrobenzene	UJ
SB08_0-2	SW8260C	591-78-6	2-Hexanone	UJ
SB105_4-5	SW8270D	92-87-5	Benzidine	UJ
SB14_6-8	SW8082A	11104-28-2	PCB-1221 (Aroclor 1221)	UJ
SB06_5-7	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.589)
SB03_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB13_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB12_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB09_13-15	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ

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SB107_4.5-5.5	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB14_6-8	SW8082A	11141-16-5	PCB-1232 (Aroclor 1232)	UJ
SOFB_042820	SW8260C	10061-01-5	Cis-1,3-Dichloropropene	UJ
SB105_4-5	SW8270D	99-09-2	3-Nitroaniline	UJ
SB03_6-8	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB15_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB13_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB14_6-8	SW8082A	53469-21-9	PCB-1242 (Aroclor 1242)	UJ
SB14_6-8	SW8082A	12672-29-6	PCB-1248 (Aroclor 1248)	UJ
SB14_6-8	SW8082A	11097-69-1	PCB-1254 (Aroclor 1254)	UJ
SB06_0-2	SW8270D	65-85-0	Benzoic Acid	UJ
SB07_0-2	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB04_0-2	SW8260C	104-51-8	N-Butylbenzene	UJ
SB02_0-2	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB10_6-8	SW8260C	74-83-9	Bromomethane	UJ
SB102_4-5	SW8270D	100-02-7	4-Nitrophenol	UJ
SOFB_042820	SW8260C	79-00-5	1,1,2-Trichloroethane	UJ
SOFB_042820	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB15_5-7	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SODUP04_052220	SW8260C	79-20-9	Methyl Acetate	UJ
SB09_13-15	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB03_0-2	SW6010B	7439-89-6	Iron	J
GWFB01_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (2.24)
SB11_0-2	SW8260C	75-09-2	Methylene Chloride	UJ
SB108_7-9.5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB14_18-20	SW8081B	58-89-9	Gamma Bhc (Lindane)	UJ
SB03_0-2	SW8260C	75-00-3	Chloroethane	UJ
GWDUP01_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (4.94)
SB14_18-20	SW8081B	8001-35-2	Toxaphene	UJ
SB14_6-8	SW8082A	11096-82-5	PCB-1260 (Aroclor 1260)	UJ
SB106_4.5-5.5	SW8260C	108-87-2	Methylcyclohexane	UJ

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SB104_4.5-5.5	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB14_18-20	SW8082A	11097-69-1	PCB-1254 (Aroclor 1254)	UJ
SB08_13-15	SW6010B	7440-66-6	Zinc	J
SB03_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB13_18-20	E537M	375-22-4	Perfluorobutanoic Acid	U (1.43)
SODUP01_042920	E537M	307-55-1	Perfluorododecanoic acid (PFDoA)	UJ
SB102_4-5	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SODUP04_052220	SW8260C	108-10-1	Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UJ
SODUP04_052220	SW8260C	108-87-2	Methylcyclohexane	UJ
SB03_0-2	SW6010B	7440-62-2	Vanadium	J
SB11_10-12	SW8082A	11096-82-5	PCB-1260 (Aroclor 1260)	UJ
SB06_0-2	SW8260C	104-51-8	N-Butylbenzene	UJ
SOFB03_050620	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB02_18-20	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SOFB_042820	SW8260C	67-66-3	Chloroform	UJ
SB10_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB01_6-8	SW8260C	75-00-3	Chloroethane	UJ
SB11_0-2	SW8270D	99-09-2	3-Nitroaniline	UJ
SB13_0-2	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (1.34)
SOFB04_052220	SW6010B	7782-49-2	Selenium	UJ
SB111_8-9	SW8260C	108-87-2	Methylcyclohexane	UJ
SB102_4-5	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB06_12-14	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB11_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB16_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB05_0-2	SW8270D	92-87-5	Benzidine	UJ
SB09_4-6	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB15_5-7	SW8270D	100-52-7	Benzaldehyde	UJ
SB110_9-10	SW8260C	75-71-8	Dichlorodifluoromethane	UJ

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SB16_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SB02_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB16_14-16	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SOFB03_050620	SW8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
SB12_8-10	SW8270D	88-74-4	2-Nitroaniline	UJ
SB14_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SODUP01_042920	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.549)
SB103_2.5-3.5	SW8260C	108-87-2	Methylcyclohexane	UJ
SB109_4-5	SW8260C	75-01-4	Vinyl Chloride	UJ
SB09_4-6	SW8260C	591-78-6	2-Hexanone	UJ
SODUP01_042920	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.549)
SB16_14-16	SW8270D	100-01-6	4-Nitroaniline	UJ
SB13_5-7	E537M	375-22-4	Perfluorobutanoic Acid	U (0.557)
SB09_0-2	SW8270D	92-87-5	Benzidine	UJ
SB16_0-2	SW8270D	88-74-4	2-Nitroaniline	UJ
SOFB_042820	SW8260C	100-42-5	Styrene	UJ
MW06_043020	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	J
SB14_6-8	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.557)
SB110_9-10	SW8270D	99-09-2	3-Nitroaniline	UJ
SODUP04_052220	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB05_0-2	SW8260C	591-78-6	2-Hexanone	UJ
SOFB_042820	SW8260C	75-01-4	Vinyl Chloride	UJ
SB03_6-8	SW8270D	65-85-0	Benzoic Acid	UJ
SB10_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB08_0-2	SW9010	57-12-5	Cyanide	UJ
MW08_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (5.47)
SB10_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP03_050620	SW8082A	12674-11-2	PCB-1016 (Aroclor 1016)	UJ
SB101_3-4	SW8260C	108-87-2	Methylcyclohexane	UJ
SB05_6-8	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ

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SOFB_042820	SW8260C	108-90-7	Chlorobenzene	UJ
SB09_13-15	SW8270D	117-81-7	Bis(2-Ethylhexyl) Phthalate	UJ
SODUP01_042920	E537M	754-91-6	Perfluorooctane Sulfonamide (FOSA)	J
SB14_0-2	SW8260C	74-83-9	Bromomethane	UJ
SOFB_042820	SW8270DSIM	98-95-3	Nitrobenzene	UJ
SB111_8-9	SW8270D	100-52-7	Benzaldehyde	UJ
MW08_043020	E537M	335-76-2	Perfluorodecanoic acid (PFDA)	UJ
SB10_6-8	SW8081B	50-29-3	P,P'-DDT	UJ
SB03_6-8	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SOFB04_052220	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB111_8-9	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB102_4-5	SW8260C	108-87-2	Methylcyclohexane	UJ
SB02_6-8	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SODUP03_050620	SW8082A	11104-28-2	PCB-1221 (Aroclor 1221)	UJ
SB14_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB_042820	SW8260C	74-97-5	Bromochloromethane	UJ
SB13_18-20	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB04_14-16	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SODUP03_050620	SW8082A	11141-16-5	PCB-1232 (Aroclor 1232)	UJ
SB106_4.5-5.5	SW8270D	99-09-2	3-Nitroaniline	UJ
SODUP03_050620	SW8082A	53469-21-9	PCB-1242 (Aroclor 1242)	UJ
SODUP03_050620	SW8082A	12672-29-6	PCB-1248 (Aroclor 1248)	UJ
SB16_14-16	SW8260C	107-13-1	Acrylonitrile	UJ
SB101_3-4	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SODUP03_050620	SW8082A	11097-69-1	PCB-1254 (Aroclor 1254)	UJ
SB05_0-2	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB16_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB07_0-2	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.538)
GWDUP01_043020	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (2.79)
SB104_4.5-5.5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ

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SB110_9-10	SW8260C	75-01-4	Vinyl Chloride	UJ
SOFB_042820	SW8260C	76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	UJ
SB104_4.5-5.5	SW8260C	75-27-4	Bromodichloromethane	UJ
SB11_10-12	SW8082A	11104-28-2	PCB-1221 (Aroclor 1221)	UJ
SB04_0-2	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.521)
SODUP03_050620	SW8082A	11096-82-5	PCB-1260 (Aroclor 1260)	UJ
SB14_6-8	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.557)
SB111_8-9	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB08_0-2	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB11_0-2	SW8270D	100-01-6	4-Nitroaniline	UJ
SB03_0-2	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB104_4.5-5.5	SW8270D	99-09-2	3-Nitroaniline	UJ
SOFB_042820	SW8260C	95-47-6	O-Xylene (1,2-Dimethylbenzene)	UJ
MW08_043020	E537M	754-91-6	Perfluorooctane Sulfonamide (FOSA)	U (2)
SB16_18-20	SW8270D	88-74-4	2-Nitroaniline	UJ
SODUP01_042920	E537M	376-06-7	Perfluorotetradecanoic acid (PFTA)	J
SB05_18-20	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB07_18-20	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.63)
SB15_0-2	E537M	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	U (1.08)
SODUP02_050420	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.536)
MW08_043020	E537M	2706-90-3	Perfluoropentanoic Acid (PFPeA)	U (3.08)
SB11_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB03_6-8	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SOFB_042820	SW8260C	74-95-3	Dibromomethane	UJ
SB07_8-10	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB05_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB08_4-6	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SOFB_042820	SW8260C	74-87-3	Chloromethane	UJ
SB103_2.5-3.5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ

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SOFB_042820	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
SODUP02_050420	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.536)
SB107_4.5-5.5	SW8260C	110-82-7	Cyclohexane	UJ
SB01_6-8	SW8081B	50-29-3	P,P'-DDT	UJ
SB109_4-5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB03_18-20	SW8270D	92-87-5	Benzidine	UJ
SB04_0-2	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.521)
MW06_043020	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB16_14-16	SW8270D	88-74-4	2-Nitroaniline	UJ
SODUP01_042920	SW6010B	7440-09-7	Potassium	J
SB12_0-2	SW6010B	7440-41-7	Beryllium	UJ
SB06_12-14	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB07_18-20	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB11_10-12	SW8082A	11141-16-5	PCB-1232 (Aroclor 1232)	UJ
SB09_4-6	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB13_18-20	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	J
SB10_18-20	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB104_4.5-5.5	SW8260C	107-13-1	Acrylonitrile	UJ
SB12_18-20	SW8270D	99-09-2	3-Nitroaniline	UJ
SB110_9-10	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB106_4.5-5.5	SW8260C	108-67-8	1,3,5-Trimethylbenzene (Mesitylene)	UJ
SB109_4-5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SOFB03_050620	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB14_6-8	SW8082A	1336-36-3	Polychlorinated Biphenyl (PCBs)	UJ
SB111_8-9	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB13_18-20	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.706)
SB02_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB03_6-8	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB16_14-16	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB07_0-2	SW8270D	100-52-7	Benzaldehyde	UJ

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SB16_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SODUP03_050620	E537M	375-85-9	Perfluoroheptanoic acid (PFHpA)	U (0.596)
SB101_3-4	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB01_6-8	SW8081B	60-57-1	Dieldrin	UJ
SB10_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP01_042920	SW6010B	7782-49-2	Selenium	J
SODUP03_050620	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.596)
SB104_4.5-5.5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB12_8-10	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SODUP01_042920	SW6010B	7440-22-4	Silver	UJ
SB08_13-15	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SODUP03_050620	E537M	335-67-1	Perfluorooctanoic acid (PFOA)	U (0.596)
SOFB_042820	SW8260C	110-82-7	Cyclohexane	UJ
SB01_6-8	SW8082A	11096-82-5	PCB-1260 (Aroclor 1260)	UJ
SB03_18-20	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB110_9-10	SW8260C	124-48-1	Dibromochloromethane	UJ
SB111_8-9	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SODUP01_042920	SW6010B	7440-23-5	Sodium	J
SB14_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SODUP04_052220	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB01_6-8	SW8081B	7421-93-4	Endrin Aldehyde	UJ
SB08_13-15	SW8270D	84-66-2	Diethyl Phthalate	UJ
SB13_5-7	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB109_4-5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB03_6-8	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SOFB_042820	SW8260C	108-87-2	Methylcyclohexane	UJ
SB103_2.5-3.5	SW8270D	108-60-1	Bis(2-Chloroisopropyl) Ether	UJ
SB10_6-8	SW8081B	72-54-8	P,P'-DDD	UJ
SB11_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SOFB_042820	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ

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SB107_4.5-5.5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB07_8-10	SW8270D	92-87-5	Benzidine	UJ
SB107_4.5-5.5	SW8270D	87-86-5	Pentachlorophenol	UJ
SODUP03_050620	SW8082A	1336-36-3	Polychlorinated Biphenyl (PCBs)	UJ
TRIP BLANK_050620	SW8260C	107-02-8	Acrolein	UJ
SB109_4-5	SW8270D	99-09-2	3-Nitroaniline	UJ
SODUP04_052220	SW6010B	7782-49-2	Selenium	UJ
SB10_6-8	SW8270DSIM	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB11_0-2	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB110_9-10	SW8260C	75-27-4	Bromodichloromethane	UJ
SB08_13-15	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SB04_18-20	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB09_13-15	SW8270D	92-87-5	Benzidine	UJ
SB03_0-2	SW9010	57-12-5	Cyanide	UJ
SB10_6-8	SW8081B	72-20-8	Endrin	UJ
SB06_12-14	SW8270D	92-87-5	Benzidine	UJ
SB107_4.5-5.5	SW8260C	108-87-2	Methylcyclohexane	UJ
SB108_7-9.5	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SOFB04_052220	SW8260C	108-87-2	Methylcyclohexane	UJ
SOFB_042820	SW8260C	75-15-0	Carbon Disulfide	UJ
SB13_0-2	SW8270D	100-52-7	Benzaldehyde	UJ
SODUP04_052220	SW6010B	7440-22-4	Silver	J
SB107_4.5-5.5	SW8260C	75-35-4	1,1-Dichloroethene	UJ
SB106_4.5-5.5	SW8260C	110-82-7	Cyclohexane	UJ
SB07_8-10	SW8270D	65-85-0	Benzoic Acid	UJ
SB06_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB11_10-12	SW8082A	53469-21-9	PCB-1242 (Aroclor 1242)	UJ
SB10_6-8	SW8270D	92-87-5	Benzidine	UJ
SB05_0-2	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB110_9-10	SW8270D	92-87-5	Benzidine	UJ
SB12_0-2	SW7196A	18540-29-9	Chromium, Hexavalent	UJ

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SB02_0-2	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB01_6-8	SW8081B	72-43-5	Methoxychlor	UJ
SB16_14-16	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB108_7-9.5	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB08_13-15	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB06_5-7	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SOFB02_043020	SW6010B	7440-22-4	Silver	UJ
SB07_18-20	SW8270D	65-85-0	Benzoic Acid	UJ
SOFB_042820	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SODUP02_050420	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SOFB_042820	SW8260C	75-09-2	Methylene Chloride	UJ
SOFB03_050620	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB14_18-20	SW8081B	319-85-7	Beta Bhc (Beta Hexachlorocyclohexane)	UJ
SB06_5-7	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB109_4-5	SW8260C	75-27-4	Bromodichloromethane	UJ
SB104_4.5-5.5	SW8270D	100-02-7	4-Nitrophenol	UJ
SB108_7-9.5	SW8260C	127-18-4	Tetrachloroethylene (PCE)	UJ
SB07_18-20	SW8260C	104-51-8	N-Butylbenzene	UJ
SB110_9-10	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB04_0-2	E537M	39108-34-4	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	U (0.521)
SOFB02_043020	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SOFB03_050620	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB103_2.5-3.5	SW8260C	135-98-8	Sec-Butylbenzene	UJ
SB02_0-2	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB13_0-2	SW8260C	74-83-9	Bromomethane	UJ
SB15_0-2	E537M	335-76-2	Perfluorodecanoic acid (PFDA)	U (0.536)
SB111_8-9	SW8270D	92-87-5	Benzidine	UJ
SB12_18-20	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SOFB_042820	SW8260C	106-93-4	1,2-Dibromoethane (Ethylene Dibromide)	UJ

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SB10_6-8	SW8081B	8001-35-2	Toxaphene	UJ
SB15_0-2	SW8270D	100-01-6	4-Nitroaniline	UJ
SB103_2.5-3.5	SW8270D	92-87-5	Benzidine	UJ
SB109_4-5	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SOFB02_043020	SW8260C	74-87-3	Chloromethane	UJ
SB02_18-20	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB01_18-20	SW8260C	74-83-9	Bromomethane	UJ
SB14_18-20	SW8081B	959-98-8	Alpha Endosulfan	UJ
SB08_4-6	SW8270D	84-66-2	Diethyl Phthalate	UJ
SB06_12-14	E537M	307-24-4	Perfluorohexanoic acid (PFHxA)	U (0.529)
SB11_10-12	SW8260C	79-20-9	Methyl Acetate	UJ
SB16_18-20	SW8260C	107-02-8	Acrolein	UJ
SOFB_042820	SW8260C	630-20-6	1,1,1,2-Tetrachloroethane	UJ
SB10_6-8	SW8081B	1024-57-3	Heptachlor Epoxide	UJ
SB16_14-16	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB109_4-5	SW8260C	75-25-2	Bromoform	UJ
SB07_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB12_8-10	SW8260C	67-64-1	Acetone	J
SB01_18-20	SW8260C	75-00-3	Chloroethane	UJ
SB16_18-20	SW8270D	100-01-6	4-Nitroaniline	UJ
SB16_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB01_18-20	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB14_18-20	SW8082A	53469-21-9	PCB-1242 (Aroclor 1242)	UJ
SB03_0-2	SW6010B	7440-23-5	Sodium	J
SB11_10-12	SW8270D	88-74-4	2-Nitroaniline	UJ
SB103_2.5-3.5	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB11_0-2	SW8270D	51-28-5	2,4-Dinitrophenol	UJ
SB06_5-7	SW8270D	100-52-7	Benzaldehyde	UJ
SB109_4-5	SW8270D	100-52-7	Benzaldehyde	UJ
SB107_4.5-5.5	SW8260C	67-64-1	Acetone	U (0.011)
SB10_6-8	SW8081B	959-98-8	Alpha Endosulfan	UJ

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SB04_14-16	SW8270D	65-85-0	Benzoic Acid	UJ
SOFB02_043020	SW8270D	58-90-2	2,3,4,6-Tetrachlorophenol	UJ
SB109_4-5	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB02_6-8	SW8151(S)	93-72-1	Silvex (2,4,5-TP)	UJ
SB110_9-10	SW8260C	74-87-3	Chloromethane	UJ
SB03_18-20	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB07_18-20	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB02_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB11_0-2	SW8270D	91-94-1	3,3'-Dichlorobenzidine	UJ
SB08_4-6	SW8260C	591-78-6	2-Hexanone	UJ
SB105_4-5	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB09_0-2	SW8260C	591-78-6	2-Hexanone	UJ
SB15_0-2	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB14_18-20	SW8081B	7421-93-4	Endrin Aldehyde	UJ
SB03_0-2	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB105_4-5	SW8270D	621-64-7	N-Nitrosodi-N-Propylamine	UJ
SB04_14-16	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB11_0-2	SW8260C	75-15-0	Carbon Disulfide	UJ
SB10_6-8	SW6010B	7440-02-0	Nickel	J
SB101_3-4	SW8270D	122-66-7	1,2-Diphenylhydrazine	UJ
SB08_13-15	SW8270D	65794-96-9	M+P MethylPhenol	UJ
SB12_18-20	SW8260C	75-15-0	Carbon Disulfide	UJ
SOFB03_050620	SW8270D	100-52-7	Benzaldehyde	UJ
SB08_4-6	SW8270D	121-14-2	2,4-Dinitrotoluene	UJ
SB14_18-20	SW8081B	309-00-2	Aldrin	UJ
SB14_18-20	SW8260C	67-64-1	Acetone	U (0.022)
SB07_18-20	SW8270D	100-52-7	Benzaldehyde	UJ
SB09_4-6	SW8270D	92-87-5	Benzidine	UJ
SB14_18-20	SW8081B	72-20-8	Endrin	UJ
SOFB04_052220	SW8270D	117-84-0	Di-N-Octylphthalate	UJ
SB15_5-7	SW8260C	67-64-1	Acetone	U (0.13)

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SB07_8-10	SW8270D	100-52-7	Benzaldehyde	UJ
SOFB03_050620	SW8270D	100-02-7	4-Nitrophenol	UJ
SOFB_042820	SW8260C	100-41-4	Ethylbenzene	UJ
SB02_6-8	SW8270D	534-52-1	4,6-Dinitro-2-Methylphenol	UJ
SB03_6-8	SW8270D	606-20-2	2,6-Dinitrotoluene	UJ
SB08_4-6	SW8270D	65-85-0	Benzoic Acid	UJ
SB110_9-10	SW8270D	100-52-7	Benzaldehyde	UJ
SB108_7-9.5	SW8260C	75-01-4	Vinyl Chloride	UJ
SB10_6-8	SW8081B	7421-93-4	Endrin Aldehyde	UJ
SB04_18-20	SW8270D	77-47-4	Hexachlorocyclopentadiene	UJ
SB16_18-20	SW8270D	99-09-2	3-Nitroaniline	UJ
SOFB_042820	SW8260C	541-73-1	1,3-Dichlorobenzene	UJ
SB13_18-20	SW8151(S)	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	UJ
SB104_4.5-5.5	SW8260C	74-87-3	Chloromethane	UJ
SODUP01_042920	SW6010B	7440-62-2	Vanadium	J
SB05_0-2	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB01_18-20	SW8151(S)	94-75-7	2,4-D (Dichlorophenoxyacetic Acid)	UJ
SODUP04_052220	SW6010B	7440-66-6	Zinc	J
SODUP01_042920	SW6010B	7440-66-6	Zinc	J
MW05_043020	E537M	375-22-4	Perfluorobutanoic Acid	U (17.4)
SB106_4.5-5.5	SW8260C	156-60-5	Trans-1,2-Dichloroethene	UJ
SB106_4.5-5.5	SW8260C	67-66-3	Chloroform	UJ
SB106_4.5-5.5	SW8260C	74-97-5	Bromochloromethane	UJ
SB106_4.5-5.5	SW8260C	107-06-2	1,2-Dichloroethane	UJ
SB106_4.5-5.5	SW8260C	107-02-8	Acrolein	UJ
SB106_4.5-5.5	SW8260C	107-13-1	Acrylonitrile	UJ
SB106_4.5-5.5	SW8260C	75-65-0	Tert-Butyl Alcohol	UJ
SB106_4.5-5.5	SW8260C	75-34-3	1,1-Dichloroethane	UJ
SB106_4.5-5.5	SW8260C	67-64-1	Acetone	UJ
SB106_4.5-5.5	SW8260C	10061-01-5	Cis-1,3-Dichloropropene	UJ

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SB106_4.5-5.5	SW8260C	76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	UJ
SB106_4.5-5.5	SW8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
SB106_4.5-5.5	SW8260C	75-27-4	Bromodichloromethane	UJ
SB106_4.5-5.5	SW8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
SB106_4.5-5.5	SW8260C	71-43-2	Benzene	UJ
SB106_4.5-5.5	SW8260C	75-71-8	Dichlorodifluoromethane	UJ
SB106_4.5-5.5	SW8260C	75-09-2	Methylene Chloride	UJ
SB106_4.5-5.5	SW8260C	79-01-6	Trichloroethylene (TCE)	UJ
SB106_4.5-5.5	SW8260C	78-87-5	1,2-Dichloropropane	UJ
SB106_4.5-5.5	SW8260C	74-83-9	Bromomethane	UJ
SB106_4.5-5.5	SW8260C	75-01-4	Vinyl Chloride	UJ
SB106_4.5-5.5	SW8260C	156-59-2	Cis-1,2-Dichloroethylene	UJ
SB106_4.5-5.5	SW8260C	75-69-4	Trichlorofluoromethane	UJ
SB106_4.5-5.5	SW8260C	74-95-3	Dibromomethane	UJ
SB106_4.5-5.5	SW8260C	56-23-5	Carbon Tetrachloride	UJ
SB106_4.5-5.5	SW8260C	75-15-0	Carbon Disulfide	UJ
SB106_4.5-5.5	SW8260C	78-93-3	Methyl Ethyl Ketone (2-Butanone)	UJ
SB106_4.5-5.5	SW8260C	75-00-3	Chloroethane	UJ
SB106_4.5-5.5	SW8260C	123-91-1	1,4-Dioxane (P-Dioxane)	UJ
SB04_0-2	SW6010B	7440-39-3	Barium	J
SB13_5-7	SW6010B	7440-70-2	Calcium	J
SODUP02_050420	SW6010B	7440-70-2	Calcium	J
SB13_5-7	SW6010B	7440-23-5	Sodium	J
SODUP02_050420	SW6010B	7440-23-5	Sodium	J
SB108_7-9.5	SW6010B	7439-95-4	Magnesium	J
SODUP04_052220	SW6010B	7439-95-4	Magnesium	J

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

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MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260C

20D0850

The method blank (MB) for batch BE00028 exhibited a detection of acetone (0.016 mg/kg). The associated results in sample SB16_0-2 and SB16_14-16 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

The continuing calibration verification (CCV) analyzed on 5/1/2020 at 10:10 exhibited percent differences (%Ds) above the control limit for acetone (32.4%), acrylonitrile (29.6%), carbon disulfide (28.3%), methyl acetate (25.9%), methylene chloride (34.2%), and trans-1,2-dichloroethylene (27%). The associated results in sample SB11_0-2, SB12_18-20, SB11_10-12, SB16_14-16, and SB12_8-10 are qualified as "J" or "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/4/2020 at 10:00 exhibited a %D above the control limit for acrolein (-30.8%). The associated results in sample SB12_0-2 and SB16_18-20 are qualified as "UJ" based on potential indeterminate bias.

20D0776

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) for batch BD01225 exhibited a relative percent difference (RPD) above the control limit for dichlorodifluoromethane (63.6%). The associated results in sample SB05_0-2, SB05_18-20, SB05_6-8, SB08_0-2, SB08_13-15, SB08_4-6, SB09_0-2, SB09_13-15, and SB09_4-6 are qualified as "UJ" based on potential indeterminate bias.

The LCS/LCSD for batch BD01321 exhibited a percent recovery below the lower control limit (LCL) for tetrachloroethylene (80.7%, 77.7%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential low bias.

The CCV analyzed on 4/29/2020 at 10:00 exhibited %Ds above the control limit for 1,2-dichloroethane (26.5%), 2-butanone (21.4%), 2-hexanone (24.5%), and acetone (30.9%). The associated results in sample SB05_0-2, SB05_18-20, SB05_6-8, SB08_0-2, SB08_13-15, SB08_4-6, SB09_0-2, SB09_13-15, and SB09_4-6 are qualified as "J" or "UJ" based on potential indeterminate bias.

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The CCV analyzed on 4/30/2020 at 18:20 exhibited %Ds above the control limit for 1,1,1,2-tetrachloroethane (-79.3%), 1,1,1-trichloroethane (tca) (-77.4%), 1,1,2,2-tetrachloroethane (-81.6%), 1,1,2-trichloro-1,2,2-trifluoroethane (-79.6%), 1,1,2-trichloroethane (-80.4%), 1,1-dichloroethane (-78.6%), 1,1-dichloroethene (-78.3%), 1,2,3-trichloropropane (-81.3%), 1,2,4-trichlorobenzene (-81.5%), 1,2,4-trimethylbenzene (-79.8%), 1,2-dibromo-3-chloropropane (-81.5%), 1,2-dibromoethane (ethylene dibromide) (-80.3%), 1,2-dichlorobenzene (-81%), 1,2-dichloroethane (-78.4%), 1,2-dichloropropane (-80.6%), 1,3,5-trimethylbenzene (mesitylene) (-79.4%), 1,3-dichlorobenzene (-80.5%), 1,4-dichlorobenzene (-80.6%), 1,4-dioxane (p-dioxane) (-42.6%), acetone (-76.5%), acrolein (-84.4%), acrylonitrile (-78.5%), benzene (-78.7%), bromochloromethane (-77.4%), bromodichloromethane (-79.8%), bromoform (-80.1%), bromomethane (-27.5%), carbon disulfide (-79.3%), carbon tetrachloride (-77.4%), chlorobenzene (-79.5%), chloroethane (-80.7%), chloroform (-78%), chloromethane (-80.9%), cis-1,2-dichloroethylene (-78.7%), cis-1,3-dichloropropene (-79.5%), cyclohexane (-78.9%), dibromochloromethane (-79.8%), dibromomethane (-80.8%), dichlorodifluoromethane (-78.8%), ethylbenzene (-78.9%), hexachlorobutadiene (-79.2%), isopropylbenzene (cumene) (-79.6%), m,p-xylene (-77.8%), methyl acetate (-79.4%), methyl ethyl ketone (2-butanone) (-78.4%), methyl isobutyl ketone (4-methyl-2-pentanone) (-80.5%), methylcyclohexane (-81.3%), methylene chloride (-77.1%), n-butylbenzene (-79.4%), n-propylbenzene (-79.6%), o-xylene (1,2-dimethylbenzene) (-78.9%), p-cymene (p-isopropyltoluene) (-78.8%), sec-butylbenzene (-79.2%), styrene (-79.2%), t-butylbenzene (-79.2%), tert-butyl alcohol (-79.4%), tert-butyl methyl ether (-78.6%), tetrachloroethylene (PCE) (-79%), toluene (-79.6%), trans-1,2-dichloroethene (-78.5%), trans-1,3-dichloropropene (-79.6%), trichloroethylene (TCE) (-80.5%), trichlorofluoromethane (-78.6%), and vinyl chloride (-80.3%). The associated results in sample SOFB_042820 are qualified as "J" or "UJ" based on potential indeterminate bias.

20D0818

The CCV analyzed on 4/30/2020 at 10:02 exhibited a %D above the control limit for n-butylbenzene (31.8%). The associated results in sample SB04_0-2, SB04_14-16, SB06_0-2, SB06_12-14, SB07_18-20, SB07_8-10, and SODUP01_042920 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/4/2020 at 10:00 exhibited a %D above the control limit for acrolein (-30.8%). The associated results in sample SB04_18-20 are qualified as "UJ" based on potential indeterminate bias.

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The CCV analyzed on 5/1/2020 at 10:11 exhibited a %D above the control limit for acetone (26.5%). The associated results in sample SB06_5-7 and SB07_0-2 are qualified as "J" or "UJ" based on potential indeterminate bias.

20E0055

The MB for batch BE00129-BLK3 exhibited a detection of acetone (0.02 mg/kg). The associated results in sample SB13_0-2, SB13_18-20, SB13_5-7, SB15_0-2, SB15_18-20, SB15_5-7, and SODUP02_050420 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

The CCV analyzed on 5/5/2020 at 09:59 exhibited %Ds above the control limit for 2-butanone (20.7%), acetone (45.9%), and bromomethane (39.2%). The associated results in sample SB15_18-20, SB15_0-2, SB13_18-20, SB15_5-7, SB13_5-7, SODUP02_050420, and SB13_0-2 are qualified as "J" or "UJ" based on potential indeterminate bias.

20E0134

The MB for batch BE00250-BLK3 exhibited a detection of acetone (0.01 mg/kg). The associated results in sample SB10_0-2, SB10_18-20, SB10_6-8, SB14_0-2, SB14_18-20, SB14_6-8, and SODUP03_050620 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

The LCS for batch BE00255 exhibited a percent recovery below the LCL for 1,2,3-trichlorobenzene (49.5%). The associated results in sample SOFB03_050620 and TRIP BLANK_050620 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00255 exhibited a percent recovery below the LCL for tetrachloroethylene (79.4%, 76%). The associated results in sample SOFB03_050620 and TRIP BLANK_050620 are qualified as "UJ" based on potential low bias.

The initial calibration (ICAL) for instrument VOA No. 8 exhibited a response factor (RF) below the control limit for bromoform (0.067). The associated results in sample SOFB03_050620 and TRIP BLANK_050620 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/7/2020 at 09:53 exhibited %Ds above the control limit for 1,4-dioxane (-43.8%), acetone (-23.1%), and acrolein (-29.7%). The associated results in sample SOFB03_050620 and TRIP BLANK_050620 are qualified as "UJ" based on potential indeterminate bias.

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The CCV analyzed on 5/7/2020 at 09:52 exhibited %Ds above the control limit for acetone (27%) and bromomethane (34%). The associated results in sample SB14_18-20, SODUP03_050620, SB14_0-2, SB10_6-8, SB10_0-2, SB14_6-8, and SB10_18-20 are qualified as "UJ" based on potential indeterminate bias.

20E0734

The LCS/LCSD for batch BE00960 exhibited a percent recovery below the LCL for acrolein (9.88%, 9.76%). The associated results in sample SB104_4.5-5.5, SB105_4-5, SB108_7-9.5, SB109_4-5, and SB110_9-10 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE01201 exhibited a percent recovery below the LCL for cyclohexane (33.8%, 29.8%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential low bias.

The LCSD for batch BE01201 exhibited a percent recovery below the LCL for methylcyclohexane (68.9%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE01201 exhibited a RPD above the control limit for 1,4-dioxane (31.7%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential indeterminate bias.

The MB for batch BE00960-BLK2 exhibited a detection of acetone (0.013 mg/kg). The associated results in sample SB104_4.5-5.5, SB108_7-9.5, SB109_4-5, and SB110_9-10 are qualified as "U" at the sample concentration based on potential blank contamination.

The MB for batch BF00067-BLK1 exhibited a detection of acetone (0.0057 mg/kg). The associated results in sample SB107_4.5-5.5, SODUP04_052220, and SB103_2.5-3.5 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

The CCV analyzed on 5/28/2020 at 02:01 exhibited %Ds above the control limit for chloromethane (-47.7%), dichlorodifluoromethane (-48.6%), and vinyl chloride (-36.6%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/28/2020 at 08:51 exhibited %Ds above the control limit for 1,1,1,2-tetrachloroethane (36.5%), 1,2-dibromo-3-chloropropane (23.4%), 1,4-dioxane (29.6%), acrolein (-23.8%), acrylonitrile (27.3%), bromodichloromethane (21.7%), bromoform (42.6%), carbon tetrachloride (36.5%), chloromethane (-38.1%), dibromochloromethane (34.9%),

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dichlorodifluoromethane (-47.4%), methyl tert-butyl ether (MTBE) (22.5%), tert-butyl alcohol (TBA) (54.7%), tetrachloroethylene (53.9%), and vinyl chloride (-21.5%). The associated results in sample SB109_4-5, SB105_4-5, SB104_4.5-5.5, SB110_9-10, and SB108_7-9.5 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 6/1/2020 at 12:21 exhibited %Ds above the control limit for 1,1-dichloroethylene (-23.1%), 1,3,5-trimethylbenzene (-20.2%), 4-methyl-2-pentanone (-20.1%), chloromethane (-26%), cyclohexane (-21.4%), methyl acetate (-21.3%), methylcyclohexane (-25%), and sec-butylbenzene (-22%). The associated results in sample SB111_8-9, SB101_3-4, SODUP04_052220, SB107_4.5-5.5, SB106_4.5-5.5, SB103_2.5-3.5, and SB102_4-5 are qualified as "UJ" based on potential indeterminate bias.

The sample SB106_4.5-5.5 exhibited a percent recovery below the LCL for the internal standard 1,2-dichlorobenzene-d4 (48%). The associated results are qualified as "UJ" based on potential loss of instrument sensitivity.

20E0108

The CCV analyzed on 5/7/2020 at 09:55 exhibited %Ds above the control limit for 1,2-dichloroethane (30.4%), bromomethane (20.9%), carbon tetrachloride (20.9%), chloroethane (21.5%), and trichlorofluoromethane (28.2%). The associated results in sample SB02_0-2, SB01_0-2, SB02_6-8, SB01_6-8, SB01_18-20, SB02_18-20, SB03_0-2, SB03_6-8, and SB03_18-20 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D and 8270D SIM

20D0850

The CCV analyzed on 5/6/2020 at 08:50 exhibited %Ds above the control limit for 2,4-dinitrophenol (93%), 2,4-dinitrotoluene (41.5%), 2,6-dinitrotoluene (44.1%), 2-nitroaniline (39%), 3,3-dichlorobenzidine (40%), 3-nitroaniline (37.5%), 4,6-dinitro-2-methylphenol (68.5%), 4-nitroaniline (42.1%), and benzaldehyde (-40.6%). The associated results in sample SB16_14-16, SB11_10-12, SB12_8-10, SB12_18-20, SB12_0-2, SB16_18-20, SB11_18-20, SB16_0-2, and SB11_0-2 are qualified as "UJ" based on potential indeterminate bias.

20D0776

The LCS for batch BD01324 exhibited a percent recovery below the LCL for benzoic acid (29.5%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential low bias.

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The LCS for batch BE00003 exhibited percent recoveries below the LCL for 2,3,4,6-tetrachlorophenol (29.2%), 2-chloronaphthalene (30.2%), 2-chlorophenol (31.5%), 3- & 4-methylphenols (25.7%), benzoic acid (5.84%), carbazole (33.1%), diethyl phthalate (31.4%), dimethyl phthalate (32.5%), and diphenylamine (39.2%). The associated results in sample SB08_13-15 and SB08_4-6 are qualified as "UJ" based on potential low bias.

The ICAL for instrument BNA #7 exhibited a relative standard deviation (RSD) above the control limit for benzoic acid (46.95678%). The associated results in sample SB05_6-8, SB05_0-2, SB05_18-20, SB09_0-2, SB08_0-2, SB09_4-6, and SB09_13-15 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/1/2020 at 08:57 exhibited %Ds above the control limit for 2,4-dinitrophenol (49.9%), benzaldehyde (-35.5%), benzidine (-27.4%), bis(2-ethylhexyl)phthalate (21.2%), di-n-octyl phthalate (28.9%), and hexachlorocyclopentadiene (24.8%). The associated results in sample SB05_6-8, SB05_0-2, SB05_18-20, SB09_0-2, SB08_0-2, SB09_4-6, and SB09_13-15 are qualified as "J" or "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/1/2020 at 13:56 exhibited %Ds above the control limit for 2,4-dinitrophenol (93.1%), 2,4-dinitrotoluene (38.2%), 2,6-dinitrotoluene (42.1%), 2-nitroaniline (36%), 3,3-dichlorobenzidine (40.3%), 3-nitroaniline (33.3%), 4,6-dinitro-2-methylphenol (64.4%), 4-nitroaniline (37.1%), benzaldehyde (-29.5%), and benzoic acid (20.5%). The associated results in sample SB08_4-6 and SB08_13-15 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/1/2020 at 08:55 exhibited %Ds above the control limit for 2,4-dinitrophenol (75.9%), 4,6-dinitro-2-methylphenol (26.2%), 4-nitrophenol (31.7%), benzaldehyde (-33.8%), and bis(2-chloroisopropyl)ether (-23.7%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/1/2020 at 08:52 exhibited a %D above the control limit for nitrobenzene (40.5%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/5/2020 at 10:15 exhibited a %D above the control limit for 1,4-dioxane (p-dioxane) (-20.7%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential indeterminate bias.

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20D0818

The ICAL for instrument BNA #7 exhibited a RSD above the control limit for benzoic acid (46.95678%). The associated results in sample SB04_18-20, SB04_0-2, SODUP01_042920, SB06_12-14, SB06_5-7, SB07_0-2, SB06_0-2, SB07_8-10, SB07_18-20, and SB04_14-16 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/4/2020 at 08:58 exhibited %Ds above the control limit for 2,4-dinitrophenol (57.9%), di-n-octylphthalate (25%), 2,3,4,6-tetrachlorophenol (22%), benzidine (-33.7%), benzaldehyde (-43%), hexachlorocyclopentadiene (28.9%), and 1,2-diphenylhydrazine (-23%). The associated results in sample SB06_12-14, SB06_0-2, SB04_18-20, SODUP01_042920, SB04_14-16, SB04_0-2, SB07_0-2, SB06_5-7, SB07_18-20, and SB07_8-10 are qualified as "UJ" based on potential indeterminate bias.

20D0849

The sample SB16_18-20 exhibited a percent recovery below the LCL for the surrogate 1,4-dioxane-d8 (28%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB16_0-2 exhibited a percent recovery below the LCL for the surrogate 1,4-dioxane-d8 (28%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB16_14-16 exhibited a percent recovery above the upper control limit (UCL) for the internal standard 1,2-dichlorobenzene-d4 (231%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB12_18-20 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (224%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB11_0-2 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (226%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB11_10-12 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (211%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB11_18-20 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (228%). The associated results are qualified as "UJ" based on potential low bias.

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The CCV analyzed on 5/5/2020 at 10:15 exhibited a %D above the control limit for 1,4-dioxane (-20.7%). The associated results in sample SOFB02_043020, MW06_043020, MW08_043020, MW05_043020, GWDUP01_043020, and GWFB01_043020 are qualified as "UJ" based on potential indeterminate bias.

20E0055

The CCV analyzed on 5/6/2020 at 08:50 exhibited %Ds above the control limit for 2,4-dinitrophenol (93%), 2,4-dinitrotoluene (41.5%), 2,6-dinitrotoluene (44.1%), 2-nitroaniline (39%), 3,3-dichlorobenzidine (40%), 3-nitroaniline (37.5%), 4,6-dinitro-2-methylphenol (68.5%), 4-nitroaniline (42.1%), and benzaldehyde (-40.6%). The associated results in sample SB15_0-2 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/7/2020 at 09:06 exhibited %Ds above the control limit for 2,4-dinitrophenol (69.2%), 2,4-dinitrotoluene (36.9%), 2,6-dinitrotoluene (40.3%), 2-nitroaniline (38.4%), 3,3-dichlorobenzidine (37.9%), 3-nitroaniline (32.5%), 4,6-dinitro-2-methylphenol (54.7%), 4-nitroaniline (35.2%), and benzaldehyde (-42.3%). The associated results in sample SB15_5-7, SB13_5-7, SB15_18-20, SB13_0-2, SB13_18-20, and SODUP02_050420 are qualified as "UJ" based on potential indeterminate bias.

20E0134

The sample SB10_18-20 exhibited a percent recovery below the LCL for the surrogate 1,4-dioxane-d8 (34%). The associated results are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00366 exhibited a percent recovery below the LCL for benzoic acid (24.9%, 21.3%). The associated results in sample SOFB03_050620 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch BE00366 exhibited a RPD above the control limit for pyridine (22.1%). The associated results in sample SOFB03_050620 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/11/2020 at 13:54 exhibited %Ds above the control limit for 2,3,4,6-tetrachlorophenol (29.5%), 2,4,6-trichlorophenol (23%), 2,4-dinitrophenol (61.8%), 2-nitrophenol (21.4%), 4,6-dinitro-2-methylphenol (32%), 4-nitrophenol (34%), benzaldehyde (-36.8%), benzidine (-38.4%), and hexachlorocyclopentadiene (-21.1%). The associated results in sample SOFB03_050620 are qualified as "UJ" based on potential indeterminate bias.

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The CCV analyzed on 5/11/2020 at 09:36 exhibited %Ds above the control limit for benzaldehyde (-45.4%) and benzidine (-34.8%). The associated results in sample SB14_18-20, SODUP03_050620, SB14_0-2, SB10_6-8, SB10_0-2, SB14_6-8, and SB10_18-20 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/11/2020 at 10:01 exhibited a %D above the control limit for pentachlorophenol (-38.4%). The associated results in sample SOFB03_050620 are qualified as "UJ" based on potential indeterminate bias.

20E0734

The LCS/LCSD for batch BE01187 exhibited a percent recovery below the LCL for benzoic acid (22.9%, 20.4%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential low bias.

The CCV analyzed on 5/28/2020 at 14:52 exhibited %Ds above the control limit for 2,4-dinitrophenol (124%), 2,4-dinitrotoluene (41.4%), 2,6-dinitrotoluene (26%), 3-nitroaniline (25.5%), 4,6-dinitro-2-methylphenol (90.9%), 4-nitrophenol (51.2%), benzaldehyde (-24.8%), benzidine (-32.3%), bis(2-chloroisopropyl)ether (20.6%), di-n-octyl phthalate (24.9%), and n-nitroso-di-n-propylamine (24.3%). The associated results in sample SB101_3-4, SB102_4-5, SB103_2.5-3.5, SB104_4.5-5.5, SB105_4-5, SB106_4.5-5.5, SB107_4.5-5.5, SB108_7-9.5, SB109_4-5, SB110_9-10, SB111_8-9, and SODUP04_052220 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/29/2020 at 09:54 exhibited %Ds above the control limit for 1,2-diphenylhydrazine (22.2%), 2,4-dinitrophenol (93.7%), 2,4-dinitrotoluene (31.4%), 2,6-dinitrotoluene (23.4%), 4,6-dinitro-2-methylphenol (61.1%), 4-nitrophenol (44.1%), benzaldehyde (-29.3%), benzidine (-27.5%), di-n-octyl phthalate (30.5%), nitrobenzene (21.7%), pentachloronitrobenzene (27.3%), and pentachlorophenol (-20.1%). The associated results in sample SB101_3-4, SB107_4.5-5.5, and SB109_4-5 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/29/2020 at 08:47 exhibited %Ds above the control limit for 2,4-dinitrophenol (49.7%), 4,6-dinitro-2-methylphenol (44%), 4-nitrophenol (24.3%), benzaldehyde (-32.1%), and di-n-octyl phthalate (24.8%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential indeterminate bias.

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The CCV analyzed on 5/29/2020 at 10:17 exhibited a %D above the control limit for nitrobenzene (75.4%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential indeterminate bias.

20E0108

The CCV analyzed on 5/8/2020 at 14:57 exhibited %Ds above the control limit for 2,4-dinitrophenol (131%), 2,4-dinitrotoluene (39.8%), 2,6-dinitrotoluene (25.5%), 4,6-dinitro-2-methylphenol (94.6%), benzaldehyde (-35%), benzidine (-33.6%), and benzoic acid (41.7%). The associated results in sample SB02_6-8, SB02_18-20, SB03_0-2, SB03_6-8, and SB03_18-20 are qualified as "UJ" based on potential indeterminate bias.

PFAS by USEPA Method 537M

20D0776

The CCV analyzed on 5/5/2020 at 22:54 exhibited %Ds above the control limit for 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2 FTS) (-51.2%), 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2 FTS) (-30.1%), and N-EtFOSAA (-33.8%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential indeterminate bias.

20D0818

The sample SB04_0-2 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (304%). The associated results are qualified as "J" based on potential high bias.

The sample SODUP01_042920 exhibited percent recoveries below the LCL for the isotope dilution standards perfluoro-n-[1,2-13c2]dodecanoic acid (MPFDoA) (15%), m2PFTeDA (3.63%), and perfluoro-1-[13c8]octanesulfonamide (m8FOSA) (0.361%). The associated results are qualified as "J" or "UJ" based on potential low bias.

The MB for batch BE00266-BLK1 exhibited detections of 8:2 FTS (0.0363 ug/kg), perfluoroheptanoic acid (PFHpA) (0.102 ug/kg), and perfluorohexanoic acid (PFHxA) (0.0901 ug/kg). The associated results in sample SB04_0-2, SB04_14-16, SB04_18-20, SB06_0-2, SB06_12-14, SB06_5-7, SB07_0-2, SB07_18-20, SB07_8-10, and SODUP01_042920 are qualified as "U" at the reporting limit based on potential blank contamination.

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20D0849

The sample MW08_043020 exhibited a percent recovery below the LCL for the isotope dilution standard m2PFTeDA (5.21 %). The associated results are qualified as "UJ" based on potential low bias.

The laboratory duplicate and parent sample (MW06_043020) exhibited a RPD above the control limit for perfluoropentanoic acid (PFPeA) (36.3%). The associated results are qualified as "J" based on potential indeterminate bias.

The MB for batch BE00144-BLK1 exhibited detections of perfluoro-1-octanesulfonamide (FOSA) (0.576 ng/L), perfluoro-n-butanoic acid (PFBA) (2.72 ng/L), and PFPeA (0.883 ng/L). The associated results in sample GWDUP01_043020, GWFB01_043020, MW05_043020, MW06_043020, MW08_043020, and SOFB02_043020 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

20E0055

The MB for batch BE00385-BLK1 exhibited detections of perfluorotetradecanoic acid (PFTA) (0.164 ug/kg), perfluorododecanoic acid (PFDoA) (0.162 ug/kg), perfluorodecane sulfonic acid (0.179 ug/kg), perfluorooctane sulfonamide (FOSA) (0.240 ug/kg), 8:2 FTS (0.334 ug/kg), perfluoroundecanoic acid (PFUnA) (0.172 ug/kg), perfluorodecanoic acid (PFDA) (0.194 ug/kg), n-ethyl-n-((heptadecafluorooctyl)sulphonyl) glycine (0.225 ug/kg), 2-(n-methyl perfluorooctanesulfonamido) acetic acid (0.202 ug/kg), perfluorononanoic acid (PFNA) (0.175 ug/kg), perfluoroheptane sulfonate (PFHpS) (0.212 ug/kg), perfluorooctanoic acid (PFOA) (0.245 ug/kg), PFHxA (0.079 ug/kg), perfluorooctanesulfonic acid (PFOS) (0.177 ug/kg), perfluorotridecanoic acid (PFTrDA) (0.162 ug/kg), 6:2 FTS (0.143 ug/kg), PFHpA (0.108 ug/kg), perfluorohexanesulfonic acid (PFHxS) (0.105 ug/kg), and perfluorobutanoic acid (0.189 ug/kg). The associated results in sample SB10_0-2, SB10_18-20, SB10_6-8, SB13_0-2, SB13_18-20, SB13_5-7, SB14_0-2, SB14_18-20, SB14_6-8, SB15_0-2, SB15_18-20, SB15_5-7, SODUP02_050420, and SODUP03_050620 are qualified as "U" at the higher of the sample concentration and the reporting limit based on potential blank contamination.

20D0134

The MB for batch BE00385-BLK1 exhibited detections of 8:2 FTS (0.334 ug/kg), PFHpA (0.108 ug/kg), PFHxS (0.105 ug/kg), PFHxA (0.079 ug/kg), PFNA (0.175 ug/kg), PFOS (0.177 ug/kg), and PFOA (0.245 ug/kg). The associated results in sample SB14_18-20, SODUP03_050620, SB14_0-

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2, SB10_6-8, SB10_0-2, SB14_6-8, and SB10_18-20 are qualified as "U" at the reporting limit based on potential blank contamination.

Herbicides by SW-846 Method 8151A

20D0776

The CCV analyzed on 4/29/2020 at 12:20 exhibited %Ds above the control limit for 2,4,5-T (-26.8%) and 2,4-D (-25%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/1/2020 at 15:49 exhibited %Ds above the control limit for 2,4,5-T (-22.9%) and 2,4-D (-21.7%). The associated results in sample SB08_0-2, SB09_0-2, SB08_4-6, SB05_6-8, SB09_4-6, SB05_0-2, SB09_13-15, SB05_18-20, and SB08_13-15 are qualified as "UJ" based on potential indeterminate bias.

20D0818

The CCV analyzed on 5/1/2020 at 15:49 exhibited %Ds above the control limit for 2,4,5-T (-22.9%) and 2,4-D (-21.7%). The associated results in sample SB04_0-2 and SB04_14-16 are qualified as "UJ" based on potential indeterminate bias.

The CCV analyzed on 5/5/2020 at 14:27 exhibited %Ds above the control limit for 2,4,5-T (-26.3%) and 2,4-D (-25.9%). The associated results in sample SB07_8-10, SB07_18-20, and SODUP01_042920 are qualified as "UJ" based on potential indeterminate bias.

20E0055

The CCV analyzed on 5/7/2020 at 16:21 exhibited %Ds above the control limit for 2,4,5-T (-29.1%), 2,4,5-TP (-21.8%), and 2,4-D (-28.4%). The associated results in sample SB13_0-2, SB13_5-7, SB13_18-20, SODUP02_050420 are qualified as "UJ" based on potential indeterminate bias.

20E0134

The CCV analyzed on 5/11/2020 at 10:41 exhibited %Ds above the control limit for 2,4,5-T (-24.6%) and 2,4-D (-25.1%). The associated results in sample SB14_0-2, SB10_6-8, SB10_18-20, SB10_0-2, SB14_18-20, SB14_6-8, and SODUP03_050620 are qualified as "UJ" based on potential indeterminate bias.

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The CCV analyzed on 5/12/2020 at 16:42 exhibited %Ds above the control limit for 2,4,5-T (-31.6%), 2,4-D (-29.5%), and 2,4,5-TP (-22.8%). The associated results in sample SOFB03_050620 are qualified as "UJ" based on potential indeterminate bias.

20E0134

The CCV analyzed on 5/7/2020 at 16:21 exhibited %Ds above the control limit for 2,4,5-T (-29.1%), 2,4,5-TP (-21.8%), and 2,4-D (-28.4%). The associated results in sample SB03_0-2, SB02_18-20, SB01_0-2, SB03_18-20, SB01_6-8, SB01_18-20, SB03_6-8, SB02_0-2, and SB02_6-8 are qualified as "UJ" based on potential indeterminate bias.

PCBs by SW-846 Method 8082A

20D0850

The sample SB11_10-12 exhibited percent recoveries below the LCL for the surrogates decachlorobiphenyl (29%) and decachlorobiphenyl [2c] (27.5%) on the primary and secondary chromatography columns. The associated results are qualified as "UJ" based on potential low bias.

20E0134

The sample SODUP03_050620 exhibited a percent recovery below the LCL for the surrogate decachlorobiphenyl (25%). The associated results are qualified as "UJ" based on potential low bias.

The sample SB14_6-8 exhibited a percent recovery below the LCL for the surrogate decachlorobiphenyl (29%). The associated results are qualified as "UJ" based on potential low bias.

20E0108

The sample SB01_6-8 exhibited a percent recovery below the LCL for the surrogate decachlorobiphenyl (27%). The associated results are qualified as "UJ" based on potential low bias.

Pesticides by SW-846 Method 8081B

20E0134

The sample SB14_18-20 exhibited a percent recovery below the LCL for the surrogate decachlorobiphenyl (26.5%). The associated results are qualified as "UJ" based on potential low bias.

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The sample SB10_6-8 exhibited a percent recovery below the LCL for the surrogate decachlorobiphenyl (29.7%). The associated results are qualified as "UJ" based on potential low bias.

20E0108

The sample SB01_6-8 exhibited percent recoveries below the LCL for the surrogates decachlorobiphenyl (28%) and decachlorobiphenyl [2c] (26.8%) on the primary and secondary chromatography columns. The associated results are qualified as "UJ" based on potential low bias.

Metals by SW-846 Method 6010D and 6020B

20D0850

The matrix spike (MS) performed on sample SB12_0-2 exhibited percent recoveries below the LCL for antimony (19.3%), beryllium (49.4%), lead (37.3%), and silver (42.1%). The associated results in sample SB12_0-2 are qualified as "J" or "UJ" based on potential low bias.

The serial dilution performed on sample SB12_0-2 exhibited a %D above the control limit for zinc (14.1%). The associated results are qualified as "J" based on potential indeterminate bias.

20D0776

The MS performed on sample SB08_13-15 exhibited percent recoveries below the LCL for antimony (26.4%) and silver (60.6%). The associated results in sample SB08_13-15 are qualified as "UJ" based on potential low bias.

The laboratory duplicate and parent sample (SB08_13-15) exhibited RPDs above the control limit for arsenic (49.5%) and nickel (46%). The associated results are qualified as "J" based on potential indeterminate bias.

The LCS for batch BD01249 exhibited a percent recovery below the LCL for silver (59.9%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential low bias.

The serial dilution performed on sample SB08_13-15 exhibited a %D above the control limit for zinc (10.8%). The associated results are qualified as "J" based on potential indeterminate bias.

20D0818

The MS performed on sample SODUP01_042920 exhibited percent recoveries below the LCL for antimony (16.6%), beryllium (61.1%), selenium (74.7%), and silver (44.2%). The associated results in sample SODUP01_042920 are qualified as "J" or "UJ" based on potential low bias.

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The MS performed on sample SODUP01_042920 exhibited percent recoveries above the UCL for zinc (185%), copper (415%), manganese (278%), and potassium (349%). The associated results in sample SODUP01_042920 are qualified as "J" based on potential high bias.

The laboratory duplicate and parent sample (SODUP01_042920) exhibited a RPD above the control limit for lead (74.8%). The associated results are qualified as "J" based on potential indeterminate bias.

The serial dilution performed on sample SODUP01_042920 exhibited %Ds above the control limit for aluminum (370%), arsenic (192%), barium (282%), cadmium (203%), calcium (281%), chromium (321%), cobalt (307%), copper (275%), iron (305%), lead (212%), magnesium (289%), manganese (281%), nickel (300%), potassium (356%), selenium (340%), sodium (271%), vanadium (206%), and zinc (262%). The associated results are qualified as "J" based on potential indeterminate bias.

20E0134

The MS/matrix spike duplicate (MSD) performed on sample SB10_6-8 exhibited percent recoveries below the LCL for antimony (21.9%), beryllium (68.4%), and nickel (44.6%). The associated results in sample SB10_6-8 are qualified as "J" or "UJ" based on potential low bias.

The MS/MSD performed on sample SB10_6-8 exhibited a percent recovery above the UCL for sodium (143%). The associated results in sample SB10_6-8 are qualified as "J" based on potential high bias.

The serial dilution performed on sample SB10_6-8 exhibited a RPD above the control limit for copper (11.3%) and zinc (13.1%). The associated results are qualified as "J" based on potential indeterminate bias.

20E0734

The MS performed on sample SODUP04_052220 exhibited percent recoveries below the LCL for antimony (18.5%), beryllium (72%), copper (13%), and selenium (74.4%). The associated results in sample SODUP04_052220 are qualified as "J" or "UJ" based on potential low bias.

The MS performed on sample SODUP04_052220 exhibited percent recoveries above the UCL for silver (132%), barium (1190%), and chromium (195%). The associated results in sample SODUP04_052220 are qualified as "J" based on potential high bias.

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The laboratory duplicate and parent sample (SODUP04_052220) exhibited RPDs above the control limit for silver (166%) and zinc (36.1%). The associated results are qualified as "J" based on potential indeterminate bias.

The LCS for batch BE01246 exhibited a percent recovery below the LCL for selenium (74.2%). The associated results in sample SOFB04_052220 are qualified as "UJ" based on potential low bias.

20E0108

The MS performed on sample SB03_0-2 exhibited percent recoveries below the LCL for antimony (17.4%), beryllium (61.5%), chromium (40.9%), copper (65.5%), and sodium (-1.07%). The associated results in sample SB03_0-2 are qualified as "J" or "UJ" based on potential low bias.

The laboratory duplicate and parent sample (SB03_0-2) exhibited RPDs above the control limit for arsenic (39.9%), iron (39.7%), magnesium (36%), manganese (41.5%), potassium (68.6%), and sodium (38.8%). The associated results are qualified as "J" based on potential indeterminate bias.

The serial dilution performed on sample SB03_0-2 exhibited RPDs above the control limit for barium (19.8%), chromium (15%), cobalt (16.6%), copper (10.4%), lead (11.7%), manganese (14%), nickel (12.2%), sodium (10.7%), vanadium (13.7%), and zinc (24.4%). The associated results are qualified as "J" based on potential indeterminate bias.

Cyanide by SW-846 Method 9012B

20D0776

The MS performed on sample SB08_0-2 exhibited a percent recovery below the LCL for cyanide, total (62.8%). The associated results in sample SB08_0-2 are qualified as "UJ" based on potential low bias.

The MS performed on sample SOFB_042820 exhibited a percent recovery below the LCL for cyanide, total (73.4%). The associated results in sample SOFB_042820 are qualified as "UJ" based on potential low bias.

20E0108

The MS performed on sample SB03_0-2 exhibited a percent recovery below the LCL for cyanide (64.1%). The associated results in sample SB03_0-2 are qualified as "UJ" based on potential low bias.

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Hexavalent Chromium by SW-846 Method 7196A

20D0850

The MS performed on sample SB12_0-2 exhibited a percent recovery below the LCL for chromium, hexavalent (65%). The associated results in sample SB12_0-2 are qualified as "UJ" based on potential low bias.

20E0734

The MS performed on sample SODUP04_052220 exhibited a percent recovery below the LCL for chromium, hexavalent (22.8%). The associated results in sample SODUP04_052220 are qualified as "UJ" based on potential low bias.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260C

20D0850

The MS performed on sample SB12_0-2 exhibited percent recoveries below the LCL for 1,1,1-trichloroethane (40.2%), 1,2,3-trichlorobenzene (6.7%), 1,2,4-trichlorobenzene (7.1%), 1,2-dibromo-3-chloropropane (22.3%), acrolein (7.16%), bromoform (27.8%), carbon tetrachloride (30.1%), cyclohexane (24.8%), hexachlorobutadiene (6.46%), methyl acetate (5.36%), methylcyclohexane (14.6%), and tetrachloroethylene (21.7%). Organic results are not qualified on the basis of MSs alone. No qualification is necessary.

The MB for batch BE00028 exhibited a detection of methylene chloride (0.0095 mg/kg). The associated results are non-detections. No qualification is necessary.

20D0818

The LCS for batch BD01300 exhibited a percent recovery above the UCL for n-butylbenzene (135%). The associated results are non-detections. No qualification is necessary.

The MB for batch BD01300 exhibited a detection of 1,2-dibromo-3-chloropropane (0.0056 mg/kg). The associated results are non-detections. No qualification is necessary.

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20E0055

The MB for batch BE00129-BLK3 exhibited a detection of methylene chloride (0.0092 mg/kg). The associated results are non-detections. No qualification is necessary.

20E0134

The MB for batch BE00250-BLK3 exhibited a detection of methylene chloride (0.0066 mg/kg). The associated results are non-detections. No qualification is necessary.

The MB for batch BE00255-BLK1 exhibited a detection of methylene chloride (1.0 ug/L). The associated results are non-detections. No qualification is necessary.

The MS performed on sample SB10_6-8 exhibited percent recoveries below the LCL for 1,1,1-trichloroethane (33.8%), 1,1,2-trichloroethane (23.9%), 1,1-dichloroethane (29.4%), 1,1-dichloroethylene (11.5%), 1,2,3-trichloropropane (23.3%), 1,2,4-trimethylbenzene (5.26%), 1,2-dibromo-3-chloropropane (14%), 1,2-dibromoethane (6.4%), 1,2-dichloroethane (13.7%), 1,2-dichloropropane (30.4%), 1,3,5-trimethylbenzene (5.94%), benzene (20.1%), bromochloromethane (10.1%), bromodichloromethane (15.9%), bromoform (14.7%), carbon tetrachloride (9.34%), chlorobenzene (6.3%), chloroform (24.6%), cis-1,2-dichloroethylene (7.24%), cis-1,3-dichloropropylene (5.34%), cyclohexane (16.8%), dibromomethane (6.98%), ethyl benzene (8.6%), isopropylbenzene (7.72%), methylcyclohexane (6.98%), methylene chloride (14.3%), p- & m- xylenes (7.92%), tert-butylbenzene (6.3%), tetrachloroethylene (6.42%), toluene (11.6%), trichloroethylene (6.74%), trichlorofluoromethane (28.7%), and vinyl chloride (10.7%). Organic results are not qualified on the basis of MSs alone. No qualification is necessary.

The MSD performed on sample SB10_6-8 exhibited percent recoveries below the LCL for 1,2,4-trichlorobenzene (6.92%), 1,2-dibromoethane (12.9%), 1,2-dichloroethane (27.8%), 1,4-dichlorobenzene (6.62%), bromochloromethane (25.2%), bromodichloromethane (36.5%), chlorobenzene (19.3%), cis-1,2-dichloroethylene (28.7%), cis-1,3-dichloropropylene (11.8%), dibromomethane (15.3%), methylcyclohexane (58.1%), trans-1,2-dichloroethylene (18.4%), and trans-1,3-dichloropropylene (6.1%). Organic results are not qualified on the basis of MSDs alone. No qualification is necessary.

The MS/MSD performed on sample SB10_6-8 exhibited RPDs above the control limit for 1,1,1,2-tetrachloroethane (90.3%), 1,1,1-trichloroethane (70.6%), 1,1,2,2-tetrachloroethane (82.5%), 1,1,2-trichloro-1,2,2-trifluoroethane (freon 113) (94.1%), 1,1,2-trichloroethane (67.9%), 1,1-dichloroethane (68.3%), 1,1-dichloroethylene (120%), 1,2,3-trichloropropane (72.6%), 1,2-

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dibromo-3-chloropropane (94.8%), 1,2-dibromoethane (67.6%), 1,2-dichloroethane (68.2%), 1,2-dichloropropane (65.3%), 1,3,5-trimethylbenzene (152%), 2-butanone (109%), 2-hexanone (66.6%), 4-methyl-2-pentanone (51.7%), acrylonitrile (65.5%), benzene (87.2%), bromochloromethane (85.7%), bromodichloromethane (78.7%), bromoform (71.3%), bromomethane (82.3%), carbon tetrachloride (131%), chlorobenzene (101%), chloroethane (88.2%), chloroform (74.1%), chloromethane (75.9%), cis-1,2-dichloroethylene (120%), cis-1,3-dichloropropylene (75.7%), cyclohexane (124%), dibromochloromethane (79.1%), dibromomethane (74.5%), dichlorodifluoromethane (84.5%), ethyl benzene (125%), isopropylbenzene (144%), methylcyclohexane (157%), methylene chloride (77.5%), o-xylene (118%), p- & m- xylenes (128%), TBA (64.9%), tert-butylbenzene (156%), tetrachloroethylene (141%), toluene (107%), trichloroethylene (122%), trichlorofluoromethane (79.4%), and vinyl chloride (120%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The LCS/LCSD for batch BE00255 exhibited a RPD above the control limit for 1,2,3-trichlorobenzene (61.7%). The associated results were previously qualified. No further action is necessary.

20E0734

The sample SB106_4.5-5.5 exhibited percent recoveries above the UCL for the surrogates p-bromofluorobenzene (105%) and toluene-d8 (121%). The associated results are non-detections. No qualification is necessary.

The LCS/LCSD for batch BE00960 exhibited percent recoveries above the UCL for 1,1,1,2-tetrachloroethane (135%, 132%), bromoform (144%, 140%), and TBA (174%, 165%). The associated results are non-detections. No qualification is necessary.

The LCS/LCSD for batch BF00067 exhibited a percent recovery above the UCL for tert-butyl alcohol (TBA) (135%, 136%). The associated results are non-detections. No qualification is necessary.

The LCSD for batch BF00067 exhibited a percent recovery above the UCL for 1,1,1,2-tetrachloroethane (130%). The associated results are non-detections. No qualification is necessary.

The MB for batch BE00960-BLK2 exhibited a detection of methylene chloride (0.0072 mg/kg). The associated results are non-detections. No qualification is necessary.

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The MB for batch BE00960-BLK4 exhibited a detection of acetone (0.026 mg/kg). The associated results were previously qualified. No further action is necessary.

The MB for batch BE00960-BLK4 exhibited a detection of methylene chloride (0.009 mg/kg). The associated results are non-detections. No qualification is necessary.

20E0108

The MS/MSD performed on sample SB03_0-2 exhibited percent recoveries below the LCL for acrolein (8.78%, 9.84%), cyclohexane (55.3%, 55.5%), and methylcyclohexane (34%, 31.1%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The MSD performed on sample SB03_0-2 exhibited percent recoveries below the LCL for 1,2,3-trichlorobenzene (9.54%), 1,2,4-trichlorobenzene (9.56%), and hexachlorobutadiene (6.6%). Organic results are not qualified on the basis of MSDs alone. No qualification is necessary.

The MS/MSD performed on sample SB03_0-2 exhibited a RPD above the control limit for bromomethane (110%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

SVOCs by SW-846 Method 8270D and 8270D SIM

20D0850

The sample SB16_0-2 exhibited a percent recovery below the LCL for the surrogate 2,4,6-tribromophenol (17.8%). No more than one surrogate per fraction recovered outside the control limits. No qualification is necessary.

20D0776

The MS/MSD performed on sample SB09_0-2 exhibited a percent recovery below the LCL for benzoic acid (6.96%, 7.2%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The MS/MSD performed on sample SB09_0-2 exhibited a RPD above the control limit for 2,4-dinitrophenol (46%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The ICAL for instrument BNA #1 exhibited a RSD above the control limit for benzoic acid (21.00926%). The associated results were previously qualified. No further action is necessary.

The LCS for batch BD01324 exhibited a percent recovery above the UCL for nitrobenzene (136%). The associated results are non-detections. No qualification is necessary.

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20D0818

The sample SB06_0-2 exhibited a percent recovery below the LCL for the surrogate 2,4,6-tribromophenol (12.1%). No more than one surrogate from a single fraction were recovered outside of the control limits. No qualification is necessary.

20D0849

The sample SB16_18-20 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (280%). The associated results were previously qualified. No further action is necessary.

The sample SB16_0-2 exhibited a percent recovery above the UCL for the internal standard 1,2-dichlorobenzene-d4 (209%). The associated results were previously qualified. No further action is necessary.

20E0055

The sample SB13_0-2 exhibited a percent recovery above the UCL for the surrogate 1,4-dioxane-d8 (88%). The associated results are non-detections. No qualification is necessary.

20E0134

The sample SB10_0-2 exhibited a percent recovery below the LCL for the surrogate 2,4,6-tribromophenol (4.32%). The other SB10_0-2 surrogates were recovered within the control limits. No qualification is necessary.

The MS/MSD performed on sample SB10_6-8 exhibited a RPD above the control limit for benzoic acid (54.5%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The ICAL for instrument BNA #1 exhibited a RSD above the control limit for benzoic acid (21.00926%). The associated results were previously qualified. No further action is necessary.

20E0734

The sample SOFB04_052220 exhibited a percent recovery above the UCL for the surrogate terphenyl-d14 (110%). No more than one surrogate from a single fraction recovered outside of the control limits. No qualification is necessary.

The LCS for batch BE01142 exhibited a percent recovery above the UCL for 4,6-dinitro-2-methylphenol (152%). The associated results are non-detections. No qualification is necessary.

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20E0108

The sample SB03_6-8 exhibited a percent recovery above the UCL for the surrogate 2,4,6-tribromophenol (111%). No more than one surrogate in a single fraction recovered outside of the control limits. No qualification is necessary.

The MS/MSD performed on sample SB03_0-2 exhibited percent recoveries below the LCL for 2,3,4,6-tetrachlorophenol (12.9%, 18.5%) and pentachlorophenol (7.04%, 6.16%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The MS performed on sample SB03_0-2 exhibited a percent recovery below the LCL for 2,4,6-trichlorophenol (9.36%). Organic results are not qualified on the basis of MSs alone. No qualification is necessary.

The MSD performed on sample SB03_0-2 exhibited a percent recovery below the LCL for benzoic acid (8.8%). Organic results are not qualified on the basis of MSDs alone. No qualification is necessary.

The MS/MSD performed on sample SB03_0-2 exhibited RPDs above the control limit for benzoic acid (32.1%) and bis(2-ethylhexyl)phthalate (72.8%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

The sample SB02_6-8 exhibited a percent recovery above the UCL for the surrogate 1,4-dioxane-d8 (92%). The associated results are non-detections. No qualification is necessary.

PFAS by USEPA Method 537M

20D0776

The sample SB09_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (170%) and m2-8:2 FTS (206%). The associated results are non-detections. No qualification is necessary.

The sample SB09_13-15 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (259%). The associated results are non-detections. No qualification is necessary.

The sample SB05_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (309%) and m2-8:2 FTS (300%). The associated results are non-detections. No qualification is necessary.

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20D0818

The sample SB04_0-2 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (279%). The associated results are non-detections. No qualification is necessary.

The sample SB04_18-20 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (297%). The associated results are non-detections. No qualification is necessary.

The sample SB07_0-2 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (151%). The associated results are non-detections. No qualification is necessary.

The sample SB07_18-20 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (203%). The associated results are non-detections. No qualification is necessary.

The sample SODUP01_042920 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (249%) and m2-8:2 FTS (151%). The associated results are non-detections. No qualification is necessary.

20D0849

The sample MW06_043020 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (208%). The associated results are non-detections. No qualification is necessary.

The sample MW05_043020 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (192%). The associated results are non-detections. No qualification is necessary.

The sample SB16_0-2 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (174%). The associated results are non-detections. No qualification is necessary.

The sample SB12_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (154%) and m2-8:2 FTS (186%). The associated results are non-detections. No qualification is necessary.

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The sample SB11_0-2 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (190%). The associated results are non-detections. No qualification is necessary.

The sample SB11_10-12 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (228%) and m2-8:2 FTS (365%). The associated results are non-detections. No qualification is necessary.

The MB for batch BE00144-BLK1 exhibited detections of PFPeA (0.883 ng/L) and FOSA (0.576 ng/L). The associated results were previously qualified. No further action is necessary.

20E0055

The sample SB15_5-7 exhibited a percent recovery above the UCL for the isotope dilution standard m2-8:2 FTS (180%). The associated results are non-detections. No qualification is necessary.

The sample SB15_18-20 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (216%) and m2-8:2 FTS (363%). The associated results are non-detections. No qualification is necessary.

The sample SB13_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (181%) and m2-8:2 FTS (197%). The associated results are non-detections. No qualification is necessary.

The sample SB13_18-20 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (213%) and m2-8:2 FTS (373%). The associated results are non-detections. No qualification is necessary.

20E0134

The sample SODUP03_050620 exhibited a percent recovery above the UCL for the isotope dilution standard sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-decane sulfonate (8:2) (223%). The associated results are non-detections. No qualification is necessary.

The sample SB14_6-8 exhibited a percent recovery above the UCL for the isotope dilution standard sodium 1h,1h,2h,2h-perfluoro-1-[1,2-13c2]-decane sulfonate (8:2) (172%). The associated results are non-detections. No qualification is necessary.

The MB for batch BE00385-BLK1 exhibited detections of 6:2 FTS (0.143 ug/kg), N-etFOSAA (0.225 ug/kg), N-MeFOSAA (0.202 ug/kg), PFDS (0.179 ug/kg), PFHpS (0.212 ug/kg), FOSA (0.24

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ug/kg), PFDA (0.194 ug/kg), PFDoA (0.162 ug/kg), PFBA (0.189 ug/kg), PFTA (0.164 ug/kg), PFTrDA (0.162 ug/kg), and PFUnA (0.172 ug/kg). The associated results are non-detections. No qualification is necessary.

20E0108

The sample SB01_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (382%) and m2-8:2 FTS (419%). The associated results are non-detections. No qualification is necessary.

The sample SB01_6-8 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (450%) and m2-8:2 FTS (265%). The associated results are non-detections. No qualification is necessary.

The sample SB01_18-20 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (409%). The associated results are non-detections. No qualification is necessary.

The sample SB02_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (408%) and m2-8:2 FTS (268%). The associated results are non-detections. No qualification is necessary.

The sample SB02_6-8 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS s (468%). The associated results are non-detections. No qualification is necessary.

The sample SB02_18-20 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (413%) and m2-8:2 FTS (297%). The associated results are non-detections. No qualification is necessary.

The sample SB03_0-2 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (396%) and m2-8:2 FTS (395%). The associated results are non-detections. No qualification is necessary.

The sample SB03_6-8 exhibited percent recoveries above the UCL for the isotope dilution standards m2-6:2 FTS (441%) and m2-8:2 FTS (303%). The associated results are non-detections. No qualification is necessary.

The sample SB03_18-20 exhibited a percent recovery above the UCL for the isotope dilution standard m2-6:2 FTS (470%). The associated results are non-detections. No qualification is necessary.

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Herbicides by SW-846 Method 8151A

20D0776

The LCS for batch BE00001 exhibited percent recoveries above the UCL for 2,4,5-TP [2c] (128%) and 2,4-D [2c] (121%). The associated results were reported from the primary chromatography column. No further action is necessary.

20D0818

The LCS for batch BE00001 exhibited percent recoveries above the UCL for 2,4,5-TP (128%) from the secondary chromatography column and 2,4-D (121%) secondary chromatography column. The associated results are reported from the primary chromatography column. No qualification is necessary.

PCBs by SW-846 Method 8082A

20E0108

The MSD performed on sample SB03_0-2 exhibited a percent recovery below the LCL for Aroclor 1016 (37.3%). Organic results are not qualified on the basis of MSDs alone. No qualification is necessary.

The MS/MSD performed on sample SB03_0-2 exhibited RPDs above the control limit for Aroclor 1016 (51%) and Aroclor 1260 (33.4%). Organic results are not qualified on the basis of MS/MSDs alone. No qualification is necessary.

Pesticides by SW-846 Method 8081B

20D0776

The CCV analyzed on 5/4/2020 at 16:46 exhibited %Ds above the control limit for 4,4'-ddt [2c] (25%), delta-BHC [2c] (21.5%), endosulfan sulfate [2c] (24.3%), and methoxychlor [2c] (22.3%). The associated results were reported from the primary chromatography column. No further action is necessary.

20E0055

The CCV analyzed on 5/7/2020 at 16:34 exhibited a %D above the control limit for endosulfan sulfate [2c] from the secondary chromatographic column (21%). The associated results in sample SB15_0-2, SB15_5-7, SB15_18-20, SB13_0-2, SB13_5-7, SB13_18-20, and SODUP02_050420 were reported from the primary sample result.

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Metals by SW-846 Method 6010B and 6020

20D0850

The MS/MSD performed on sample SB12_0-2 exhibited percent recoveries above the UCL for aluminum (557%), calcium (9450%), iron (870%), magnesium (2830%), and potassium (189%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

20D0776

The MS performed on sample SB08_13-15 exhibited percent recoveries outside of the control limits for aluminum (186%), calcium (8,030%), iron (909%), lead (-382%), magnesium (1,980%), and potassium (129%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

20D0818

The MS/MSD performed on sample SODUP01_042920 exhibited percent recoveries above the UCL for aluminum (903%), calcium (21,200%), iron (5,140%), lead (-69.6%), and magnesium (13,100%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

20E0134

The MB for batch BE00248-BLK1 exhibited a detection of potassium (7.43 mg/kg). The associated results are >10X the contamination. No qualification is necessary.

The MB for batch BE00248-BLK1 exhibited detections of antimony (2.94 mg/kg) and selenium (2.87 mg/kg). The associated results are non-detections. No qualification is necessary.

The field blank (FB) (SOFB03_050620) exhibited a detection of mercury (0.0003 mg/L). The associated results are >10X the contamination. No qualification is necessary.

The MS/MSD performed on sample SB10_6-8 exhibited percent recoveries above the UCL for aluminum (173%), calcium (1,190%), iron (544%), and magnesium (636%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

20E0734

The LCS for batch BE01187 exhibited a percent recovery above the UCL for nitrobenzene (170%). The associated results are non-detections. No qualification is necessary.

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The MS/MSD for batch SODUP04_052220 exhibited percent recoveries above the UCL for aluminum (310%), calcium (-3,710%), iron (334%), lead (25,000%), magnesium (-2,490%), potassium (134%), and zinc (-36.5%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

20E0108

The MS/MSD performed on sample SB03_0-2 exhibited percent recoveries below the LCL for aluminum (-1,330%), calcium (-9,270%), iron (-4,110%), magnesium (-6,570%), manganese (-2.06%), and potassium (-852%). The associated results in the parent sample are >4X the spiked amount. No qualification is necessary.

COMMENTS:

Four field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than $\pm 2X$ the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50% for soil. The following field duplicate and parent sample pairs were compared to and met the precision criteria:

- SB108_7-9.5 and SODUP04_052220
- SB13_5-7 and SODUP02_050420
- SB04_0-2 and SODUP01_042920
- SB14_6-8 and SODUP03_050620

The field duplicate and parent sample (SB108_7-9.5 and SODUP04_052220) exhibited a RPD above the control limit for magnesium (51.8%). The associated results are qualified as "J" based on potential indeterminate bias.

The field duplicate and parent sample (SB13_5-7 and SODUP02_050420) exhibited RPDs above the control limit for acetone (54%), calcium (59.4%), methyl ethyl ketone (2-butanone) (64.3%), and sodium (75.7%). The associated results are qualified as "J" based on potential indeterminate bias.

The field duplicate and parent sample (SB04_0-2 and SODUP01_042920) exhibited a RPD above the control limit for barium (114.7%). The associated results are qualified as "J" based on potential indeterminate bias.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above,

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that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified, with the exception of the rejected results. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist

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Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Dina Palazzolo, Langan Senior Staff Scientist

From: Emily Strake, Langan Senior Project Chemist

Date: July 22, 2020

Re: Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
Staten Island, New York
April and May 2020 Canister Air Samples
Langan Project No.: 170610601

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of canister air samples collected in April and May 2020 by Langan Engineering and Environmental Services ("Langan") at the 475 Bay Street and 31 Wave Street site ("the site"). The samples were analyzed by York Analytical Laboratories, Inc. (NYSDOH NELAP registration # 10854 and 12058) for volatile organic compounds (VOCs) by the method specified below.

- VOCs by USEPA Method TO-15

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

TABLE 1: SAMPLE SUMMARY

<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20E0004	20E0004-03	AA01_043020	4/30/2020	TO-15
20E0004	20E0004-06	IA08_043020	4/30/2020	TO-15
20E0004	20E0004-07	IA09_043020	4/30/2020	TO-15
20E0004	20E0004-04	SS08_043020	4/30/2020	TO-15
20E0004	20E0004-05	SS09_043020	4/30/2020	TO-15
20E0004	20E0004-01	SV04_043020	4/30/2020	TO-15
20E0004	20E0004-02	SV07_043020	4/30/2020	TO-15
20E0109	20E0109-08	AA02_050520	5/5/2020	TO-15
20E0109	20E0109-01	SV01_050520	5/5/2020	TO-15

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<i>SDG</i>	<i>Lab Sample ID</i>	<i>Client Sample ID</i>	<i>Sample Date</i>	<i>Analytical Parameters</i>
20E0109	20E0109-02	SV02_050520	5/5/2020	TO-15
20E0109	20E0109-03	SV03_050520	5/5/2020	TO-15
20E0109	20E0109-04	SV11_050520	5/5/2020	TO-15
20E0109	20E0109-05	SV13_050520	5/5/2020	TO-15
20E0109	20E0109-06	SV15_050520	5/5/2020	TO-15
20E0109	20E0109-07	SV16_050520	5/5/2020	TO-15

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-31, "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15" (September 2016, Revision 6), the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017), and the specifics of the methods employed.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, instrument tuning, instrument calibration, surrogate recoveries, laboratory blanks, laboratory control samples, laboratory duplicate samples, batch certification, internal standard area counts, target compound identification and quantification, chromatograms, and overall system performance.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- R** – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- J** – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- U** – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

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NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

<i>Client Sample ID</i>	<i>Analysis</i>	<i>CAS #</i>	<i>Analyte</i>	<i>Validator Qualifier</i>
SS08_043020	TO15	127-18-4	Tetrachloroethene (PCE)	J
SS09_043020	TO15	127-18-4	Tetrachloroethene (PCE)	J
SV04_043020	TO15	127-18-4	Tetrachloroethene (PCE)	J
SV07_043020	TO15	127-18-4	Tetrachloroethene (PCE)	J
AA01_043020	TO15	100-44-7	Benzyl Chloride	UJ
IA08_043020	TO15	100-44-7	Benzyl Chloride	UJ
IA08_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
IA08_043020	TO15	127-18-4	Tetrachloroethene (PCE)	UJ
IA09_043020	TO15	100-44-7	Benzyl Chloride	UJ
IA09_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
IA09_043020	TO15	127-18-4	Tetrachloroethene (PCE)	UJ
SS08_043020	TO15	100-44-7	Benzyl Chloride	UJ
SS08_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
SS09_043020	TO15	100-44-7	Benzyl Chloride	UJ
SS09_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
SV04_043020	TO15	100-44-7	Benzyl Chloride	UJ
SV04_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
SV07_043020	TO15	100-44-7	Benzyl Chloride	UJ
SV07_043020	TO15	120-82-1	1,2,4-Trichlorobenzene	UJ
AA02_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV01_050520	TO15	100-44-7	Benzyl Chloride	UJ

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<i>Client Sample ID</i>	<i>Analysis</i>	<i>CAS #</i>	<i>Analyte</i>	<i>Validator Qualifier</i>
SV02_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV03_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV11_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV13_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV15_050520	TO15	100-44-7	Benzyl Chloride	UJ
SV16_050520	TO15	100-44-7	Benzyl Chloride	UJ

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by USEPA Method TO-15:

20E0004

The laboratory control sample (LCS) for batch BE00112 exhibited percent recoveries below the lower control limit (LCL) for 1,2,4-trichlorobenzene (69.9%) and tetrachloroethylene (69.9%). The associated results in sample IA08_043020, IA09_043020, SS08_043020, SS09_043020, SV04_043020, and SV07_043020 are qualified as "J" or "UJ" based on potential low bias.

The initial calibration (ICAL) for instrument 5975C exhibited a relative standard deviation (RSD) above the control limit for benzyl chloride (35.41387%). The associated results in sample AA01_043020, IA08_043020, IA09_043020, SS08_043020, SS09_043020, SV04_043020, and SV07_043020 are qualified as "UJ" based on potential indeterminate bias.

20E0109

The ICAL for instrument 5975C exhibited a RSD above the control limit for benzyl chloride (32.61209%). The associated results in sample AA02_050520, SV01_050520, SV02_050520, SV03_050520, SV11_050520, SV13_050520, SV15_050520, and SV16_050520 are qualified as "UJ" based on potential indeterminate bias.

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OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by USEPA Method TO-15:

20E0004

The method blank (MB) for batch BE00113-BLK1 exhibited a detection of tetrachloroethylene (0.68 ug/m³). The associated results are non-detections. No qualification is necessary.

The continuing calibration verification (CCV) analyzed on 5/1/2020 at 21:11 exhibited percent differences (%Ds) above the control limit for 1,2,4-trichlorobenzene (-33.5%) and tetrachloroethylene (-32.1%). The associated results were previously qualified. No further action is necessary.

COMMENTS:

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified, with the exception of the rejected results. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist

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Mailing Address: 989 Lenox Drive Lawrenceville, NJ 08648

To: Kim Semon, Langan Project Manager

From: Joe Conboy, Langan Staff Chemist

Date: July 6, 2021

Re: Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
June 2021 Soil and Water Samples
Langan Project No.: 170610601

This memorandum presents the findings of an analytical data validation from the analysis of soil and water samples collected in June 2021 by Langan Engineering and Environmental Services at 475 Bay Street and 31 Wave Street. The samples were analyzed by Alpha Analytical Laboratories, Inc. (NYSDOH NELAP registration # 11148) for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), per- and polyfluoroalkyl substances (PFAS), polychlorinated biphenyls (PCBs), pesticides, and metals by the methods specified below.

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D and 8270D SIM
- PFAS by USEPA Method 537M
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Metals by SW-846 Methods 6010D/6020B/7471A/7473

Table 1, attached, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Validation Overview

This data validation was performed in accordance with the following guidelines, where applicable:

- USEPA Region II Standard Operating Procedure (SOP) #HW-34A, "Trace Volatile Data Validation" (September 2016, Revision 1),
- USEPA Region II SOP #HW-33A, "Low/Medium Volatile Data Validation" (September 2016, Revision 1),
- USEPA Region II SOP #HW-35A, "Semivolatile Data Validation" (September 2016, Revision 1),
- USEPA Region II SOP #HW-17, "Validating Chlorinated Herbicides" (December 2010, Revision 3.1),
- USEPA Region II SOP #HW-37A, "Polychlorinated Biphenyl (PCB) Aroclor Data Validation" (June 2015, Revision 0),

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- USEPA Region II SOP #HW-36A, "Pesticide Data Validation" (October 2016, Revision 1),
- USEPA Region II SOP #HW-3a, "ICP-AES Data Validation" (September 2016, Revision 1),
- USEPA Region II SOP #HW-3b, "ICP-MS Data Validation" (September 2016, Revision 1),
- USEPA Region II SOP #HW-3c, "Mercury and Cyanide Data Validation" (September 2016, Revision 1),
- USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017)
- USEPA Contract Laboratory Program "National Functional Guidelines for Inorganic Superfund Methods Data Review" (EPA-540-R-2017-001, January 2017), and
- published analytical methodologies.

Validation includes review of the analytical data to verify that they are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum may include:

• holding times	• surrogates	• overall system
• sample preservation	• internal standards	performance
• sample extraction and digestion	• isotope dilutions	• serial dilutions
• instrument tuning	• matrix spike/spike duplicate recoveries	• dual column performance
• instrument calibration	• target compound identification and quantification	• field duplicates
• laboratory blanks		• trip blanks
• laboratory control samples	• chromatograms	• field blanks

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA guidelines and our best professional judgment:

- R** – The sample results are unusable because certain criteria were not met when generating the data. The analyte may or may not be present in the sample.
- J** – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** – The analyte was not detected at a level greater than or equal to the reporting limit; however, the reported reporting limit is approximate and may be inaccurate or imprecise.
- U** – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- NJ** – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned, these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are considered invalid and are not technically

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usable for data interpretation. Data that is otherwise qualified because of minor data-quality anomalies are usable, as qualified in Table 2 (attached).

The following acronyms may be used in the discussion of data-quality issues:

%D	Percent Difference	MB	Method Blank
CCV	Continuing Calibration Verification	MDL	Method Detection Limit
FB	Field Blank	MS	Matrix Spike
FD	Field Duplicate	MSD	Matrix Spike Duplicate
ICAL	Initial Calibration	RF	Response Factor
ICV	Initial Calibration Verification	RL	Reporting Limit
ISTD	Internal Standard	RPD	Relative Percent Difference
LCL	Lower Control Limit	RSD	Relative Standard Deviation
LCS	Laboratory Control Sample	TB	Trip Blank
LCSD	Laboratory Control Sample Duplicate	UCL	Upper Control Limit

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260C

21F0985

The ICV analyzed on QVOA6 exhibited %Ds above the control limit for acrolein (-37.6%) and hexachlorobutadiene (35.4%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

The CCV analyzed on 6/22/2021 at 09:43 exhibited %Ds above the control limit for 1,1,2,2-tetrachloroethane (20.1%), acrolein (-39.6%), bromomethane (-82.9%), methylene chloride (27.6%), n-butylbenzene (27%), n-propylbenzene (22%), and tert-butyl alcohol (38.3%). This CCV also exhibited RFs below the control limit for tetrachloroethene (0.1905) and trichloroethene (0.1995). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

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The LCS/LCSD for batch BF11176 exhibited a percent recovery below the LCL for bromomethane (40.6%, 38%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential low bias.

SVOCs by SW-846 Method 8270D

21F0985

The ICAL for instrument BNA#5 exhibited a RSD above the control limit for pentachlorophenol (21.5466%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

The ICAL for instrument BNA#3 exhibited a RSD above the control limit for 2-4-dinitrophenol (27.38%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

The CCV analyzed on 6/23/2021 at 11:05 exhibited a %D above the control limit for bis(2-ethylhexyl)phthalate (39.7%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as J or UJ because of potential indeterminate bias.

The CCV analyzed on 6/22/2021 at 12:44 exhibited %Ds above the control limit for acetophenone (79.8%), benzaldehyde (-35.3%), and benzidine (-41.1%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

The MB for batch BF11111 exhibited detections of pyrene (0.0800 ug/l) and naphthalene (0.0800 ug/l). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as U at the sample concentration because of potential blank contamination.

PFAS by USEPA Method 537M

21F0985

Sample SW01_062121 exhibited percent recoveries outside of control limits for the isotope dilution standards MPFBA (18.2%), M2-6:2 FTS (315%), and M2-8:2 FTS (256%). The associated results are qualified as J because of potential bias.

Sample SW02_062121 exhibited percent recoveries outside of control limits for isotope dilution standards MPFBA (18.2%), M2-6:2 FTS (315%), and M2-8:2 FTS (256%). The associated results are qualified as J because of potential bias.

Sample SW03_062121 exhibited percent recoveries outside of control limits for the isotope dilution standards MPFBA (18.2%), M2-6:2 FTS (315%), and M2-8:2 FTS (256%). The associated results are qualified as J because of potential bias.

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The CCV analyzed on 6/23/2021 at 17:53 exhibited a %D above the control limit for PFTTrDA (37.5%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

The CCV analyzed on 6/23/2021 at 21:36 exhibited %Ds above the control limit for PFTA (33.1%) and PFTTrDA (38.5%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential indeterminate bias.

Metals by SW-846 Methods 6010D/6020B/7471A/7473

21F0731

The contract required detection limit (CRDL) standard Y1F1815-CRL1 exhibited a percent recovery above the UCL for zinc (260%). The associated result in sample SB103R_7-8 is qualified as J because of potential high bias.

21F0784

The serial dilution performed on sample SB107R_7-8 exhibited RPDs above the control limit for nickel (11%) and zinc (16.3%). The associated results are qualified as J because of potential indeterminate bias.

The CRDL standard for batch 6/21/2021 at 11:59 exhibited a percent recovery above the UCL for lead (307%). The associated results in samples SB101R_7-8, SB102_7-8, and SB107R_7-8 are qualified as J because of potential high bias.

21F0838

The MS performed on sample SB104R_8-9 exhibited a percent recovery above the UCL for nickel (198%). The associated result in sample SB104R_8-9 is qualified as J because of potential high bias.

The CCV analyzed on 6/21/2021 at 17:14 exhibited a percent recovery above the UCL for arsenic (114%). The associated result in sample SB106R_7-8 is qualified as J because of potential high bias.

21F0893

The MS performed on sample SB05R_4-5 exhibited a percent recovery below the LCL for nickel (34.8%). The associated result in sample SB05R_4-5 is qualified as J because of potential low bias.

The standard reference material (SRM) for batch BF11007 exhibited a percent recovery above the UCL for lead (180%). The associated results in samples SB08R_10-11, SB109R_7-8, and SODUP02_061821 are qualified as J because of potential high bias.

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The instrument reporting limit (RL) check Y1F2142-CRL1 exhibited a percent recovery above the UCL for zinc (307%). The associated results in samples SB08R_10-11, SB109R_7-8, SB109R_8-9, SB109R_9-10, and SODUP02_061821 are qualified as J because of potential high bias.

The instrument RL check Y1F2357-CRL1 exhibited percent recoveries above the UCL for lead (61.8%) and zinc (163%). The associated results in samples SB109R_8-9 and SB08R_11-12 are qualified as J because of potential high bias.

The instrument RL check Y1F2545-CRL1 exhibited a percent recovery above the UCL for zinc (556%). The associated result in sample SB109R_9-10 is qualified as J because of potential high bias.

21F0985

The ICV analyzed on 6/25/2021 at 13:02 exhibited a %D above the control limit for barium (89.7%). The associated results in samples SB108R_1_3-4, SB108R_1_5-6, SB108R_N1_3-4, SB108R_N1_5-6, and SB108R_N2_4-5 are qualified as J because of potential indeterminate bias.

The CCV analyzed on 6/22/2021 at 12:34 exhibited a %D above the control limit for sodium (78.3%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as J because of potential indeterminate bias.

The LCS for batch BF11126 exhibited a percent recovery below the LCL for sodium (78%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as J because of potential low bias.

The instrument RL check Y1F2216-CRL1 exhibited a percent recovery above the UCL for zinc (178%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as J because of potential high bias.

The instrument RL check Y1F2219-CRL1 exhibited a percent recovery below the LCL for selenium (144%). The associated results in samples SW01_062121, SW02_062121, and SW03_062121 are qualified as UJ because of potential high bias.

The laboratory duplicate and parent sample (SB111R_1_8-9) exhibited a RPD above the control limit for mercury (49.8%). The associated result in sample SB111R_1_8-9 is qualified as J because of potential indeterminate bias.

21F0987

The MS performed on sample SB111R_10-11 exhibited a percent recovery below the LCL for nickel (57.8%). The associated result is qualified as J because of potential low bias.

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The laboratory duplicate and parent sample (SB111R_10-11) exhibited a RPD above the control limit for lead (54.3%). The associated result in sample SB111R_10-11 is qualified as J because of potential indeterminate bias.

The serial dilution performed on sample SB111R_10-11 exhibited RPDs above the control limit for lead (36.2%) and zinc (18.3%). The associated result is qualified as J because of potential indeterminate bias.

21F1075

The ICV analyzed on 6/24/2021 at 09:28 exhibited a %D above the control limit for barium (89.4%). The associated result in sample SB08R_N1_13-15 is qualified as J because of potential indeterminate bias.

The CCV analyzed on 6/23/2021 at 16:24 exhibited a %D above the control limit for barium (89.6%). The associated results in samples SB08R_W1_13-15, SB08R_E1_13-15, and SB08R_S1_13-15 are qualified as J because of potential indeterminate bias.

The CCV analyzed on 6/24/2021 at 10:11 exhibited a %D above the control limit for barium (89.7%). The associated result in sample SB08R_N1_13-15 is qualified as J because of potential indeterminate bias.

The CCV analyzed on 6/24/2021 at 10:29 exhibited a %D above the control limit for barium (89.7%). The associated result in sample SB08R_N1_13-15 is qualified as J because of potential indeterminate bias.

The instrument RL check Y1F2357-CRL1 exhibited a percent recovery below the LCL for lead (61.8%). The associated results in samples SB08R_W1_13-15, SB08R_E1_13-15, and SB08R_S1_13-15 are qualified as J because of potential low bias.

The instrument RL check Y1F2953-CRL1 exhibited a percent recovery above the UCL for lead (132%). The associated result in sample SB08R_N1_12-13 is qualified as J because of potential high bias.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260C

21F0985

The LCS/LCSD for batch BF11176 exhibited a percent recovery above the UCL for n-butylbenzene (135%, 133%). The associated results are non-detect. No qualification is necessary.

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SVOCs by SW-846 Method 8270D

21F0784

The FB (SOFB01_20210616) exhibited detections of bis(2-ethylhexyl) phthalate (1.69 ug/l) and pyrene (0.0500 ug/l). The associated results are non-detect. No qualification is necessary.

21F0985

Sample SW01_062121 exhibited a percent recovery above the UCL for the surrogate terphenyl-d14 (121%). No more than one surrogate from a single fraction recovered outside of the control limits. No qualification is necessary.

Sample SW03_062121 exhibited a percent recovery above the UCL for the surrogate terphenyl-d14 (118%). No more than one surrogate from a single fraction recovered outside of the control limits. No qualification is necessary.

PCBs by SW-846 Method 8082A

21F0985

The LCSD for batch BF11158 exhibited a percent recovery above the UCL for 8:2FTS (135%). The associated results are non-detect. No qualification is necessary.

Metals by SW-846 Methods 6010D/6020B/7471A/7473

21F0985

The MB for batch BF11126 exhibited a detection of potassium (0.0928 mg/l). The associated results are >10X the contamination. No qualification is necessary.

The continuing calibration blank (CCB) analyzed on 6/22/2021 at 13:13 exhibited a detection of potassium (0.0885 ug/L). The associated results are >10X the contamination. No qualification is necessary.

FIELD DUPLICATE:

Three field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than $\pm 2X$ the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 30% for soil. The following field duplicate and parent sample pairs were compared to and met the precision criteria:

- SBDUP01_20210615 and SB14R_7-8
- SBDUP02_20210618 and SB14R_7-8
- SBDUP03_20210618 and SB05R_4-5

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CONCLUSION:

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Joe Conboy
Staff Chemist

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Table 1: Sample Summary

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
21F0730	21F0730-01	SB16R_7-8	6/14/2021	Nickel and Chromium
21F0730	21F0730-02	SB16R_18-20	6/14/2021	Nickel and Chromium
21F0730	21F0730-03	SB15R_6-7	6/14/2021	Nickel
21F0730	21F0730-04	SB15R_18-20	6/14/2021	Nickel
21F0730	21F0730-05	SB01R_8-9	6/14/2021	Nickel and Chromium
21F0730	21F0730-06	SB01R_18-20	6/14/2021	Nickel and Chromium
21F0731	21F0731-01	SB103R_7-8	6/15/2021	Cadmium, Lead, Nickel, Chromium, Zinc, and Mercury
21F0731	21F0731-04	SB02R_7-8	6/15/2021	Pesticide, Copper, Lead, Nickel, and Mercury
21F0732	21F0732-01	SB14R_7-8	6/15/2021	Nickel and Chromium
21F0732	21F0732-02	SB14R_18-20	6/15/2021	Nickel and Chromium
21F0732	21F0732-03	SB02R_8-9	6/15/2021	Nickel and Chromium
21F0732	21F0732-04	SB02R_18-20	6/15/2021	Nickel and Chromium
21F0732	21F0732-05	SODUP01_20210615	6/15/2021	Nickel and Chromium
21F0784	21F0784-01	SB12R_8-9	6/16/2021	Nickel and Chromium
21F0784	21F0784-02	SB12R_18-20	6/16/2021	Nickel and Chromium
21F0784	21F0784-03	SB13R_7-8	6/16/2021	Nickel and Copper
21F0784	21F0784-04	SB13R_18-20	6/16/2021	Nickel and Copper
21F0784	21F0784-05	SB10R_7-8	6/16/2021	Nickel and Copper
21F0784	21F0784-06	SB10R_18-20	6/16/2021	Nickel and Copper
21F0784	21F0784-07	SB101R_7-8	6/16/2021	SVOCs, Lead, Nickel, Copper, Zinc, and Mercury
21F0784	21F0784-10	SB13R_7-8_Hg	6/16/2021	Mercury
21F0784	21F0784-13	SB102R_7-8	6/16/2021	Lead, Nickel, and Chromium
21F0784	21F0784-16	SB107R_7-8	6/16/2021	SVOCs, Lead, Nickel, Zinc, and Mercury
21F0784	21F0784-19	SOFB01_20210616	6/16/2021	SVOCs (including SVOCs SIM) and Metals
21F0838	21F0838-01	SB03R_9-10	6/17/2021	Nickel and Chromium
21F0838	21F0838-02	SB03R_18-20	6/17/2021	Nickel and Chromium
21F0838	21F0838-03	SB11R_11-12	6/17/2021	Nickel and Chromium
21F0838	21F0838-04	SB11R_18-20	6/17/2021	Nickel and Chromium
21F0838	21F0838-05	SB07R_7-8	6/17/2021	Nickel
21F0838	21F0838-06	SB07R_18-20	6/17/2021	Nickel
21F0838	21F0838-07	SOFB02_061721	6/17/2021	SVOCs (including SVOCs SIM) and Metals
21F0838	21F0838-08	TB02_061721	6/17/2021	VOCs
21F0838	21F0838-09	SB104R_7-8	6/17/2021	Nickel and Mercury
21F0838	21F0838-10	SB104R_8-9	6/17/2021	Nickel and Mercury
21F0838	21F0838-12	SB106R_7-8	6/17/2021	Arsenic, Cadmium, Copper, Lead, Nickel, Zinc, and Mercury
21F0838	21F0838-13	SB106R_8-9	6/17/2021	Copper, Lead, Nickel, Zinc, and Mercury

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21F0838	21F0838-14	SB106R_9-10	6/17/2021	Lead, Nickel, and Mercury
21F0838	21F0838-15	SB110R_7-8	6/17/2021	Lead, Nickel, Zinc, and Mercury
21F0838	21F0838-16	SB110R_8-9	6/17/2021	Lead, Nickel, and Mercury
21F0893	21F0893-01	SB05R_4-5	6/18/2021	Nickel
21F0893	21F0893-02	SB05R_18-20	6/18/2021	Nickel
21F0893	21F0893-03	SB04R_11-12	6/18/2021	Nickel and Chromium
21F0893	21F0893-04	SB04R_20-21	6/18/2021	Nickel and Chromium
21F0893	21F0893-05	SB06R_10-11	6/18/2021	Nickel
21F0893	21F0893-06	SB06R_18-20	6/18/2021	Nickel
21F0893	21F0893-07	SB09R_10-11	6/18/2021	Nickel and Chromium
21F0893	21F0893-08	SB09R_18-20	6/18/2021	Nickel and Chromium
21F0893	21F0893-10	SB08R_18-20	6/18/2021	Nickel
21F0893	21F0893-11	SB109R_7-8	6/18/2021	SVOCs, Barium, Copper, Lead, Nickel, Zinc, and Mercury
21F0893	21F0893-12	SB109R_8-9	6/18/2021	Lead, Nickel, Zinc, and Mercury
21F0893	21F0893-13	SB109R_9-10	6/18/2021	Lead, Nickel, Zinc, and Mercury
21F0893	21F0893-14	SB06R_9-10	6/18/2021	Nickel
21F0893	21F0893-17	SB09R_11-12	6/18/2021	Lead, Nickel, and Chromium
21F0893	21F0893-20	SB08R_10-11	6/18/2021	Barium, Lead, Nickel, Zinc, and Mercury
21F0893	21F0893-21	SB08R_11-12	6/18/2021	Lead, Nickel, and Mercury
21F0893	21F0893-22	SB08R_12-13	6/18/2021	Lead and Nickel
21F0893	21F0893-23	SODUP02_061821	6/18/2021	SVOCs, Barium, Copper, Lead, Nickel, Zinc, and Mercury
21F0893	21F0893-24	SODUP03_061821	6/18/2021	Nickel
21F0985	21F0985-03	SB08R_1_13-15	6/21/2021	Lead and Barium
21F0985	21F0985-12	SB108R_1_3-4	6/21/2021	Barium
21F0985	21F0985-13	SB108R_1_4-5	6/21/2021	Barium
21F0985	21F0985-14	SB108R_1_5-6	6/21/2021	Barium
21F0985	21F0985-18	SB108R_W1_4-5	6/21/2021	Barium
21F0985	21F0985-22	SB108R_N1_3-4	6/21/2021	Barium
21F0985	21F0985-23	SB108R_N1_4-5	6/21/2021	Barium
21F0985	21F0985-24	SB108R_N1_5-6	6/21/2021	Barium
21F0985	21F0985-27	SB108R_N2_3-4	6/21/2021	Barium
21F0985	21F0985-28	SB108R_N2_4-5	6/21/2021	Barium
21F0985	21F0985-29	SB108R_N2_5-6	6/21/2021	Barium
21F0985	21F0985-33	SB108R_S1_4-5	6/21/2021	Barium
21F0985	21F0985-43	SB108R_E1_4-5	6/21/2021	Barium
21F0985	21F0985-53	SB111R_1_8-9	6/21/2021	Mercury
21F0985	21F0985-57	SB111R_N1_7-8	6/21/2021	Mercury
21F0985	21F0985-58	SB111R_N1_8-9	6/21/2021	Mercury
21F0985	21F0985-59	SB111R_N1_9-10	6/21/2021	Mercury
21F0985	21F0985-63	SB111R_N2_8-9	6/21/2021	Mercury
21F0985	21F0985-67	SB111R_S1_7-8	6/21/2021	Mercury
21F0985	21F0985-68	SB111R_S1_8-9	6/21/2021	Mercury
21F0985	21F0985-69	SB111R_S1_9-10	6/21/2021	Mercury

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21F0985	21F0985-72	SB111R_S2_7-8	6/21/2021	Mercury
21F0985	21F0985-73	SB111R_S2_8-9	6/21/2021	Mercury
21F0985	21F0985-74	SB111R_S2_9-10	6/21/2021	Mercury
21F0985	21F0985-78	SB111R_E2_8-9	6/21/2021	Mercury
21F0985	21F0985-82	SB111R_E1_7-8	6/21/2021	Mercury
21F0985	21F0985-83	SB111R_E1_8-9	6/21/2021	Mercury
21F0985	21F0985-84	SB111R_E1_9-10	6/21/2021	Mercury
21F0985	21F0985-85	SB111R_E1_10-11	6/21/2021	Mercury
21F0985	21F0985-88	SB111R_W1_8-9	6/21/2021	Mercury
21F0985	21F0985-96	SW01_062121	6/21/2021	VOCs, SVOCs, PFAS, Pesticides, PCBs, Metals
21F0985	21F0985-97	SW02_062121	6/21/2021	VOCs, SVOCs, PFAS, Pesticides, PCBs, Metals
21F0985	21F0985-98	SW03_062121	6/21/2021	VOCs, SVOCs, PFAS, Pesticides, PCBs, Metals
21F0987	21F0987-01	SB108R_10-11	6/21/2021	Barium, Chromium, Copper, Lead, Nickel, Zinc, and Mercury
21F0987	21F0987-04	SB111R_10-11	6/21/2021	Lead, Nickel, Zinc, and Mercury
21F0987	21F0987-07	SODUP01_062121	6/21/2021	Barium and Lead
21F0987	21F0987-12	SOFB01_062121	6/21/2021	Barium, Lead, and Mercury
21F0987	21F0987-15	SOFB04_062121	6/21/2021	VOCs and SVOCs
21F0987	21F0987-16	SOFB05_062121	6/21/2021	SVOCs, Pesticides, PCBs, and Metals
21F0987	21F0987-17	TRIP BLANK	6/21/2021	VOCs
21F1075	21F1075-03	SB08R_W1_13-15	6/22/2021	Barium and Lead
21F1075	21F1075-13	SB08R_N2_13-15	6/22/2021	Lead
21F1075	21F1075-18	SB08R_E1_13-15	6/22/2021	Barium and Lead
21F1075	21F1075-24	SB08R_N1_12-13	6/22/2021	Lead
21F1075	21F1075-25	SB08R_N1_13-15	6/22/2021	Barium and Lead
21F1075	21F1075-28	SB08R_S1_13-15	6/22/2021	Barium and Lead

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Table 2: Validator-Applied Qualification

Client Sample ID	Analysis	CAS #	Analyte	Validator Qualifier
SB05R_4-5	SW6010	7440-02-0	Nickel	J
SB08R_10-11	SW6010	7439-92-1	Lead	J
SB08R_10-11	SW6010	7440-66-6	Zinc	J
SB08R_11-12	SW6010	7439-92-1	Lead	J
SB08R_E1_13-15	SW6010	7440-39-3	Barium	J
SB08R_E1_13-15	SW6010	7439-92-1	Lead	J
SB08R_N1_12-13	SW6010	7439-92-1	Lead	J
SB08R_N1_13-15	SW6010	7440-39-3	Barium	J
SB08R_S1_13-15	SW6010	7440-39-3	Barium	J
SB08R_S1_13-15	SW6010	7439-92-1	Lead	J
SB08R_W1_13-15	SW6010	7440-39-3	Barium	J
SB08R_W1_13-15	SW6010	7439-92-1	Lead	J
SB09R_11-12	SW6010	7439-92-1	Lead	J
SB101R_7-8	SW6010	7439-92-1	Lead	J
SB102R_7-8	SW6010	7439-92-1	Lead	J
SB103R_7-8	SW6010	7440-66-6	Zinc	J
SB104R_8-9	SW6010	7440-02-0	Nickel	J
SB106R_7-8	SW6010	7440-38-2	Arsenic	J
SB107R_7-8	SW6010	7439-92-1	Lead	J
SB107R_7-8	SW6010	7440-02-0	Nickel	J
SB107R_7-8	SW6010	7440-66-6	Zinc	J
SB108R_1_3-4	SW6010	7440-39-3	Barium	J
SB108R_1_5-6	SW6010	7440-39-3	Barium	J
SB108R_N1_3-4	SW6010	7440-39-3	Barium	J
SB108R_N1_5-6	SW6010	7440-39-3	Barium	J
SB108R_N2_4-5	SW6010	7440-39-3	Barium	J
SB109R_7-8	SW6010	7439-92-1	Lead	J
SB109R_7-8	SW6010	7440-66-6	Zinc	J
SB109R_8-9	SW6010	7439-92-1	Lead	J
SB109R_8-9	SW6010	7440-66-6	Zinc	J
SB109R_9-10	SW6010	7440-66-6	Zinc	J
SB111R_1_8-9	SW7473	7439-97-6	Mercury	J
SB111R_10-11	SW6010	7439-92-1	Lead	J
SB111R_10-11	SW6010	7440-02-0	Nickel	J
SB111R_10-11	SW6010	7440-66-6	Zinc	J
SODUP02_061821	SW6010	7439-92-1	Lead	J
SODUP02_061821	SW6010	7440-66-6	Zinc	J
SW01_062121	E537	375-22-4	PFBA	J
SW01_062121	E537	376-06-7	PFTA	UJ
SW01_062121	E537	72629-94-8	PFTTrDA	UJ
SW01_062121	E537	39108-34-4	8:2FTS	UJ
SW01_062121	E537	27619-97-2	6:2FTS	UJ
SW01_062121	SW6010	7440-23-5	Sodium	J
SW01_062121	SW6010	7440-66-6	Zinc	J

Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
June 2021 Soil Samples
Table 2: Validator-Applied Qualification

Client Sample ID	Analysis	CAS #	Analyte	Validator Qualifier
SW01_062121	SW6020	7782-49-2	Selenium	UJ
SW01_062121	SW8260	79-34-5	1,1,2,2-Tetrachloroethane	UJ
SW01_062121	SW8260	107-02-8	Acrolein	UJ
SW01_062121	SW8260	74-83-9	Bromomethane	UJ
SW01_062121	SW8260	87-68-3	Hexachlorobutadiene	UJ
SW01_062121	SW8260	75-09-2	Methylene Chloride	UJ
SW01_062121	SW8260	104-51-8	n-Butylbenzene	UJ
SW01_062121	SW8260	103-65-1	n-Propylbenzene	UJ
SW01_062121	SW8260	75-65-0	Tert-Butyl Alcohol	UJ
SW01_062121	SW8260	127-18-4	Tetrachloroethene	UJ
SW01_062121	SW8260	79-01-6	Trichloroethene	UJ
SW01_062121	SW8270	51-28-5	2,4-Dinitrophenol	UJ
SW01_062121	SW8270	98-86-2	Acetophenone	UJ
SW01_062121	SW8270	100-52-7	Benzaldehyde	UJ
SW01_062121	SW8270	92-87-5	Benzidine	UJ
SW01_062121	SW8270DSIM	117-81-7	Bis(2-ethylhexyl) phthalate	J
SW01_062121	SW8270DSIM	91-20-3	Naphthalene	U(0.0821)
SW01_062121	SW8270DSIM	87-86-5	Pentachlorophenol	UJ
SW01_062121	SW8270DSIM	129-00-0	Pyrene	U(0.0923)
SW02_062121	E537	375-22-4	PFBA	J
SW02_062121	E537	376-06-7	PFTA	UJ
SW02_062121	E537	72629-94-8	PFTTrDA	UJ
SW02_062121	E537	39108-34-4	8:2FTS	UJ
SW02_062121	E537	27619-97-2	6:2FTS	UJ
SW02_062121	SW6010	7440-23-5	Sodium	J
SW02_062121	SW6010	7440-66-6	Zinc	J
SW02_062121	SW6020	7782-49-2	Selenium	UJ
SW02_062121	SW8260	79-34-5	1,1,2,2-Tetrachloroethane	UJ
SW02_062121	SW8260	107-02-8	Acrolein	UJ
SW02_062121	SW8260	74-83-9	Bromomethane	UJ
SW02_062121	SW8260	87-68-3	Hexachlorobutadiene	UJ
SW02_062121	SW8260	75-09-2	Methylene Chloride	UJ
SW02_062121	SW8260	104-51-8	n-Butylbenzene	UJ
SW02_062121	SW8260	103-65-1	n-Propylbenzene	UJ
SW02_062121	SW8260	75-65-0	Tert-Butyl Alcohol	UJ
SW02_062121	SW8260	127-18-4	Tetrachloroethene	UJ
SW02_062121	SW8260	79-01-6	Trichloroethene	UJ
SW02_062121	SW8270	51-28-5	2,4-Dinitrophenol	UJ
SW02_062121	SW8270	98-86-2	Acetophenone	UJ
SW02_062121	SW8270	100-52-7	Benzaldehyde	UJ
SW02_062121	SW8270	92-87-5	Benzidine	UJ
SW02_062121	SW8270DSIM	117-81-7	Bis(2-ethylhexyl) phthalate	UJ
SW02_062121	SW8270DSIM	91-20-3	Naphthalene	U(0.06)
SW02_062121	SW8270DSIM	87-86-5	Pentachlorophenol	UJ

Data Usability Summary Report
For 475 Bay Street and 31 Wave Street
June 2021 Soil Samples
Table 2: Validator-Applied Qualification

Client Sample ID	Analysis	CAS #	Analyte	Validator Qualifier
SW02_062121	SW8270DSIM	129-00-0	Pyrene	U(0.07)
SW03_062121	E537	375-22-4	PFBA	J
SW03_062121	E537	376-06-7	PFTA	UJ
SW03_062121	E537	72629-94-8	PFTTrDA	UJ
SW03_062121	E537	39108-34-4	8:2FTS	UJ
SW03_062121	E537	27619-97-2	6:2FTS	UJ
SW03_062121	SW6010	7440-23-5	Sodium	J
SW03_062121	SW6010	7440-66-6	Zinc	J
SW03_062121	SW6020	7782-49-2	Selenium	UJ
SW03_062121	SW8260	79-34-5	1,1,2,2-Tetrachloroethane	UJ
SW03_062121	SW8260	107-02-8	Acrolein	UJ
SW03_062121	SW8260	74-83-9	Bromomethane	UJ
SW03_062121	SW8260	87-68-3	Hexachlorobutadiene	UJ
SW03_062121	SW8260	75-09-2	Methylene Chloride	UJ
SW03_062121	SW8260	104-51-8	n-Butylbenzene	UJ
SW03_062121	SW8260	103-65-1	n-Propylbenzene	UJ
SW03_062121	SW8260	75-65-0	Tert-Butyl Alcohol	UJ
SW03_062121	SW8260	127-18-4	Tetrachloroethene	UJ
SW03_062121	SW8260	79-01-6	Trichloroethene	UJ
SW03_062121	SW8270	51-28-5	2,4-Dinitrophenol	UJ
SW03_062121	SW8270	98-86-2	Acetophenone	UJ
SW03_062121	SW8270	100-52-7	Benzaldehyde	UJ
SW03_062121	SW8270	92-87-5	Benzidine	UJ
SW03_062121	SW8270DSIM	117-81-7	Bis(2-ethylhexyl) phthalate	J
SW03_062121	SW8270DSIM	91-20-3	Naphthalene	U(0.08)
SW03_062121	SW8270DSIM	87-86-5	Pentachlorophenol	UJ
SW03_062121	SW8270DSIM	129-00-0	Pyrene	U(0.09)

APPENDIX I

LABORATORY ANALYTICAL REPORTS
(Submitted under separate cover)