PHASE II ENVIRONMENTAL SITE INVESTIGATION REPORT

for

57-00, 57-05, 57-57 and 58-20 47th Street Maspeth, Queens, New York

Prepared For:

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LANGAN

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1.0 INTRODUCTION

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) prepared this Phase II Environmental Site Investigation (ESI) report on behalf of Bay Crane Service of New York for the properties located at 57-00, 57-05, 57-57, and 58-20 47th Street in the Maspeth neighborhood of Queens, New York (the site). The Phase II ESI was conducted to investigate the recognized environmental conditions (RECs) identified during the Phase I Environmental Site Assessment (ESA) dated July 21, 2021.

The Phase II ESI included completion of a geophysical survey, advancement of soil borings, installation of temporary groundwater monitoring wells, and collection and laboratory analysis of soil and groundwater samples. The Phase II ESI field work was completed on July 7 through July 9, 2021.

This report is organized as follows:

- Section 2.0: Describes the site background
- Section 3.0: Presents the Phase II ESI methodology
- Section 4.0: Presents the findings of the Phase II ESI
- Section 5.0: Presents conclusions based on the findings
- Section 6.0: Presents limitations

2.0 BACKGROUND

2.1 Site Location and Description

The site is located at 57-00, 57-05, 57-57, and 58-20 47th Street in the Maspeth neighborhood of Queens, New York, and is identified on the Queens Borough Tax Map as Block 2601, Lots 1 and 6 and Block 2602, Lots 68 and 72. The approximately 168,000-square-foot site is situated on the northern part of Block 2601 and northeastern part of Block 2602, and is transected by 47th Street. The site is situated on the city blocks bound by 58th Road to the north, 49th Place to the east, Grand Avenue to the south, and Newtown Creek to the west. The site is improved with a vacant slab-on-grade one-story building with a mezzanine level (Lot 6), and two vacant slab-on-grade one-story buildings (Lots 68 and 72). The remainder of the site is improved with concrete and asphalt parking space.

According to the United States Geological Survey (USGS) Central Park Quadrangle 7.5-minute Series Topographic Map, the site sits at an elevation of about 9 feet above mean sea level (msl) and the surrounding area slopes gradually to the southwest towards Newtown Creek. The site is located within an industrial area characterized by one- to two-story commercial and manufacturing/industrial buildings. A Site Location Map is included as Figure 1.

2.2 Proposed Development

Redevelopment plans for the site are in early development; however, the site may be used in its present-day configuration for crane storage and repair.

2.3 Recognized Environmental Conditions

Langan's July 20, 2021 Phase I ESA identified the following Recognized Environmental Conditions (RECs) for the site:

REC 1 – Historical Use of Subject Property

Historical operations at the Subject Property included a 'fertilizer works' facility (1902 to 1914), an oil depot with petroleum bulk storage (1914 to 1936), truck parking (1974 to 1991), truck repair (1982 to 2006), a waste transfer facility with petroleum bulk storage (2004 to 2021), and auto repair (2013, 2014) on Lots 1 and 6; and a motor freight station with petroleum bulk storage (1963, 1982 to 2006) on Lot 72. The Subject Property is listed as an active facility on the Solid Waste Facilities/Landfill Sites (SWF/LF) database for the processing of construction and demolition (C&D) waste; however, based on the site reconnaissance this operation ceased in early 2021. Historical operations at the Subject Property may have resulted in inadvertent releases of hazardous substances or petroleum products.

REC 2 – Western-Adjoining Superfund Site

Newtown Creek, which is listed in the National Priority List (NPL) and Superfund Enterprise Management System (SEMS) databases. Contamination in Newtown Creek is attributed to combined sewer overflow (CSO) and historical industrial facilities on the creek banks. Facilities included over 50 oil refineries, petrochemical plants, fertilizer and glue factories, sawmills, and lumber and coal yards. A remedial investigation is presently underway for the entire Newtown Creek Superfund Site and a focused feasibility study (FFS) is currently being prepared by responsible parties regarding a combined sewer outfall (CSO) long term control plan, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Given that the remedial investigation and a focused feasibility study are underway by the responsible parties, it is unknown as to whether there is any impact to the Subject Property.

2.4 Soil and Geology

Geological surface features (e.g., rock outcroppings) were not observed at the site. Baskerville's "Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York, and Parts of Bergen and Hudson Counties, New Jersey", dated 1994, indicates the bedrock underlying the site is part of the Hartland Formation. The Hartland Formation is comprised of mica schist and quartz-feldspar granulite, with localized intrusions of granite and pegmatite. Review of the United States Geographic Services (USGS) Topographic Maps for the site identified infilling along the western and southern parts of the site between 1947 and 1979. Given the development history, historic fill will likely be present.

2.5 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 hydrogeological network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeological and anthropogenic variables such as precipitation, evaporation, extent of vegetation cover, and coverage by impervious surfaces. Other factors influencing groundwater include depth to bedrock, the presence of artificial fill, and variability in local geology and groundwater sources or sinks. Groundwater is inferred to flow to the southwest towards Newtown Creek. Groundwater was encountered at depths ranging from 8.0 to 11.2 feet below grade surface (bgs) during this Phase II ESI.

Groundwater in New York City is not used as a potable water source. Potable water is provided to the site by New York City and is obtained from surface impoundments in the Croton, Catskill, and Delaware watersheds. According to the current Federal Emergency Management Agency

(FEMA) Effective Flood Insurance Rate Map (FIRM) dated September 5, 2007, the northern and western parts of the site fall within Zone AE, a special flood hazard area with base flood elevation of 10 feet inundated by 1% annual chance of flooding. The remainder of the site falls within Zone X and lies within the area of 0.2% annual chance of flood.

3.0 FIELD INVESTIGATION

The Phase II ESI included completion of a geophysical survey, advancement of eleven environmental soil borings, installation of four temporary groundwater monitoring wells, and collection of eleven soil and four groundwater samples for laboratory analysis. The Phase II ESI field work was completed from July 7 through 9, 2021. A sample summary is included in Table 1 and sample locations are shown on Figure 2. Photographs taken during the field investigation are included in Appendix A.

3.1 Geophysical Survey

Prior to intrusive sampling, NOVA Geophysical & Environmental, Inc. (NOVA), of Douglaston, New York, conducted a geophysical survey on July 7, 2021. NOVA used ground penetrating radar (GPR) and electromagnetic detection equipment to identify potential underground storage tanks (USTs) and locate buried utilities and anomalies across the site. Boring locations were cleared of any subsurface structures or utilities.

A copy of the geophysical survey report is included in Appendix B.

3.2 Soil Investigation

Eleven soil borings, SB01 through SB11, were advanced by Eastern Environmental Solutions, Inc. of Manorville, New York. A Langan field engineer was on-site to document field observations and collect soil samples. Soil borings were advanced using Geoprobe® 7922 DT 2-inch direct push drill rig to depths ranging from 15 to 20 feet below ground surface (bgs). Soil samples were collected continuously into 5-foot Macro-Core® sample barrels lined with dedicated acetate sleeves.

Soil samples retrieved from borings were visually classified for soil type, grain size, texture, and moisture content. Each sample was screened for visual, olfactory, and instrumental evidence of a chemical or petroleum release. Instrumental screening for the presence of organic vapors was performed using a photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp. Eleven soil samples were collected, one each, from borings SB01 through SB11 for laboratory analysis. Samples were collected from the interval exhibiting the greatest degree of impacts or from representative intervals of historic fill material. Samples submitted for volatile organic compound (VOC) analysis were collected directly from the acetate liner into laboratory-supplied Terra Core® soil samplers. The remaining sample volume was homogenized and placed in laboratory-supplied containers for additional analyses. The sample containers were labeled, placed in a laboratory-supplied cooler, and packed on ice (to attempt to maintain a temperature of about 4°C). The samples were picked up and delivered via courier service to York Analytical

Laboratories Inc. (York) under standard chain-of-custody protocol. York is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Stratford, Connecticut.

Soil samples were analyzed for Part 375 List and Target Compound List (TCL) VOCs by United States Environmental Protection Agency (USEPA) Method 8260C, semi-volatile organic compounds (SVOCs) by USEPA Method 8270D, pesticides by USEPA Method 8081B, polychlorinated biphenyls (PCBs) by USEPA Method 8082A, and Part 375/Target Analyte List (TAL) metals including hexavalent and trivalent chromium by USEPA Methods 6010C.

Following sample collection, boreholes were backfilled to grade with soil cuttings and the ground surface was restored. Soil boring logs are included in Appendix C, soil boring locations are shown on Figure 2, and a soil sample summary is included in Table 1.

3.3 Groundwater Investigation

Four soil borings, SB01 through SB04, were converted into temporary groundwater monitoring wells. Monitoring wells MW01, MW02 and MW04 were installed by inserting 10 feet of 0.02-inch slotted, one-inch diameter well screen and 10 feet of PVC riser pipe. Monitoring well MW03 was installed by inserting 5 feet of 0.02-inch slotted, one-inch diameter well screen, and 10 feet of PVC riser pipe. Well screens were positioned to straddle the observed water table. The annular space of each monitoring well was backfilled with No. 2 sand to 2 inches bgs and the upper 2 inches of the borehole was sealed to grade surface with bentonite.

Following installation, the monitoring wells were developed and sampled using a peristaltic pump. Prior to sample collection, the wells were purged and attempts were made to stabilize groundwater parameters (pH, conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential), with turbidity measurements below 50 Nephelometric Turbidity Units (NTU). Following groundwater sample collection, each temporary monitoring well was removed, boreholes were filled to grade surface with non-impacted soil cuttings and No. 2 sand, and patched with concrete. Monitoring well construction logs and groundwater sampling logs are included as Appendix D.

The groundwater samples were collected into laboratory-supplied glassware and delivered via courier service to York. Groundwater samples were analyzed for TCL VOCs by EPA Method 8260, TCL SVOCs by EPA Method 8270, PCBs by EPA Method 8082, pesticides by USEPA Method 8081B, and total and dissolved (field filtered) metals including hexavalent and trivalent chromium by EPA Methods 6010B/7471A. The groundwater monitoring well locations are shown on Figure 2 and a groundwater sample summary is included in Table 1.

4.0 OBSERVATIONS AND RESULTS

4.1 Geophysical Survey

NOVA's geophysical survey identified municipal water, sewer, electric, telecom and/or gas lines entering the buildings on Lots 6, 68 and 72 from 47th Street. An electric line was also observed transecting Lots 1 and 6. The geophysical survey identified anomalies indicative of an oil/water separator on the eastern side of the Lot 6 building and drainage structures within the Lot 6 building and southern part of Lot 6. Anomalies indicative of underground storage tanks (UST) graves were also identified on the southern part of Lot 6. Borings were relocated as necessary to avoid subsurface utilities. A copy of the geophysical survey report is included in Appendix B.

4.2 Subsurface Observations

Fill material, generally consisting of fine-grained sand with varying amounts of fine gravel, silt, brick, wood, and concrete was identified from below surface grade to depths ranging from about 4 to 16 feet bgs. Native soil, typically consisting of fine-grained sand and silt with varying amounts of medium sand, peat and fine gravel was identified beneath the fill layer to the boring termination depths ranging from 5 to 20 feet bgs.

Petroleum-like odors, staining, and PID readings above background levels were each identified at the following locations:

Soil Boring	Depth Interval (feet bgs)	Maximum PID (ppm)	Other Observations
SB01	10 to 12	76.1	Petroleum-like odor; staining
SB02	10 to 11	17	Petroleum-like odor; staining
	17 to 18	192.8	Petroleum-like odor; staining
SB04	8 to 11	50.3	Petroleum-like odor; staining

*ppm = parts per million

Groundwater was encountered in soil borings at depths ranging from 8 to 11.2 feet bgs. Petroleum-like odors and PID readings of 8.6 ppm and 49.7 ppm were observed from the headspace of monitoring wells MW02 and MW04, respectively. Purge water from these locations exhibited gray and brown discoloration; however, sheen or free product was not observed.

4.3 Soil Sample Results

Soil sample analytical results were compared to Title 6 of the New York Codes, Rules and Regulations (NYCRR) Part 375 Commercial Use (CU) and Industrial Use (IU) Soil Cleanup Objectives (SCOs). Analytes exceeding the CU and/or IU SCOs are summarized below. SCOs are listed in parentheses. Exceedances of IU SCOs are in bold. Soil sample analytical results are summarized in Table 2, and analytical laboratory reports are included in Appendix E.

SVOCs – SVOCs were detected in SB03, SB07, and SB11 above the CU and/or IU SCOs as summarized below:

- Benzo(a)anthracene – **64.8 milligrams per kilogram (mg/kg)** in SB07_8-9 (CU SCO: 5.6 mg/kg; IU SCO: 11 mg/kg)
- Benzo(a)pyrene – 1.08 mg/kg in SB03_2-3; 3.84 mg/kg in SB-11_13-14; **47.1 mg/kg** in SB07_8-9 (CU SCO: 1 mg/kg; IU SCO: 1.1 mg/kg)
- Benzo(b)fluoranthene – **39.2 mg/kg** in SB07_8-9 (CU SCO: 5.6 mg/kg; IU SCO: 11 mg/kg)
- Chrysene – 65.2 mg/kg in SB07_8-9 (CU SCO: 56 mg/kg)
- Dibenzo(a,h)anthracene – 0.748 mg/kg in SB11_13-14 to **9.53 mg/kg** in SB07_8-9 (CU SCO: 0.56 mg/kg; IU SCO: 1.1 mg/kg)
- Indeno(1,2,3-cd)pyrene – **26.7 mg/kg** in SB07_8-9 (CU SCO: 5.6 mg/kg; IU SCO: 11 mg/kg)

Metals – Metals were detected in SB-07, SB-10, and SB-11 above their respective CU and/or IU SCOs as summarized below:

- Arsenic – **27.6 mg/kg** in SB10_3-4 (CU/IU SCO: 16 mg/kg)
- Lead – 1,840 mg/kg in SB10_3-4 (CU SCO: 1,000 mg/kg)
- Mercury – 2.97 mg/kg in SB10_3-4; 4.22 mg/kg in SB-11_13-14; 5.33 mg/kg in SB07_1-2 (CU SCO: 2.8 mg/kg)

VOCs, Pesticides and PCBs

VOCs, pesticides and PCBs were not detected at concentrations above CU and/or IU SCOs.

4.4 Groundwater Sample Results

Groundwater results were compared to the NYSDEC Division of Water Technical and Operation Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA (drinking water). Analytical results from the groundwater sample are summarized in Table 3.

VOCs were detected in samples collected from MW02 and MW04 at concentrations above the NYSDEC TOGS SGVs and are summarized below. SGVs are listed in parentheses:

- 1,2-Dichloropropane – 7 milligrams per liter (µg/L) in MW02 (SGV: 1 µg/L)
- Isopropylbenzene – 5.1 µg/L in MW02 (SGV: 5 µg/L)
- N-Propylbenzene – 6 µg/L in MW02 (SGV: 6 µg/L)
- Methyl tert-butyl ether (MTBE) - 73 µg/L in MW04 (SGV: 10 µg/L)

SVOCs were detected in samples collected from MW03 at concentrations above the NYSDEC TOGS SGVs and are summarized below.

- Benzo(a)anthracene – 0.564 µg/L (SGV: 0.002 µg/L)
- Benzo(a)pyrene – 0.523 µg/L (SGV: 0.002 µg/L)
- Benzo(b)fluoranthene – 0.369 µg/L (SGV: 0.002 µg/L)
- Benzo(k)fluoranthene – 0.41 µg/L (SGV: 0.002 µg/L)
- Chrysene – 0.523 µg/L (SGV: 0.002 µg/L)
- Indeno(1,2,3-cd)pyrene – 0.297 µg/L (SGV: 0.002 µg/L)

Total and dissolved metals that were detected in the samples collected from MW01 through MW04 at concentrations above the SGVs and are summarized below.

- Total Antimony – 4.34 µg/L in MW03 (SGV: 3 µg/L)
- Total Arsenic – 37.6 µg/L in MW03 (SGV: 25 µg/L)
- Total Iron – 7,420 µg/L in MW04 to 11,100 µg/L in MW01 (SGV: 300 µg/L)
- Dissolved Iron – 5,740 µg/L in MW03 to 11,400 µg/L in MW01 (SGV: 300 µg/L)
- Total Lead - 419 µg/L in MW03 (SGV: 25 µg/L)
- Total Magnesium – 38,800 µg/L in MW01 (SGV: 35,000 µg/L)
- Dissolved Magnesium – 39,900 µg/L in MW01 (SGV: 35,000 µg/L)
- Total Manganese – 1,490 µg/L in MW01 to 3,090 µg/L in MW02 (SGV: 300 µg/L)
- Dissolved Manganese – 1,560 µg/L in MW01 to 3,100 in MW02 (SGV: 300 µg/L)
- Total Sodium – 67,100 µg/L in MW02 to 110,000 µg/L in MW04 (SGV: 20,000 µg/L);
- Dissolved Sodium – 71,900 µg/L in MW02 to 126,000 µg/L in MW04 (SGV: 20,000 µg/L)

5.0 CONCLUSIONS

The following is a summary of Phase II findings:

- Anomalies indicative of an oil/water separator and underground storage tanks (UST) graves were identified on the Eastern and southern part of Lot 6, respectively.
- Fill material, generally consisting of fine-grained sand with varying amounts of fine gravel, silt, brick, wood, and concrete was identified from below surface grade to depths ranging

from about 4 to 16 feet bgs. Native soil, typically consisting of fine-grained sand and silt with varying amounts of medium sand, peat and fine gravel was identified beneath the fill layer to the boring termination depths, ranging from 5 to 20 feet bgs.

- Groundwater was encountered at depths ranging from 8 to 11.5 feet bgs.
- Petroleum-like odors, staining, and PID readings were each identified in soil borings SB01, SB02, and SB04 at depths ranging from 8 to 18 feet bgs. Impacts were generally identified at or below the groundwater table; petroleum-related VOCs and SVOCs were not detected above CU SCOs in the soil samples collected from these borings.
- SVOCs and metals were detected in soil samples at a concentrations above CU and/or IU SCOs in one or more boring. Generally, concentrations were consistent with historic fill in New York City and are not indicative of a point source or release. Concentrations of SVOCs above IU SCOs identified in SB07_8-9 may be attributed to historical site operations or historic fill quality.
- VOCs were not identified in soil about CU and/or IU SCOs; however, MTBE was identified in monitoring wells site-wide, with concentrations exceeding the NYSDEC TOGS SGVs in up-gradient monitoring well MW04. Select petroleum-related VOCs were also identified in monitoring well MW02 above the NYSDEC TOGS SGVs. Petroleum-related VOCs in groundwater may be attributed to historical on-site operations.
- SVOCs were identified in one monitoring well, MW03, above the NYSDEC TOGS SGVs. These exceedances are likely the result of entrained sediment in groundwater derived from historic fill.
- Total antimony, arsenic, iron, lead, magnesium, manganese, and sodium and dissolved iron, magnesium, manganese and sodium were detected in groundwater at a concentrations exceeding TOGS SGVs. Detections of iron, magnesium, manganese and sodium are naturally-occurring and the observed concentrations are not indicative of groundwater contamination. Because dissolved antimony, arsenic, and lead were not identified in groundwater at concentrations greater than the SGV, detections of these total metals in groundwater are likely the result of entrained sediment in groundwater derived from historic fill.

6.0 LIMITATIONS

This report was prepared expressly for Bay Crane Service of New York, for the property located at 57-00, 57-05, 57-57 and 58-20 47th Street, in Maspeth, Queens, New York, and for the objectives defined herein. Langan cannot assume responsibility for the use of this report for any property other than the specific site addressed in this report, or by any third party without specific written authorization from Langan.

The conclusions and opinions provided in this report are based on subsurface conditions ascertained from the analysis of a limited number of samples. Actual conditions encountered may differ substantially from those presented herein and should be brought to our attention whereby we may determine how such changes may affect our conclusions and opinions.

TABLES

Table 1
Phase II Environmental Site Investigation
Sample Summary

57-00, 57-05, 57-57 and 58-20 47th Street
Maspeth, Queens, New York
Langan Project No. 170686701

No.	Sample Location	Sample ID	Sample Date/Time	Sample Collection Depth (feet bgs)	Sampling Rationale	Sample Analyses
SOIL						
1	SB01	SB01_10-11	7/7/2021	10 to 11	interval of greatest impact	TCL/Part 375 VOCs & SVOCs, PCBs, Pesticides and TAL/Part 375 Metals (including cyanide and hexavalent and trivalent chromium)
2	SB02	SB02_17-18	7/8/2021	17 to 18	interval of greatest impact	
3	SB03	SB03_2-3	7/7/2021	2 to 3	historic fill	
4	SB04	SB04_8-9	7/8/2021	8 to 9	interval of greatest impact	
5	SB05	SB05_1-2	7/8/2021	1 to 2	historic fill	
6	SB06	SB06_2-3	7/8/2021	2 to 3	historic fill	
7	SB07	SB07_8-9	7/7/2021	8 to 9	historic fill	
8	SB08	SB08_1-2	7/721	1 to 2	historic fill	
9	SB09	SB09_13-14	7/7/2021	13 to 14	historic fill	
10	SB10	SB10_3-4	7/7/2021	3 to 4	historic fill	
11	SB11	SB11_13-14	7/721	13 to 14	historic fill	
GROUNDWATER						
1	MW01	MW01_070821	7/8/2021	Center of water column	Groundwater	TCL VOCs, SVOCs, PCBs, and TAL Metals (total and dissolved [field filtered])
2	MW02	MW02_070921	7/9/2021			
3	MW03	MW03_070921	7/9/2021			
4	MW04	MW04_070921	7/9/2021			
QA/QC						
	N/A	SOFB01_042820	4/28/2020	N/A	Field Blank	TCL/Part 375 VOCs & SVOCs, PCBs, Pesticides and TAL/Part 375 Metals (including cyanide and hexavalent and trivalent chromium)
	N/A	GWFB01_043020	4/30/2020		Field Blank	TCL VOCs, SVOCs, PCBs, and TAL Metals

Notes:
1. Sample depth intervals were determined in the field.
2. 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.
3. VOC = volatile organic compound
4. SVOC = semivolatile organic compound
5. PCB = polychlorinated biphenyl
6. N/A = Not Applicable
7. TCL = Target Compound List
8. TAL = Target Analyte List
9. QA/QC = quality assurance/quality control

Table 2
Phase II Environmental Site Investigation
Soil Sample Analytical Results Summary

57-00, 57-05, 57-57 and 58-20 47th Street
Maspeth, Queens, New York
Langan Project No.: 17068701

Location			SB01		SB02		SB03		SB04		SB05		SB06		SB07		SB08		SB09		SB10		SB11	
Sample ID	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	SB01_10-11		SB02_17-18		SB03_2-3		SB04_8-9		SB05_1-2		SB06_2-3		SB07_8-9		SB08_1-2		SB09_13-14		SB10_3-4		SB11_13-14	
Laboratory ID			21G0279-01		21G0351-01		21G0279-02		21G0351-02		21G0351-03		21G0351-04		21G0279-06		21G0351-05		21G0279-03		21G0279-04		21G0279-05	
Sample Date			7/7/2021		7/8/2021		7/7/2021		7/8/2021		7/8/2021		7/8/2021		7/7/2021		7/8/2021		7/7/2021		7/7/2021		7/7/2021	
Sample Depth (feet bgs)			10-11		17-18		2-3		8-9		1-2		2-3		8-9		1-2		13-14		3-4		13-14	
Volatile Organic Compounds (mg/kg)																								
1,2,4-Trimethylbenzene	190	380	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.027		0.0055		0.0033	U	0.0041	U	0.41	U
1,3,5-Trimethylbenzene (Mesitylene)	190	380	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.025		0.004	J	0.0033	U	0.0041	U	0.41	U
Acetone	500	1,000	0.0041	U	2.5	U	0.023		0.38	U	0.0054	U	0.0048	U	0.029		0.22	E	0.025		0.031		1.2	JD
Bromomethane	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.022	B	0.41	U
Carbon Disulfide	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0022	J	0.0025	U	0.0036	J	0.0059	J	0.41	U
Chloromethane	~	~	0.0021	U	1.2	U	0.0029	U	0.34	JBD	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.029	B	0.77	JBD
Isopropylbenzene (Cumene)	~	~	0.022		1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.0041	U	0.41	U
Methyl Acetate	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.0041	U	1.8	D
Methyl Ethyl Ketone (2-Butanone)	500	1,000	0.0021	U	1.2	U	0.0029	U	0.2	JD	0.0027	U	0.0024	U	0.007		0.016		0.0071		0.0041	U	0.78	JD
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0037	J	0.0033	U	0.0041	U	0.41	U
Methylcyclohexane	~	~	0.0021	U	450	D	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.0041	U	0.41	U
n-Butylbenzene	500	1,000	0.027		1.2	U	0.0029	U	0.26	JD	0.0027	U	0.0024	U	0.0022	J	0.0025	U	0.0033	U	0.0041	U	2.1	D
n-Propylbenzene	500	1,000	0.039		1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0029	J	0.0025	U	0.0033	U	0.0041	U	0.41	U
o-Xylene (1,2-Dimethylbenzene)	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0034	J	0.0033	U	0.0041	U	0.41	U
p-Cymene (p-Isopropyltoluene)	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0068		0.005	J	0.0033	U	0.0041	U	0.41	U
Sec-Butylbenzene	500	1,000	0.035		1.2	U	0.0029	U	0.2	JD	0.0027	U	0.0024	U	0.0041	J	0.0025	U	0.0033	U	0.0041	U	0.41	U
Tert-Butyl Alcohol	~	~	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0025	U	0.0033	U	0.058		0.41	U
Toluene	500	1,000	0.0021	U	1.2	U	0.0029	U	0.19	U	0.0027	U	0.0024	U	0.0021	U	0.0059		0.0033	U	0.0063	J	0.41	U
Semivolatile Organic Compounds (mg/kg)																								
2-Methylnaphthalene	~	~	0.0482	U	0.0504	U	0.0522	JD	0.138	D	0.0427	U	0.0434	U	1.73	D	1.23	D	0.0597	U	0.234	D	0.724	D
3 & 4 Methylphenol (m&p Cresol)	500	1,000	0.0482	U	0.0504	U	0.0467	U	0.0453	U	0.0427	U	0.0434	U	0.226	U	0.0484	U	0.0597	U	0.0457	U	0.197	D
Acenaphthene	500	1,000	0.0482	U	0.451	D	0.101	D	0.0453	U	0.0427	U	0.0434	U	11.6	D	0.0796	JD	0.0597	U	0.0457	U	2.42	D
Acenaphthylene	500	1,000	0.0482	U	0.0504	U	0.116	D	0.0453	U	0.0427	U	0.0434	U	0.692	D	0.0788	JD	0.0597	U	0.0457	U	0.0689	U
Anthracene	500	1,000	0.132	D	0.0504	U	0.335	D	0.0809	JD	0.0427	U	0.0434	U	42.4	D	0.161	D	0.0597	U	0.556	D	3.96	D
Benzo(a)anthracene	5.6	11	0.0482	U	0.0504	U	1.03	D	0.128	D	0.0427	U	0.0434	U	**64.8**	D	0.43	D	0.0597	U	0.304	D	5.55	D
Benzo(a)pyrene	1	1.1	0.0482	U	0.0504	U	**1.08**	D	0.149	D	0.0427	U	0.0434	U	**47.1**	D	0.412	D	0.0597	U	0.23	D	**3.84**	D
Benzo(b)fluoranthene	5.6	11	0.0482	U	0.0504	U	0.886	D	0.118	D	0.0427	U	0.0434	U	**39.2**	D	0.334	D	0.0597	U	0.375	D	3.1	D
Benzo(g,h,i)Perylene	500	1,000	0.0482	U	0.0504	U	0.734	D	0.0968	D	0.0427	U	0.0434	U	22.9	D	0.226	D	0.0597	U	0.216	D	1.81	D
Benzo(k)fluoranthene	56	110	0.0482	U	0.0504	U	0.741	D	0.121	D	0.0427	U	0.0434	U	35.8	D	0.348	D	0.0597	U	0.166	D	2.69	D
Biphenyl (Diphenyl)	~	~	0.0482	U	0.0504	U	0.0467	U	0.0453	U	0.0427	U	0.0434	U	0.764	D	0.0484	U	0.0597	U	0.0457	U	0.204	D
Bis(2-ethylhexyl) phthalate	~	~	0.0482	U	0.0504	U	0.132	D	0.0453	U	0.0427	U	0.0434	U	0.226	U	0.0484	U	0.0597	U	0.0457	U	0.0689	U
Carbazole	~	~	0.0482	U	0.0504	U	0.0999	D	0.0453	U	0.0427	U	0.0434	U	5.05	D	0.0602	JD	0.0597	U	0.0457	U	2.43	D
Chrysene	56	110	0.0482	U	0.0504	U	0.995	D	0.132	D	0.0427	U	0.0434	U	**65.2**	D	0.412	D	0.0597	U	0.738	D	4.17	D
Dibenz(a,h)anthracene	0.56	1.1	0.0482	U	0.0504	U	0.254	D	0.0453	U	0.0427	U	0.0434	U	**9.53**	D	0.0827	JD	0.0597	U	0.1	D	**0.748**	D
Dibenzofuran	350	1,000	0.0482	U	0.0504	U	0.0731	JD	0.0453	U	0.0427	U	0.0434	U	6.6	D	0.0484	U	0.0597	U	0.0481	JD	1.6	D
Fluoranthene	500	1,000	0.0991	D	0.0504	U	1.86	D	0.242	D	0.0427	U	0.0434	U	128	D	0.838	D	0.0597	U	0.417	D	12.1	D
Fluorene	500	1,000	0.316	D	0.0504	U	0.151	D	0.0643	JD	0.0427	U	0.0434	U	18.9	D	0.0484	U	0.0597	U	0.119	D	2.57	D
Indeno(1,2,3-cd)pyrene	5.6	11	0.0482	U	0.0504	U	0.794	D	0.0817	JD	0.0427	U	0.0434	U	**26.7**	D	0.216	D	0.0597	U	0.19	D	2.25	D
Naphthalene	500	1,000	0.0922	JD	0.0504	U	0.0835	JD	0.127	D	0.0427	U	0.0434	U	1.41	D	0.308	D	0.0597	U	0.292	D	1.12	D
Phenanthrene	500	1,000	0.703	D	0.0901	JD	1.12	D	0.23	D	0.0427	U	0.0434	U	170	D	0.547	D	0.0597	U	0.561	D	16.1	D
Pyrene	500	1,000	0.21	D	0.0504	U	1.78	D	0.265	D	0.0427	U	0.0434	U	122	D	0.745	D	0.0597	U	0.398	D	10.7	D
Pesticides (mg/kg)																								
4,4'-DDD	92	180	0.0019	U	0.00197	U	0.00188	U	0.00178	U	0.00168	U	0.00175	U	0.00994	D	0.00192	U	0.00236	U	0.0018	U	0.00272	U
4,4'-DDE	62	120	0.0019	U	0.00197	U	0.00188	U	0.00178	U	0.00168	U	0.00175	U	0.00853	D	0.00192	U	0.00236	U	0.0018	U	0.00272	U
Polychlorinated Biphenyls (mg/kg)																								
PCB-1254 (Aroclor 1254)	~	~	0.0192	U	0.0198	U	0.0884		0.0179	U	0.0169	U	0.0176	U	0.0176	U	0.0367		0.0238	U	0.0182	U	0.0275	U
PCB-1260 (Aroclor 1260)	~	~	0.0192	U	0.0198	U	0.0189	U	0.0179	U	0.0169	U	0.0176	U	0.0184		0.0194	U	0.0238	U	0.0182	U	0.0275	U
Total PCBs	1	25	0.0192	U	0.0198	U	0.0884		0.0179	U	0.0169	U	0.0176	U	0.0184		0.0367		0.0238	U	0.0182	U	0.0275	U
Inorganics (mg/kg)																								
Aluminum	~	~	7,920		3,110		8,800		6,520		3,870		6,350		801		9,460		11,100		5,590		12,400	
Arsenic	16	16	2.92		1.82	U	6.54		1.63	U	1.56	U	2.31		12.4		5.74		14.1		**27.6**		10.3	
Barium	400	10,000	126		18.8		137		50.9		34.6		31.7		36.9		99.8		190		119		223	
Beryllium	590	2,700	0.058	U	0.061	U	0.057	U	0.054	U	0.052	U	0.053	U	0.362		0.059	U	0.072	U	0.055	U	0.083	U
Cadmium	9.3	60	0.348	U	0.363	U	0.481		0.326	U	0.311	U	0.319	U	0.327	U	0.352	U	0.501		0.355		1.18	
Calcium	~	~	29,500		836	B	43,000		18,600	B	861	B	643	B	687		81,900	B	7,600		3,350		35,300	
Chromium, Total	~	~	21.5		6.79		19.7		22.2		9.94		14		5.15		31.5		21		10.2		46.2	
Chromium, Trivalent	1,500	6,800	21.5		6.79		19.7		22.2		9.94		14		5.15		31.5		21		10.2		46.2	
Cobalt	~	~	6.5		4.14		6.92		6.66		6.36		7.87		2.14		5.56		15.6		7.78		9.49	
Copper	270	10,000	41.8		6.47		46.2		29.8		12		11.4		11.7		37.4		33.6		110		149	
Iron	~	~	12,200		7,090		17,900		33,000		19,000		20,600		6,470		10,700		19,000		17,800		26,200	
Lead	1,000	3900	72.6		1.51		124		29.6		1.41		2.59		29.7		39.8		28		**1,840**		381	
Magnesium	~	~	7,170		1,210		5,190		2,910		1,360		1,590		106		8,190		930		696		4,760	
Manganese	10,000	10,000	265		80.1		299		535		478		521		10.1		268		92.1		69.6		373	
Mercury	2.8	5.7	0.0633		0.0363	U	0.272		0.0721		0.0311	U	0.0319	U	**5.33**		0.118		0.143		**2.97**		**4.22**	
Nickel	310	10,000	14.2		7.41		16.2		12.7		8.48		11.8		6.13		16.3		29.6		14.1		31.5	
Potassium	~	~	946		448		1,610		976		534		766		284		1,770		796		521		2,190	
Sodium	~	~	322		84.9		292		394		330		55		114		459		366		230		441	
Vanadium	~	~	19.1		10		24.1		40.5		18.6		22.6		7.6		26.3		30.6		15.4		38.1	
Zinc	10,000	10,000	95.3		14.9		147		55.3		12.2		42		13.9		93.9		211		151		646	
General Chemistry (%)																								
Solids, Percent	~	~	86.2		82.6		87.4		91.9		96.4		94.2		91.8		85.2		69.5		90.9		60.3	

Notes provided on Page 2.
Concentrations above Restricted Use Commercial SCOs are bolded.
Concentrations above Restricted Use Industrial SCOs are shaded.

Table 2
Phase II Environmental Site Investigation
Soil Sample Analytical Results Summary

57-00, 57-05, 57-57 and 58-20 47th Street
Maspeth, Queens, New York
Langan Project No.: 17068701

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 Restricted Use Commercial and Restricted Use Industrial Soil Cleanup Objectives (SCO).
2. Only detected analytes are shown in the table.
3. Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and 4-methylphenc (p-cresol).
4. Detected analytical results above Restricted Use Commercial are bolded.
5. Detected analytical results above Restricted Use Industrial SCOs are shaded.
6. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
7. ~ = Regulatory limit for this analyte does not exist
8. bgs = below grade surface
9. mg/kg = milligrams per kilogram
10. % = percent

Qualifiers:

D = The concentration reported is a result of a diluted sample.
E = The result is estimated and cannot be accurately reported due to levels encountered or interferences.
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.
B = The analyte was found in the associated analysis batch blank.

Table 3
Phase II Environmental Site Investigation
Groundwater Sample Analytical Results Summary

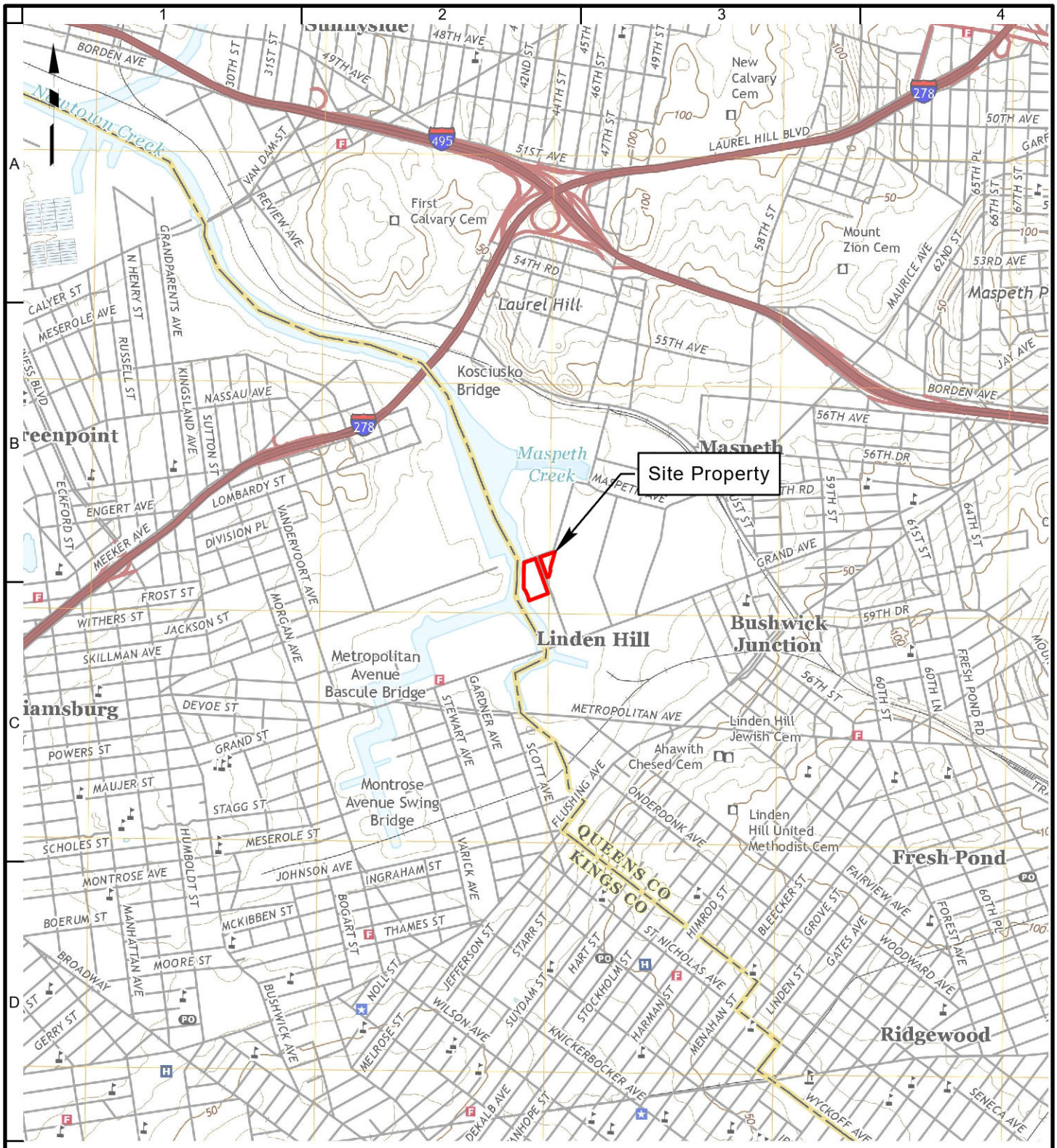
57-00, 57-05, 57-57 and 58-20 47th Street
Maspeth, Queens, New York
Langan Project No.: 17068701

Location		MW01		MW02		MW03		MW04	
Sample ID	NYSDEC	MW01_070821		MW02_070921		MW03_070921		MW04_070921	
Laboratory ID	SGVs	21G0351-06		21G0417-01		21G0417-02		21G0417-03	
Sample Date		7/8/2021		7/9/2021		7/9/2021		7/9/2021	
Volatile Organic Compounds (µg/L)									
1,2-Dichloropropane	1	0.2	U	**7**		0.2	U	0.2	U
2-Hexanone (MBK)	50	0.2	U	5.1		0.2	U	0.2	U
Acetone	50	1	J	1	U	3.5		10	
Benzene	1	0.2	U	0.48	J	0.2	U	0.2	U
Chloroform	7	0.87		0.2	U	0.2	U	0.2	U
Cyclohexane	~	0.2	U	91		0.2	U	0.5	
Isopropylbenzene (Cumene)	5	0.2	U	**5.1**		0.2	U	0.21	J
Methyl Ethyl Ketone (2-Butanone)	50	0.2	U	0.2	U	0.2	U	1.2	
Methylcyclohexane	~	0.2	U	380	D	0.44	J	0.2	U
n-Butylbenzene	5	0.2	U	0.28	J	0.2	U	0.62	
n-Propylbenzene	5	0.2	U	**6**		0.2	U	0.45	J
Sec-Butylbenzene	5	0.2	U	3.5		0.2	U	0.51	
T-Butylbenzene	5	0.27	J	0.92		0.2	U	0.53	
Tert-Butyl Methyl Ether	10	1.4		0.87		0.41	J	**73**	
Semivolatile Organic Compounds (µg/L)									
2-Methylnaphthalene	~	2.56	U	2.5	U	2.56	U	3.11	J
Acenaphthene	20	0.472		1.11		0.554		0.21	
Acenaphthylene	~	0.0513	U	0.05	U	0.215		0.05	
Anthracene	50	0.0513	U	0.11		0.677		0.13	
Benzo(a)anthracene	0.002	*0.0513*	U	*0.05*	U	**0.564**		*0.05*	U
Benzo(a)pyrene	0	*0.0513*	U	*0.05*	U	**0.523**		*0.05*	U
Benzo(b)fluoranthene	0.002	*0.0513*	U	*0.05*	U	**0.369**		*0.05*	U
Benzo(g,h,i)Perylene	~	0.0513	U	0.05	U	0.277		0.05	U
Benzo(k)fluoranthene	0.002	*0.0513*	U	*0.05*	U	**0.41**		*0.05*	U
Chrysene	0.002	*0.0513*	U	*0.05*	U	**0.523**		*0.05*	U
Dibenz(a,h)anthracene	~	0.0513	U	0.05	U	0.0923		0.05	U
Fluoranthene	50	0.0513	U	0.05	U	1.7		0.05	
Fluorene	50	0.0513	U	0.05	U	0.738		0.09	
Indeno(1,2,3-cd)pyrene	0.002	*0.0513*	U	*0.05*	U	**0.297**		*0.05*	U
Naphthalene	10	0.0615		0.09		0.246		1.57	
Phenanthrene	50	0.0718		0.12		1.81		0.49	
Pyrene	50	0.0513		0.05	U	1.11		0.06	
Polychlorinated Biphenyls (µg/L)	~	ND		ND		ND		ND	
Inorganics (µg/L)									
Aluminum	~	55.6	U	55.6	U	3,060		157	
Antimony	3	1.18		1.11	U	**4.34**		1.55	
Arsenic	25	7.51		1.11	U	**37.6**		1.12	
Arsenic (Dissolved)	25	7.34		1.11	U	22.2		1.48	
Barium	1,000	116		205		106		175	
Barium (Dissolved)	1,000	123		201		40.9		173	
Cadmium	5	0.556	U	0.556	U	3.01		0.556	U
Calcium	~	191,000		159,000		100,000		110,000	
Calcium (Dissolved)	~	191,000		157,000	B	95,000	B	109,000	B
Chromium, Total	50	5.56	U	5.56	U	14.3		5.56	U
Chromium, Trivalent	~	10	U	10	U	14.3		10	U
Copper	200	22.2	U	22.2	U	74.2		22.2	U
Iron	300	**11,100**		**9,260**		**10,800**		**7,420**	
Iron (Dissolved)	300	**11,400**		**8,810**		**5,740**		**7,370**	
Lead	25	5.56	U	5.56	U	**419**		5.56	U
Magnesium	35,000	**38,800**		33,800		3,290		22,700	
Magnesium (Dissolved)	35,000	**39,900**		34,400		2,570		23,300	
Manganese	300	**1,490**		**3,090**		126		**2,590**	
Manganese (Dissolved)	300	**1,560**		**3,100**		90.5		**2,560**	
Mercury	0.7	0.2		0.2	U	0.4		0.2	U
Potassium	~	22,300		20,500		102,000		9,400	
Potassium (Dissolved)	~	22,800		19,300	B	102,000	B	9,370	B
Selenium	10	1.11	U	1.11	U	1.88		1.11	
Selenium (Dissolved)	10	1.94		5.22		1.16		8.49	
Silver	50	5.56	U	6.74		5.56	U	5.56	U
Sodium	20,000	**79,400**		**67,100**		**95,400**		**110,000**	
Sodium (Dissolved)	20,000	**86,000**		**71,900**		**109,000**		**126,000**	
Zinc	2,000	27.8	U	27.8	U	228		27.8	U

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. ~ = Regulatory limit for this analyte does not exist
6. µg/l = micrograms per liter
7. ND = Not detected

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.
B = The analyte was found in the associated analysis batch blank.

FIGURES



Notes:
1. Basemap adapted from United States Geological Survey (USGS) 7.5-Minute Series Topographical Maps, Brooklyn, New York, Quadrangle, Dated 2019.

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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC

Collectively known as Langan

Project
57-00, 57-05, 57-57 AND 58-20 47th STREET
BLOCK Nos. 2601, 2602
LOT Nos. 1, 6, 68, 72
QUEENS NEW YORK

Figure Title
SITE PROPERTY LOCATION MAP

Project No. 170686701	Figure No. 1
Date 7/21/2021	
Scale 1"=2,000'	
Drawn By MG	
Submission Date	Sheet 1 of 3

100 0 100
SCALE IN FEET

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Project
57-00, 57-05, 57-57, and 58-20 47th Street
BLOCK Nos. 2601, 2602, 2603,
LOT Nos. 1, 6, 72, 68
QUEENS NEW YORK

Figure Title
SAMPLE LOCATION MAP

Project No. 170686701	Figure No. 2
Date 7/20/2021	
Scale 1"=100'	
Drawn By	Sheet 1 of 1

Path: \\langan.com\data\NYC\data7\170686701\Project Data\ArcGIS\APRX\170686701\170686701.aprx Date: 7/20/2021 User: ibaker Time: 2:32 PM

APPENDIX A
SITE PHOTOGRAPHS

Photograph 1: View of Eastern Environmental Solutions Inc. (Eastern) preparing to advance soil boring SB01 in the southeastern portion of the site (facing southwest)

Photograph 2: View Eastern advancing soil boring SB04 in the northeastern portion of the site (facing east)

Photograph 3: View of material observed in soil boring SB01, in the southeastern portion of the site (facing southwest)

Photograph 4. View of soil cores from SB04, in the northeastern part of the site (facing south).

Photograph 5: View of purged groundwater generated from development of temporary monitoring well MW02

Photograph 6: View of purged groundwater generated during low flow purging of temporary monitoring well MW02, prior to groundwater sample collection.

Photograph 7: View of Langan performing low flow purging prior to groundwater sample collection at temporary monitoring well MW04 (facing east)

Photograph 8: View of the final site restoration using Portland cement at soil boring SB04 (facing east)

APPENDIX B
GEOPHYSICAL SURVEY REPORT

GEOPHYSICAL ENGINEERING SURVEY REPORT

Industrial Site
58-20 47th Street,
Maspeth, Queens 11378

NOVA PROJECT NUMBER:
21-2307

DATED:
July 19, 2021

PREPARED FOR:

LANGAN

21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001-2727

PREPARED BY:

NOVA
GEOPHYSICAL
ENGINEERING
Subsurface Mapping Solutions
56-01 Marathon Parkway # 765
Douglaston, New York 11362
347-556-7787 (PHONE)
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NOVA GEOPHYSICAL SERVICES

SUBSURFACE MAPPING SOLUTIONS
56-01 Marathon Parkway #765, Douglaston, New York 11362
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July 16, 2021

Kimberly Semon, PE
Project Manager
LANGAN
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001-2727
Direct: 212.479.5486
Mobile: 631.338.2036
E: ksemon@langan.com

Re: Geophysical Engineering Survey (GES) Report
Industrial Site
58-20 47th Street,
Maspeth, Queens 11378

Dear Mrs. Semon,

Nova Geophysical Services (NOVA) is pleased to provide the findings of the geophysical engineering survey (GES) at the above referenced project site: 58-20 47th Street, Maspeth, Queens 11378 (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 July 7th, 2021.

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 transduce 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 interpolation.

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

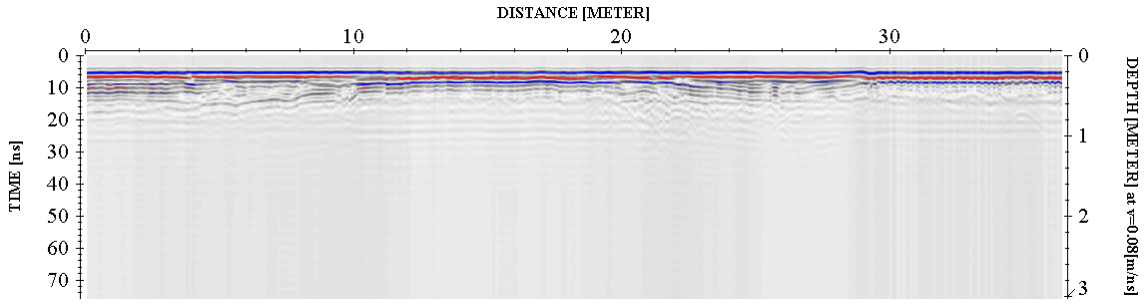
The project site was screened using GPR to search the specified area and inspected for reflections, which could be indicative of substructures and utilities within the subsurface. An EM utility locator was used to help determine the locations of utilities within the survey area.

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.

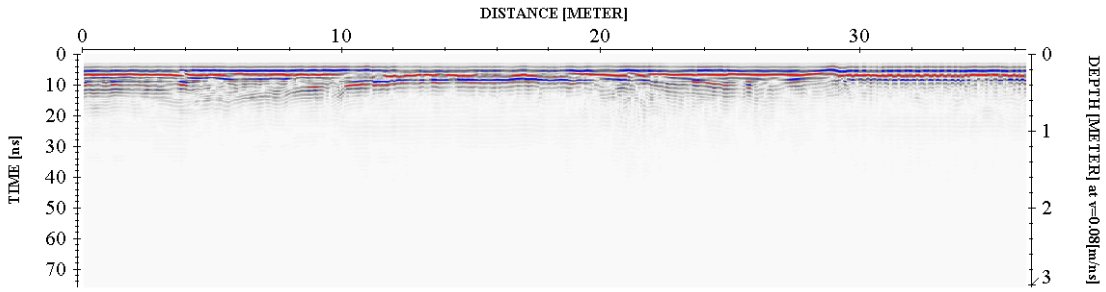
DATA PROCESSING

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.

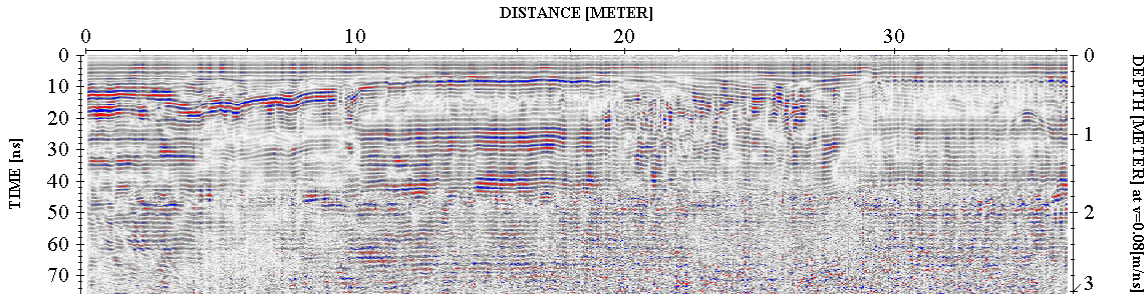
Step 1. Import Raw RAMAC data to standard processing format



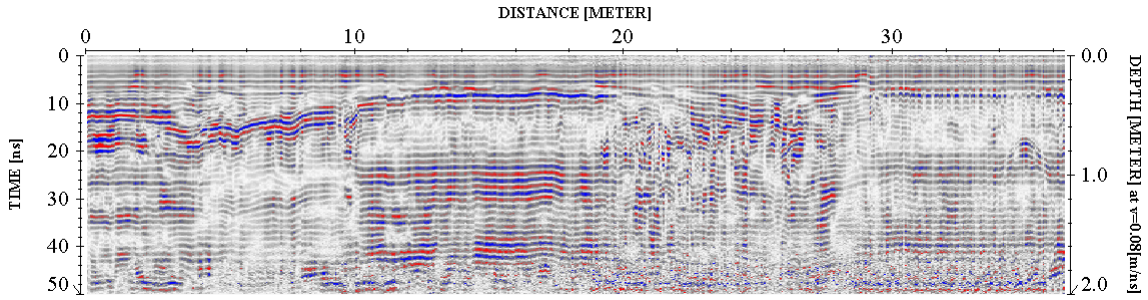
Step 2. Remove instrument noise *(dewow)*



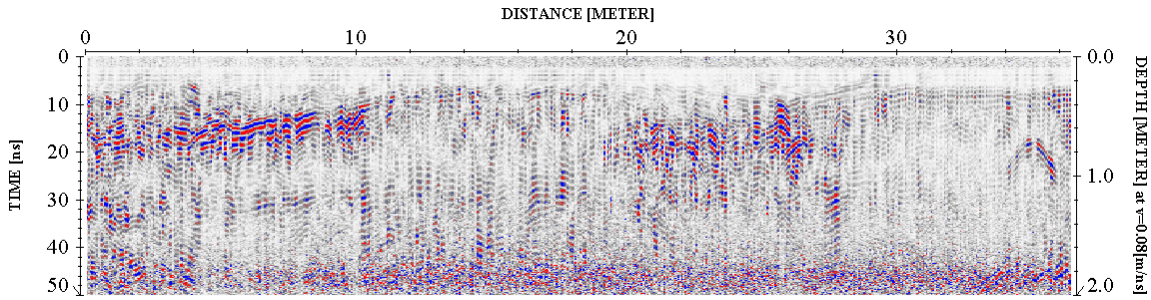
Step 3. Correct for attenuation losses *(energy decay function)*



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: 95° F

Surface: Concrete, Gravel,

Survey Parameters: A GPR grid scan was conducted within the survey areas as shown on the survey plan. The approximate line spacing of the grid survey was approximately 6'. Additional GPR data was collected over features of interest and in the vicinity of proposed boring locations. An EM utility locator was used in conjunction with the GPR throughout the surveyed areas.

Limitations: The geophysical noise level at the site was high due to being located in an urban environment, reinforced concrete within the surveyed areas and the presence of gravel.

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, electric, drainage, telecom, and gas) along with related structures (such as an oil water separator and drains) were identified during the GES. The approximate locations are shown in the survey plan.
- NOVA identified a suspected aboveground storage tank (AST) vault (AST removed prior to GES). A second AST was also identified within the survey area. Two additional sets of vent pipe and fill port were identified and are suspected to be related to two previously removed ASTs. Shown in the survey plan.
- Two large geophysical anomalies resembling potential underground storage tank (UST) graves along with associated lines were identified. Shown in the survey plan.
- All cleared proposed boring locations are shown in the survey plan.

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

Sincerely,

NOVA Geophysical Services

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

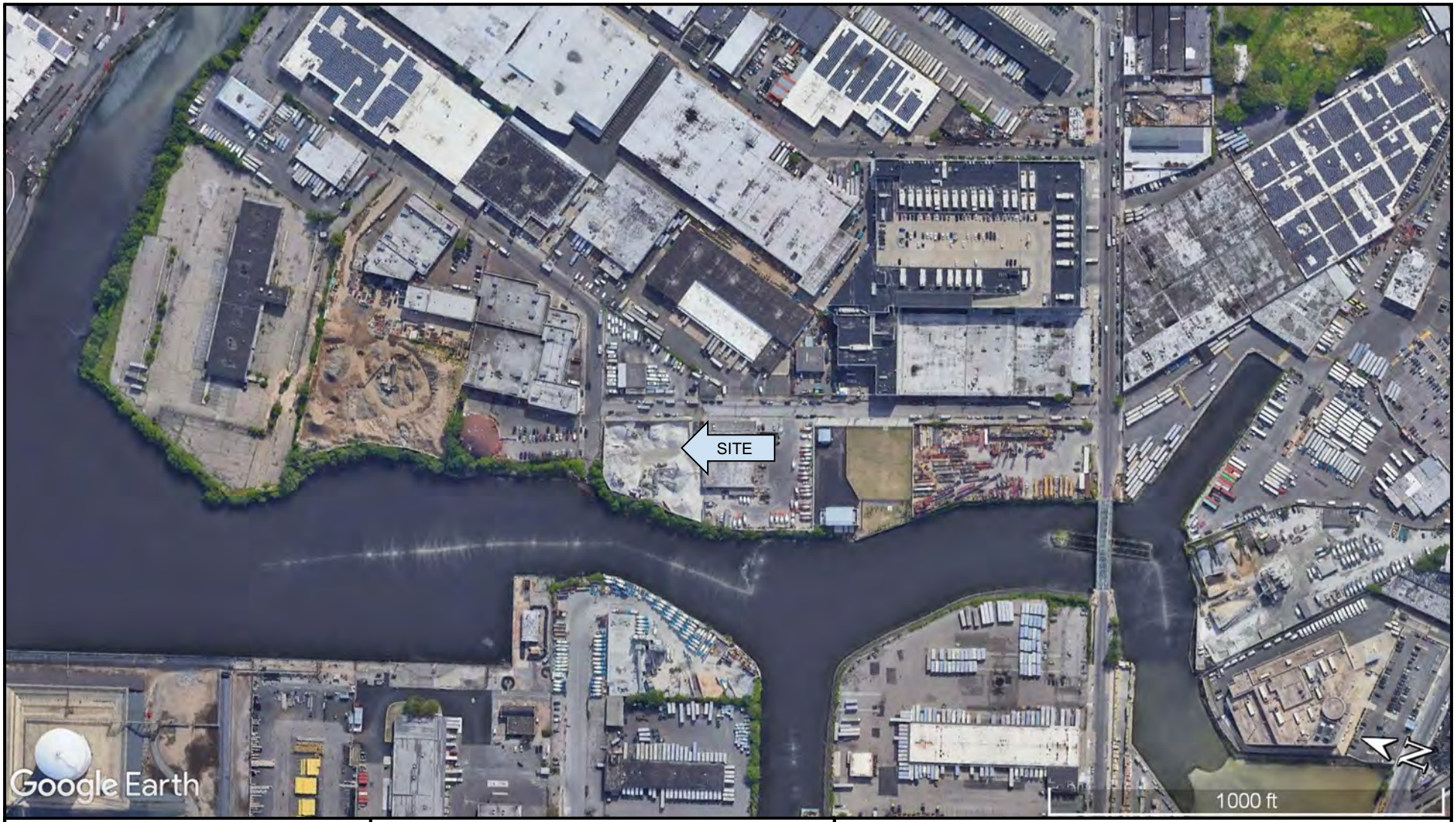
Project Engineer

Attachments:

Location Map

Survey Plan

Geophysical Images



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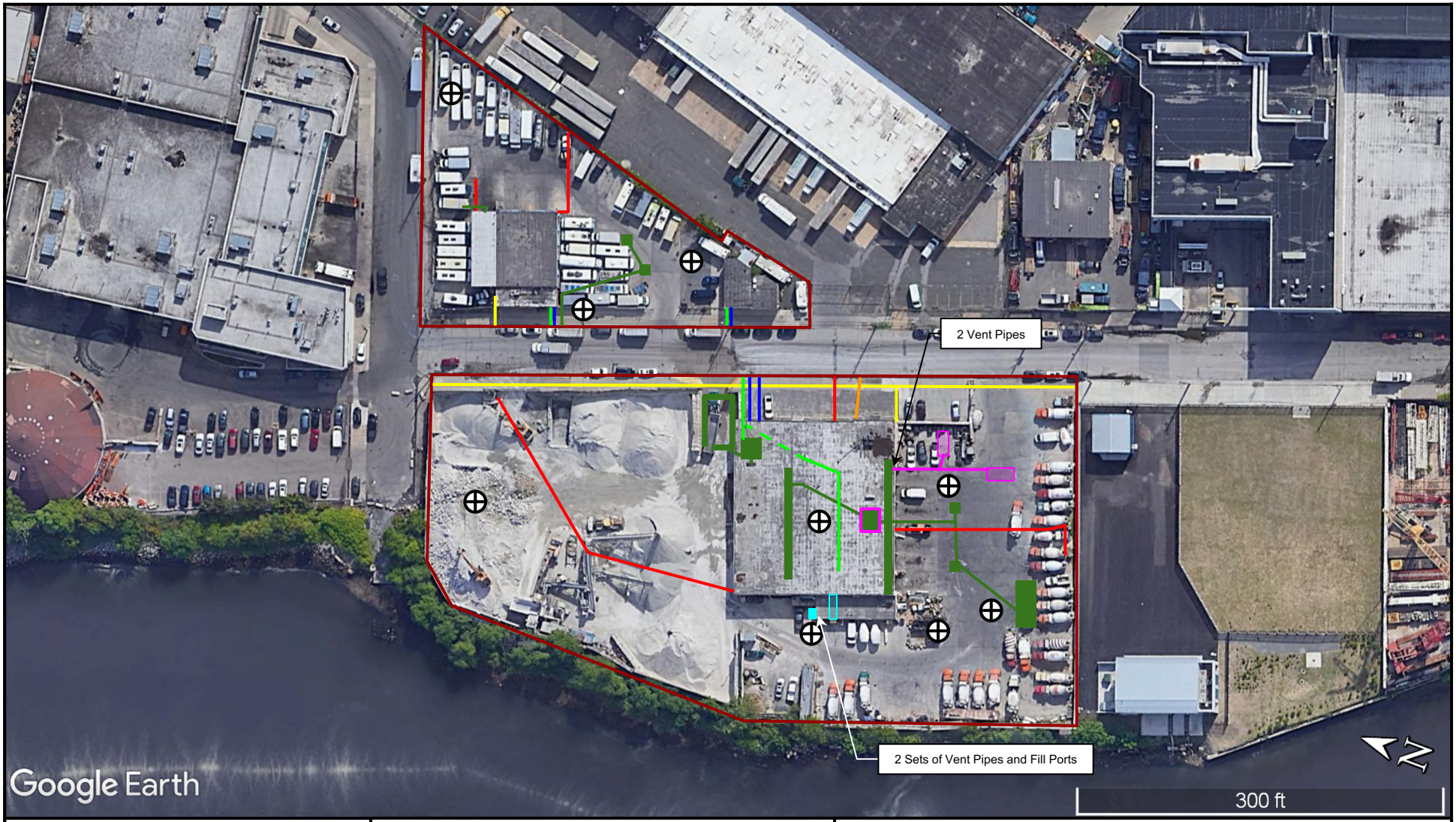
LOCATION MAP

SITE:	**Industrial Site** 58-20 47th Street , Maspeth, New York 11238
CLIENT:	Langan
DATE:	July 7th, 2021
AUTH:	Chris Steinley / Tolga Ybas

LEGEND



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SURVEY PLAN

SITE:	**Industrial Site** 58-20 47th Street , Maspeth, New York 11238
CLIENT:	Langan
DATE:	July 7th, 2021
AUTH:	Chris Steinley / Tolga Ybas

LEGEND

- Survey Area
- Sewer
- Water
- Gas
- Electric
- Telecom
- Oil-Water Separator
- Drainage Structure
- UST Grave
- AST Vault
- AST
- Drain
- ⊕ Proposed Boring

GEOPHYSICAL IMAGES

Industrial Site
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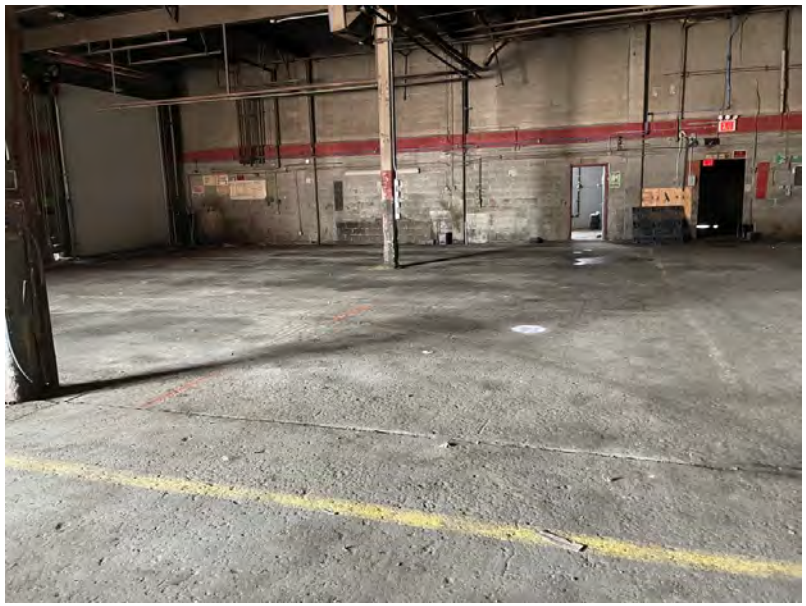

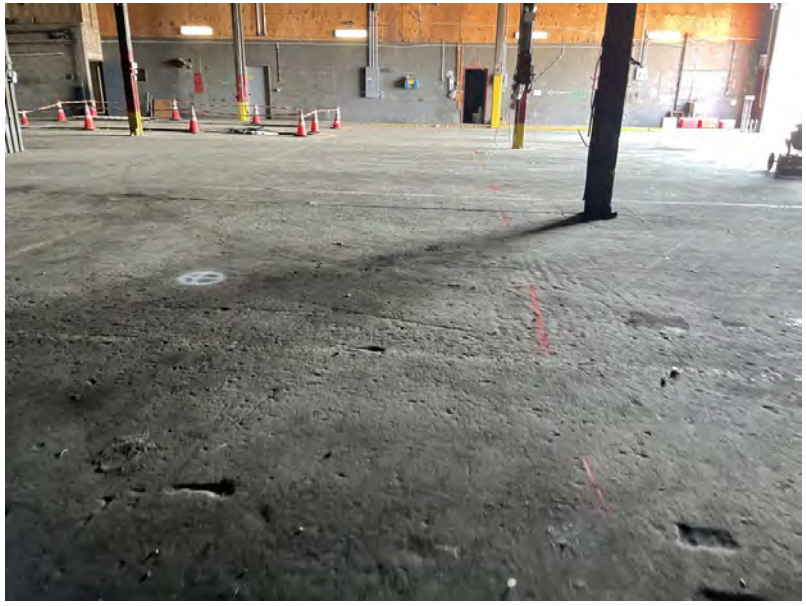

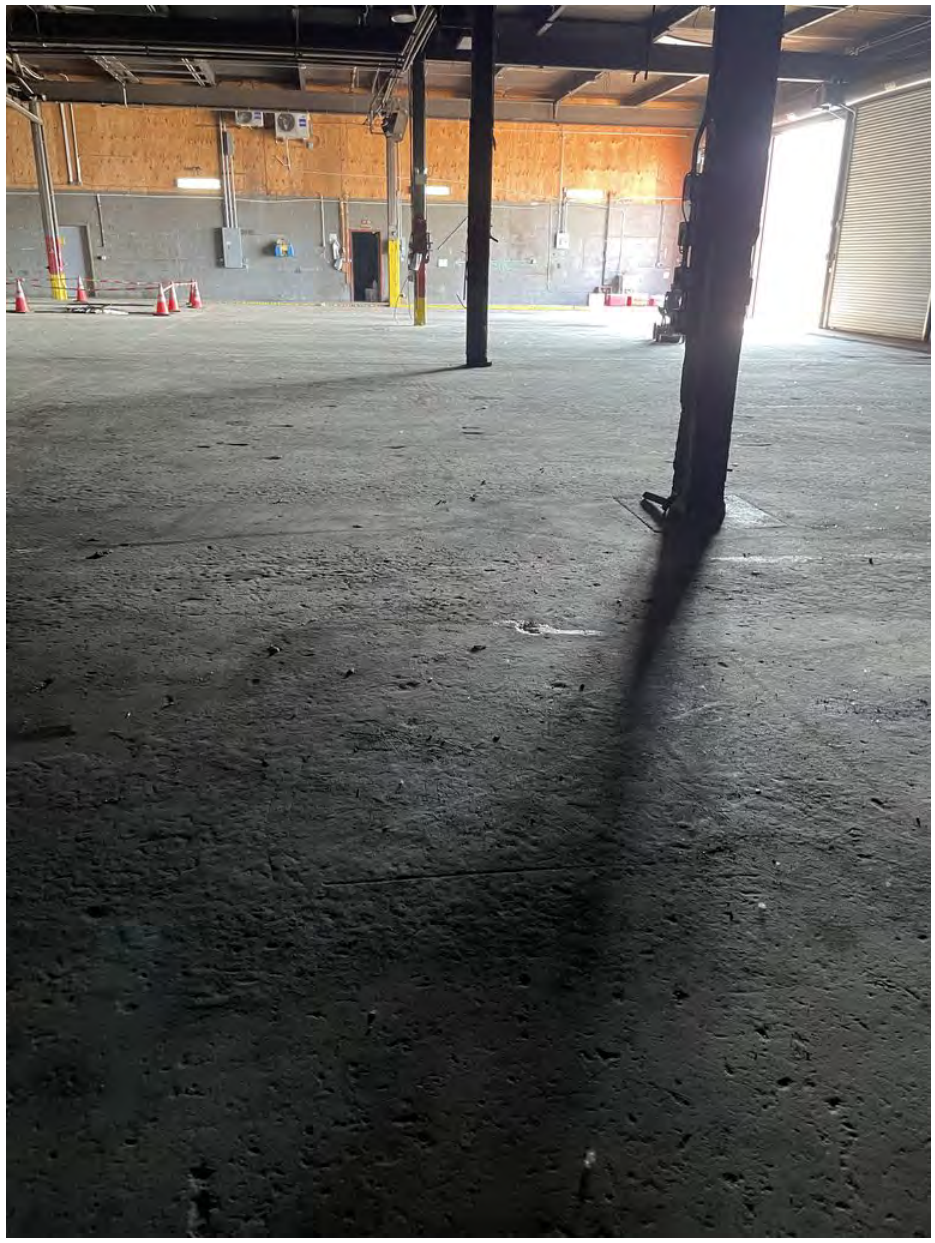

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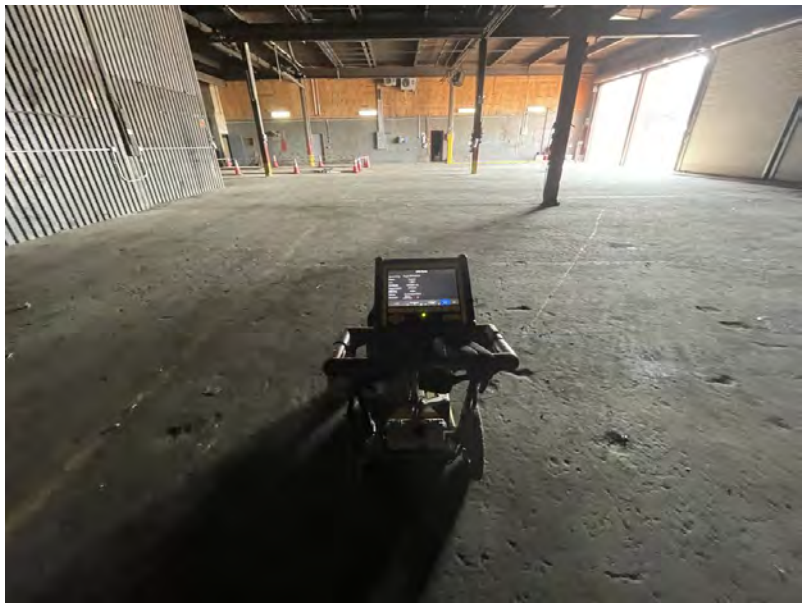

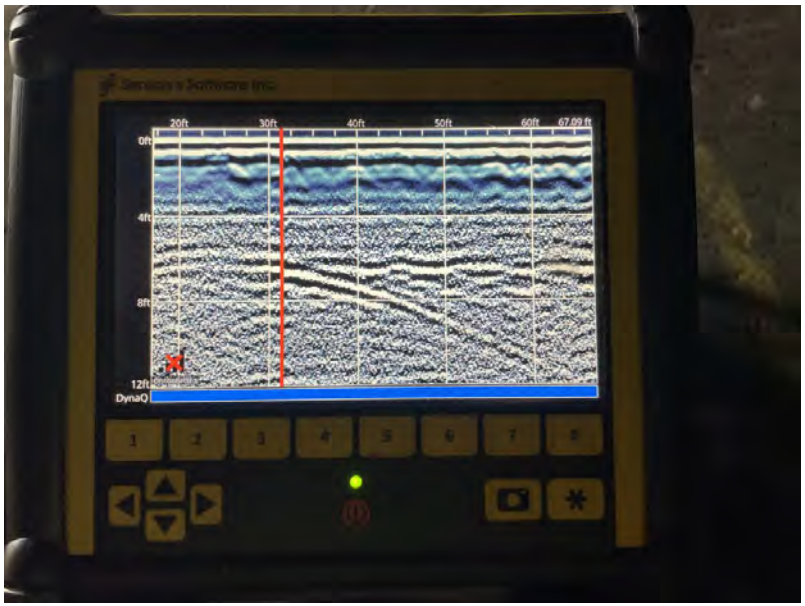

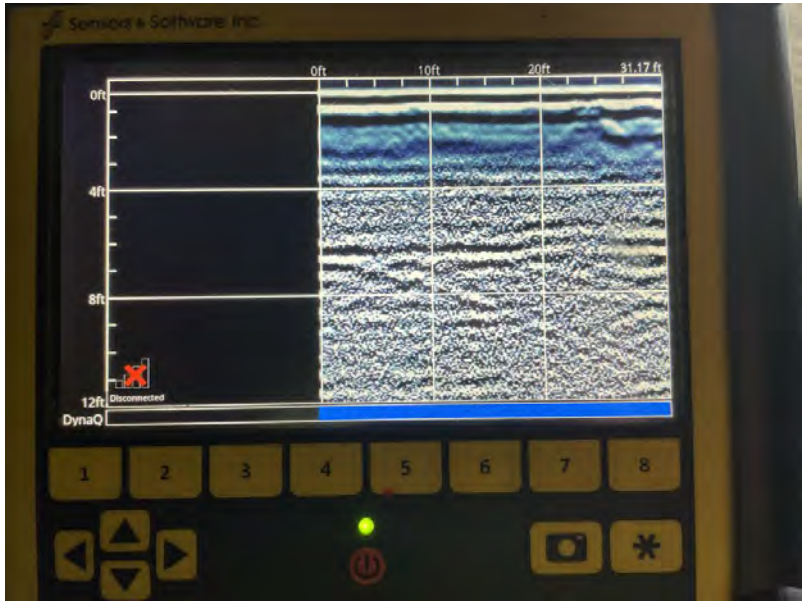

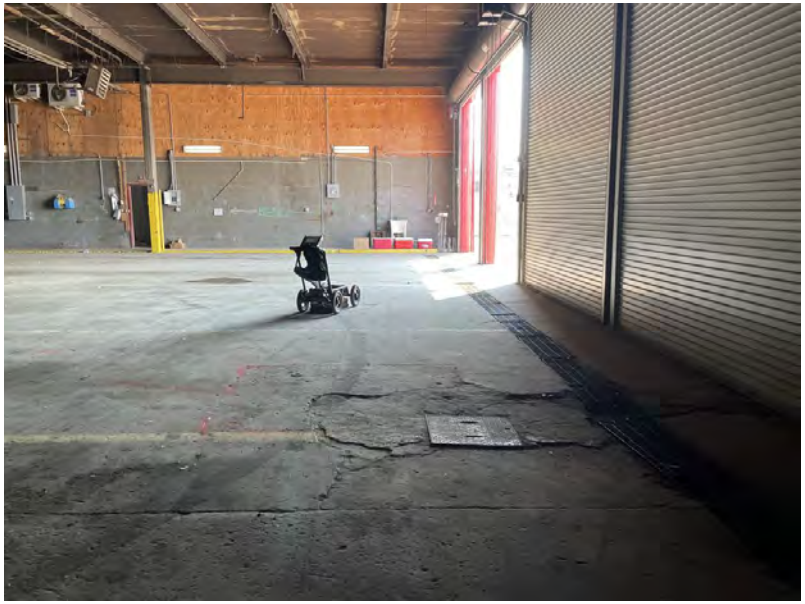

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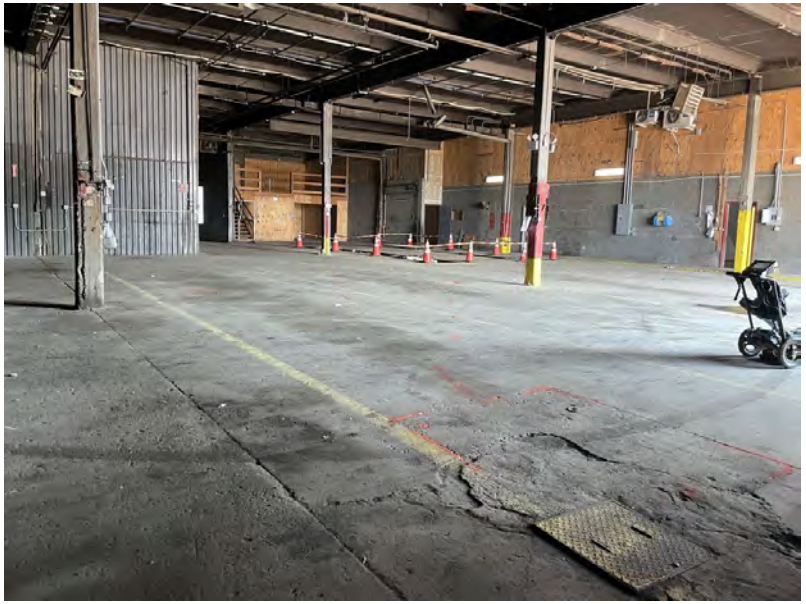

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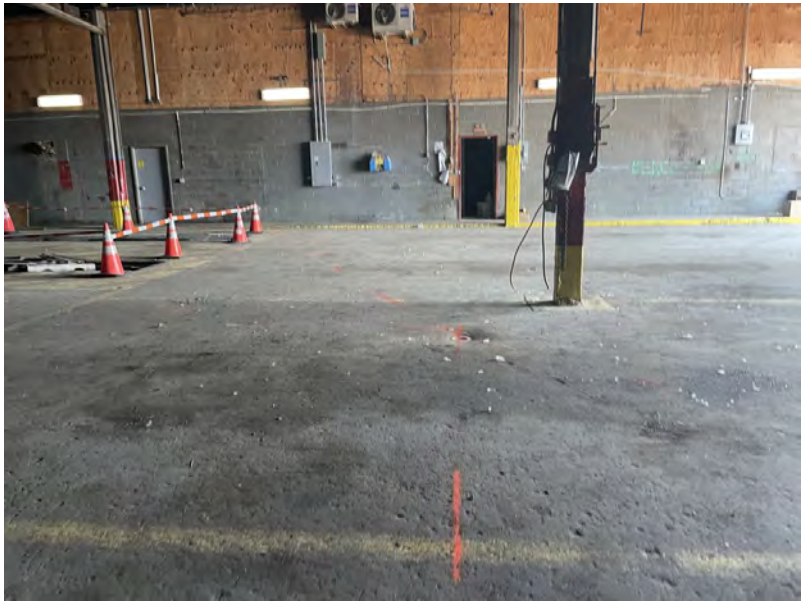

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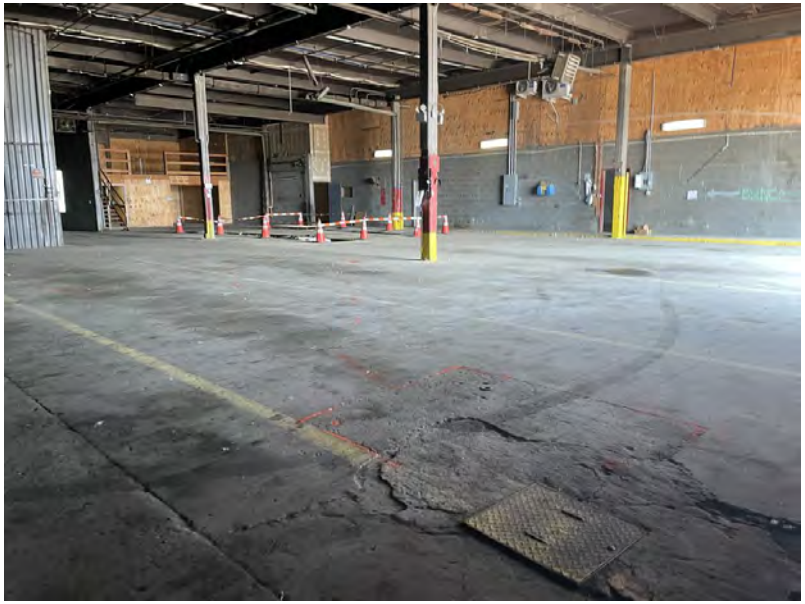

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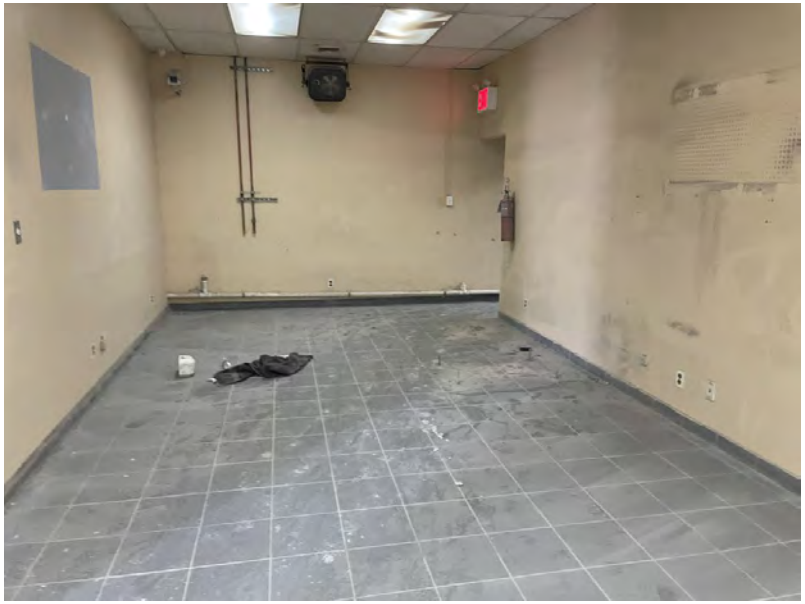

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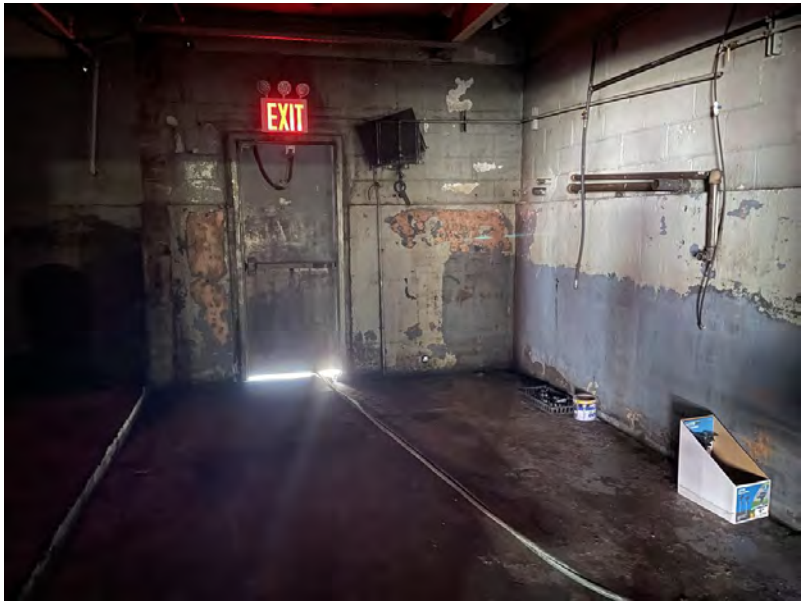

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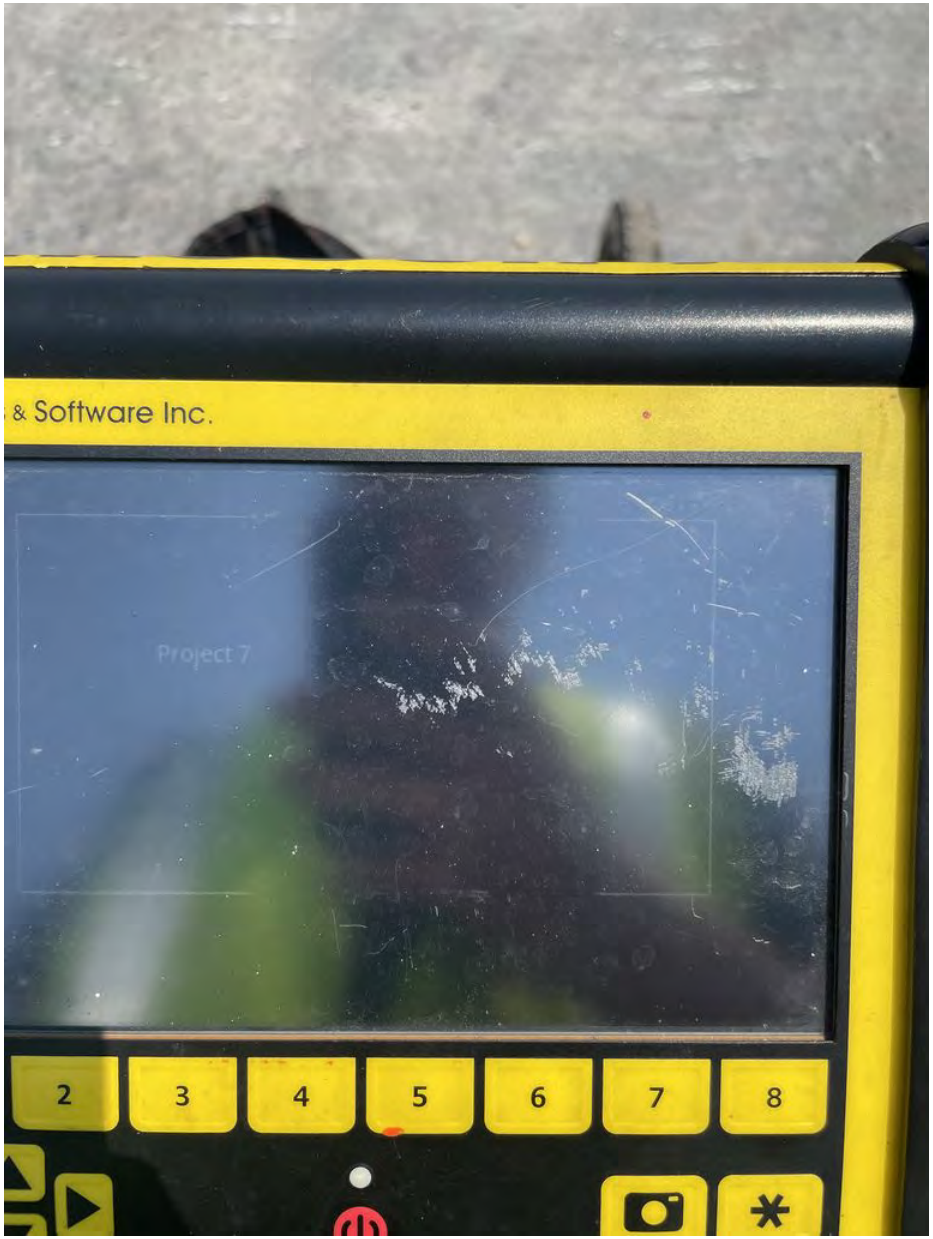

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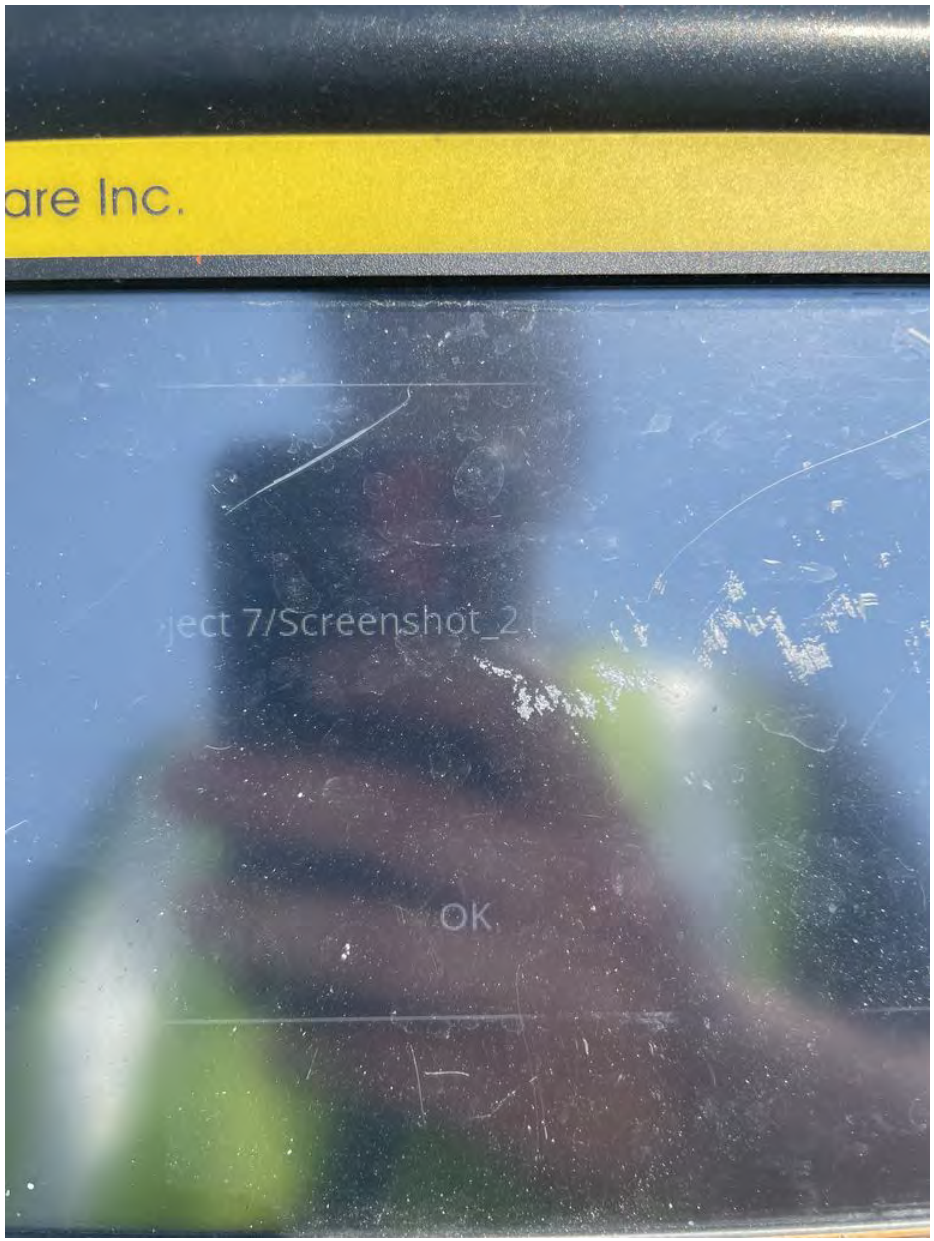

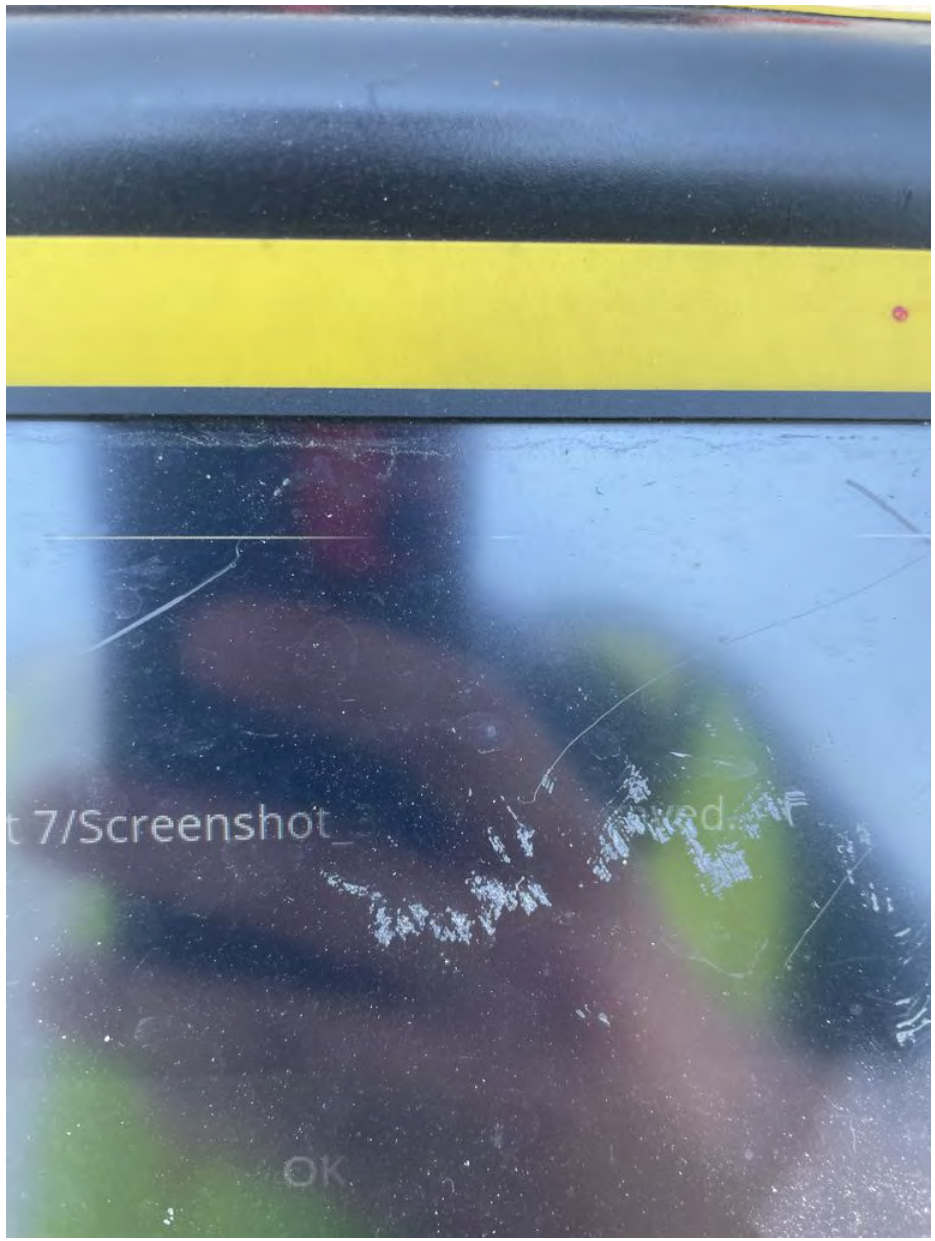

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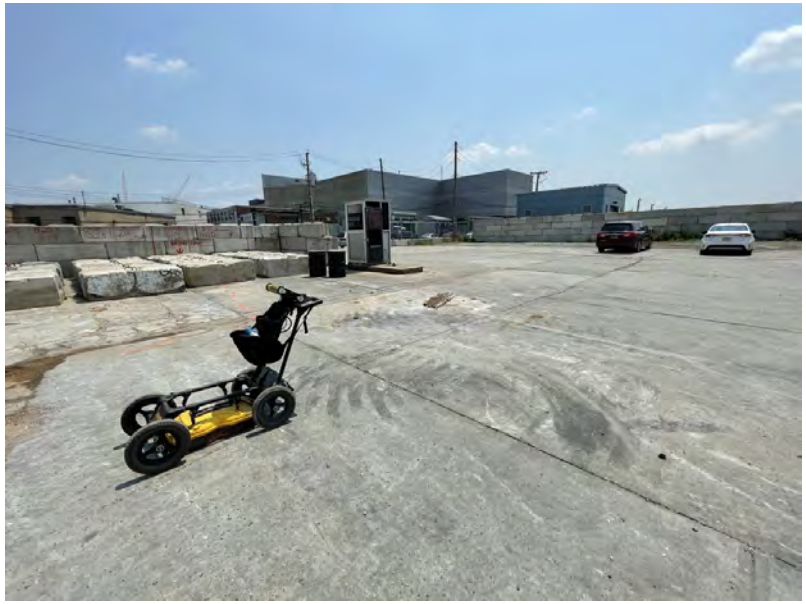

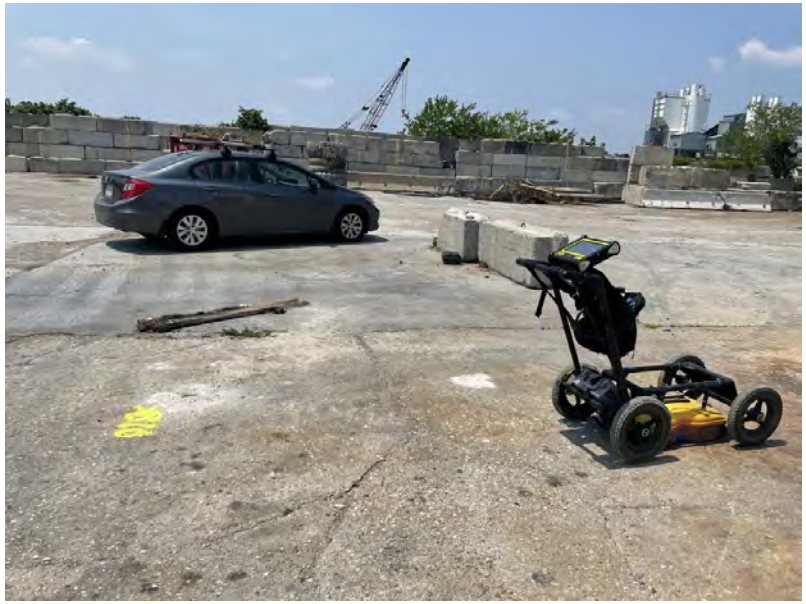

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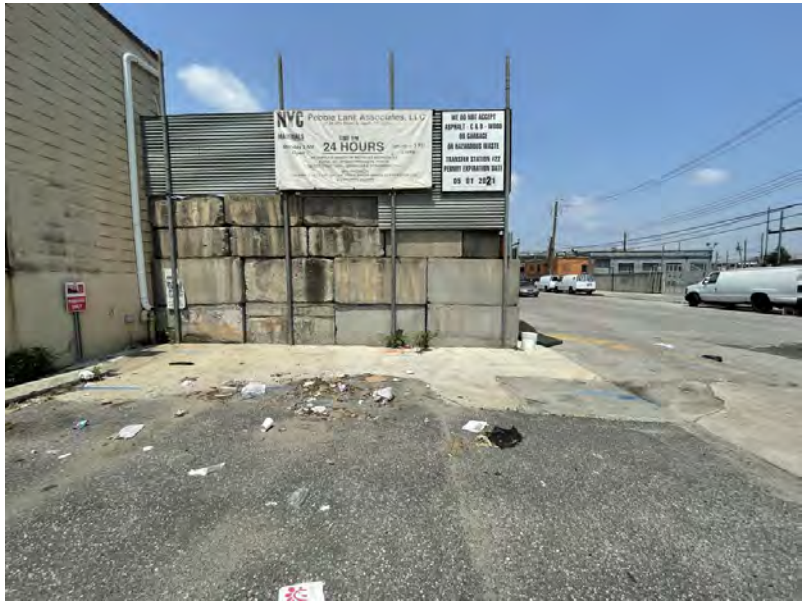

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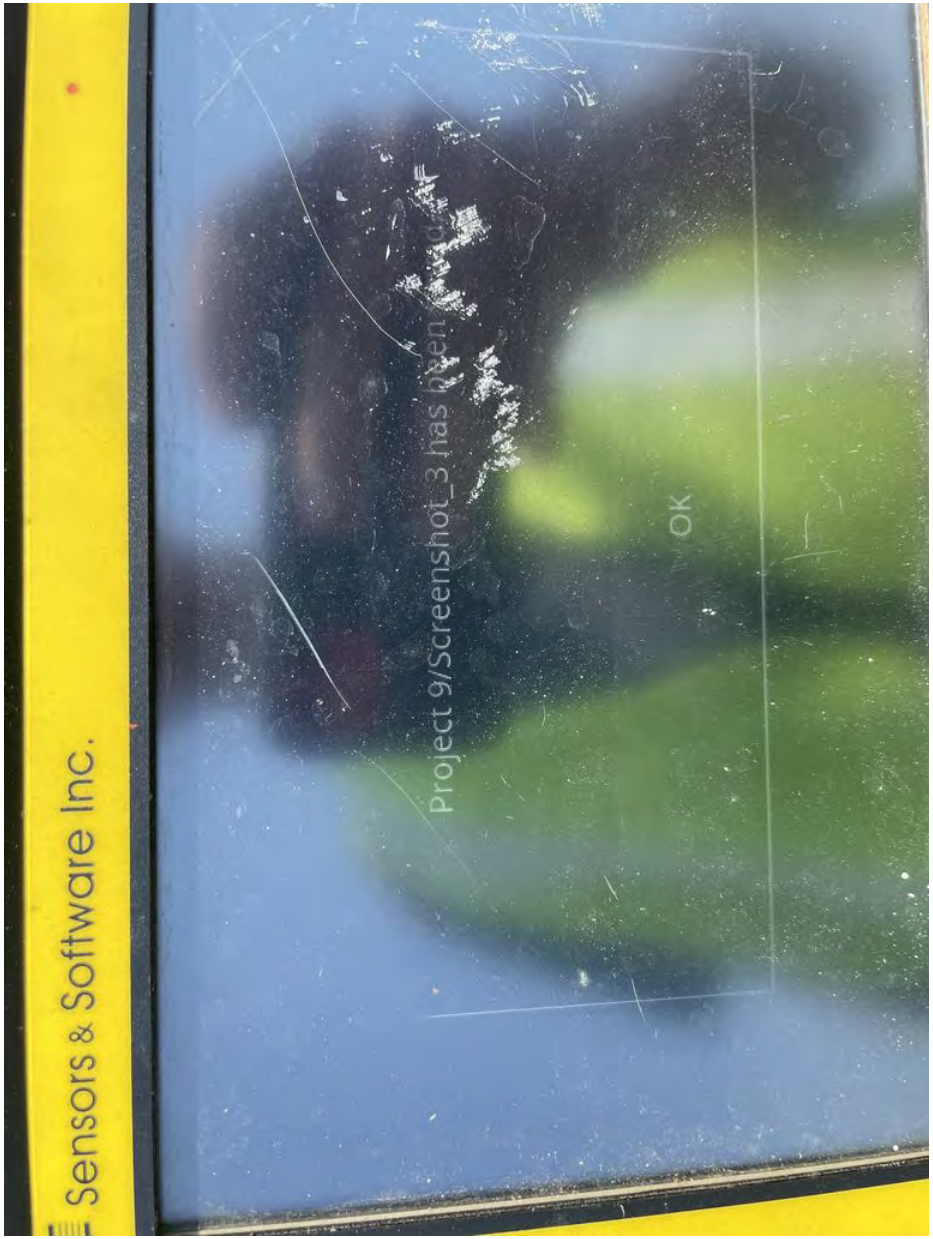

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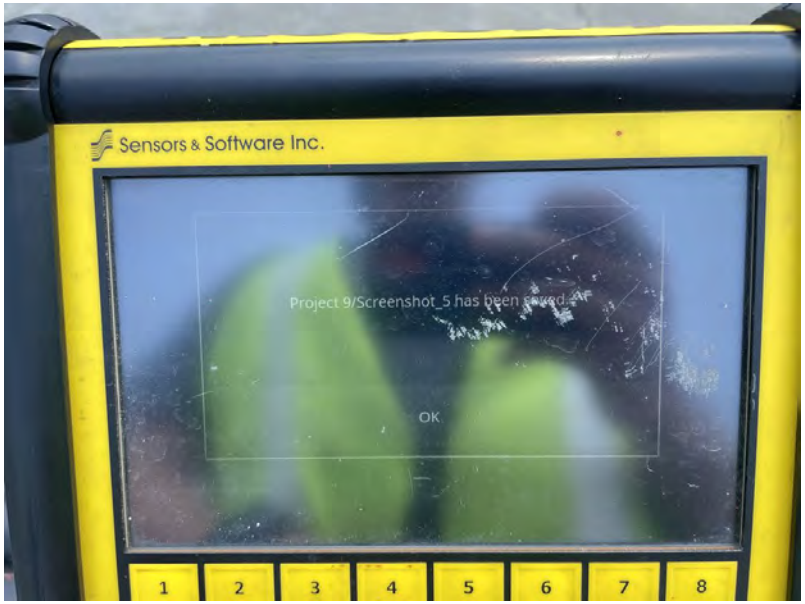

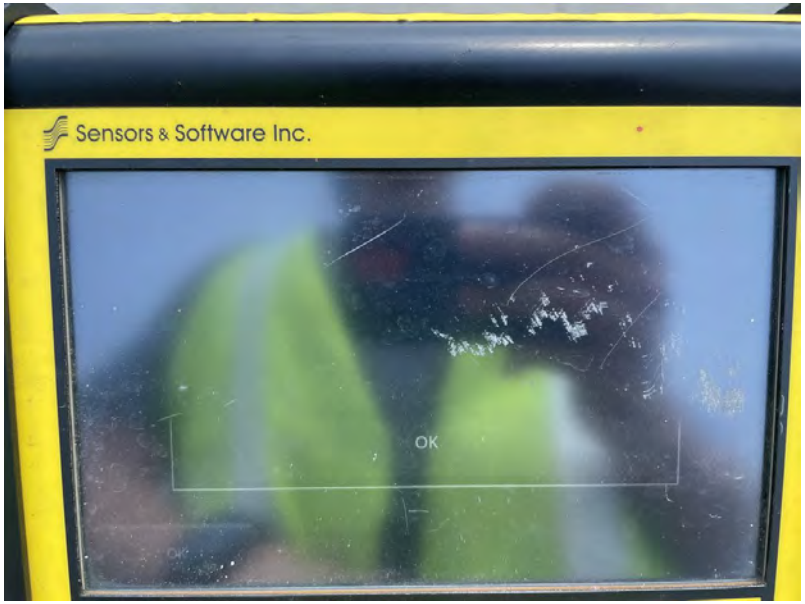

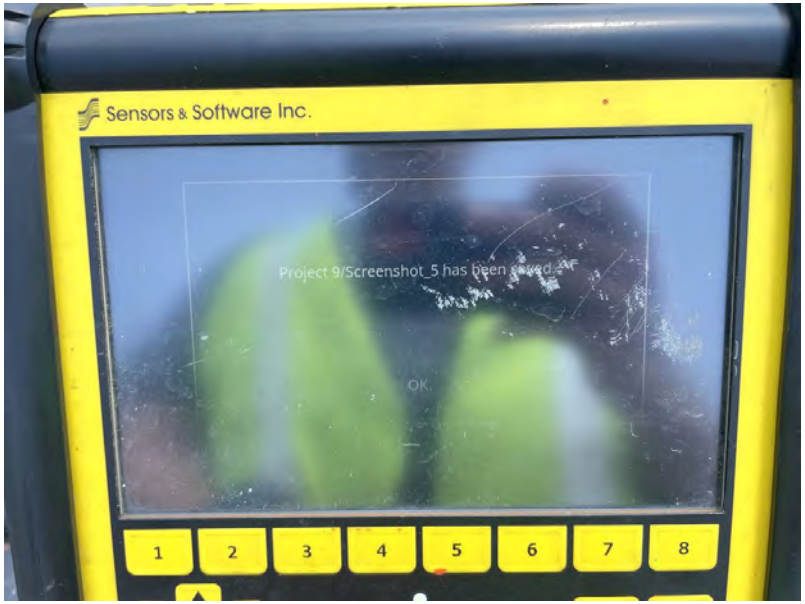

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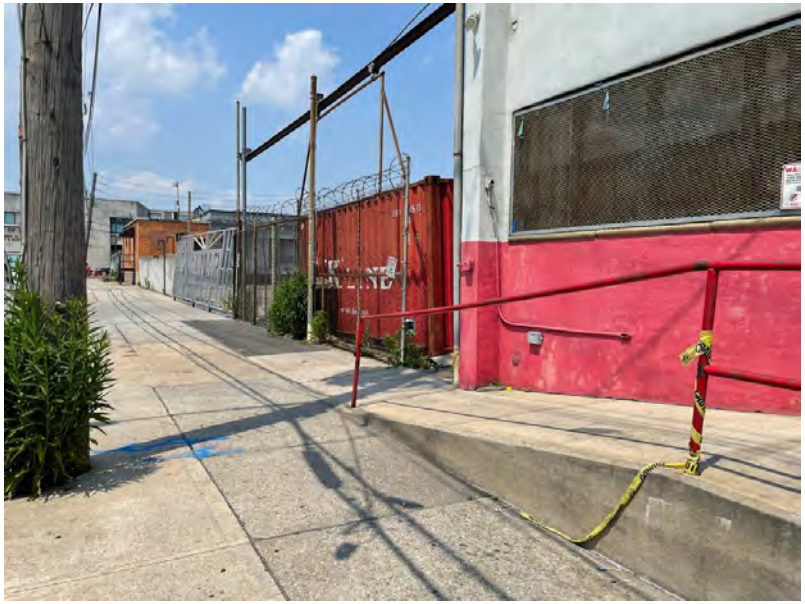

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APPENDIX C
SOIL BORING LOGS

LANGAN

Log of Boring **SB-01** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 4 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 11 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-6") 6-inch-thick Concrete	0	M-1A	Macrocore	48/60		0.0	
		M-1B (6-14") Tan to brown fine SAND, brick (dry)[FILL]		M-1B				0.0	
		M-1C (14"-18") Dark brown fine SAND, brick (dry)[FILL]		M-1C				0.0	
		M-1D (18-24") Gray to orangish brown fine SAND, some fine gravel, concrete (dry)[FILL]	2	M-1D				0.0	
		M-1E (24-48") Gray fine GRAVEL [FILL]						0.2	
			4	M-1E				0.2	
								0.2	
								0.2	
								0.2	
		M-2A (0-6") Gray fine SAND, trace fine gravel (dry)[FILL]	6	M-2A	Macrocore	42/60			Slight petroleum-like odor
		M-2B (6-42") Brown silty fine SAND (dry)						1.3	
			8					0.3	
				M-2B				0.2	
								0.2	
								0.2	
		M-3A (0-12") Dark grayish-brown fine SAND, some silt, some fine gravel, trace medium sand (dry) ▽	10					76.1	Petroleum-like odor and staining
				M-3A				5.1	
		M-3B (12-60") Brown medium SAND (wet)						1.9	Sample SB01_10-11 collected.
			12					0.7	
								0.6	
								1.7	
								0.5	
								0.3	
			14	M-3B				0.4	
								0.3	
		M-4A (0-60") Brown medium SAND, trace fine gravel (wet)						0.0	
								0.0	
			16					0.0	
								0.0	
				M-4	Macrocore	60/60		0.0	
								0.0	
			18					0.0	
								0.0	
								0.0	
								0.0	
			20					0.0	E.O.B. at 20' Temporary monitoring well MW01 installed to 20' bgs, screened from 10' to 20' bgs. MW01 was removed and the borehole was backfilled with No. 2 sand and capped at grade with portland cement.
			22						
			24						
			25						

LANGAN

Log of Boring **SB-02** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/8/21 — Date Finished: 7/8/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 4 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 10 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-12") 12-inch-thick Concrete	0	M-1A				0.4	
		M-1B (12-28") Brown to gray fine SAND, some fine gravel, brick (dry)[FILL]		M-1A				0.5	
				M-1B	Macrocore	34/60		0.0	
		M-1C (28-34") Dark gray to black fine SAND, some fine gravel (dry)[FILL]	2	M-1B	Macrocore	34/60		0.1	
				M-1B	Macrocore	34/60		0.1	
			4	M-1C	Macrocore	34/60		0.1	
		M-2A (0-6") Gray fine SAND, some fine gravel, brick (dry)[FILL]		M-2A					
		M-2B (6-12") Concrete	6	M-2B					
		M-2C (12-48") Brown to olive fine SAND, trace silt, trace fine gravel (dry) [FILL]		M-2C	Macrocore	52/60		0.1	
			8	M-2C	Macrocore	52/60		0.2	
				M-2C	Macrocore	52/60		0.1	
		M-2D (48-52") Grayish olive SILT (moist)[FILL] ▽		M-2D	Macrocore	52/60		0.1	
			10	M-2D	Macrocore	52/60		1.1	
		M-3A (0-12") Gray to brown fine SAND, some silt, trace gravel (moist)[FILL]		M-3A				17	
		M-3B (12-18") Dark gray to gray medium SAND, brick (wet)[FILL]		M-3A				0.1	Petroleum-like odors and staining
		M-3C (18-28") Black to dark gray fine SAND (wet)	12	M-3B	Macrocore	28/60		0.1	
				M-3B	Macrocore	28/60		0.1	
				M-3C	Macrocore	28/60		0.1	
			14	M-3C	Macrocore	28/60		0.1	
				M-3C	Macrocore	28/60		0.1	
		M-4A (0-24") Black to dark gray fine SAND (wet)		M-4A				0.1	
			16	M-4A	Macrocore	36/60		2.3	
		M-4B (24-36") Dark brown to olive fine SAND, trace silt (wet)		M-4A	Macrocore	36/60		192.8	Petroleum-like odors and staining
			18	M-4A	Macrocore	36/60		59.5	Sample SB02_17-18 collected.
				M-4B	Macrocore	36/60		4.2	
				M-4B	Macrocore	36/60		2.7	
			20	M-4B	Macrocore	36/60		0.8	
				M-4B	Macrocore	36/60		0.7	E.O.B. at 20'
			22						Temporary monitoring well MW02 installed to 19' bgs, screened from 9' to 19' bgs. MW02 was removed and the borehole was backfilled with No. 2 sand and capped at grade with portland cement.
			24						
			25						

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Log of Boring **SB-03** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 10 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-48") Tannish-brown fine SAND, trace fine gravel, brick, wood (dry)[FILL]	0					0.0	
			1					0.0	
								0.0	
								7.3	
			2	M-1	Macrocore	48/60		0.6	Sample SB03_2-3 collected.
								0.6	
			3					0.5	
								0.4	
			4					0.3	
		M-2A (0-18") Brown fine SAND, some silt, trace fine gravel, brick (dry)[FILL]	5					0.3	
				M-2A				0.5	
		M-2B (18-30") Brown fine SAND, trace fine gravel, concrete (dry)[FILL]	6					0.4	
				M-2B				0.5	
		M-2C (30-56") Dark brown fine SAND, trace fine gravel, brick (dry)[FILL]	7		Macrocore	56/60		0.3	
								0.2	
			8					0.2	
				M-2C				0.3	
			9					0.2	
			▽					0.2	
		M-3A (0-28") Dark brown silty fine SAND, some peat, brick, wood (wet)[FILL]	10						
			11						
				M-3A				0.0	
		M-3B (28-40") Dark brown silty fine SAND, some peat, trace clay (moist)	12		Macrocore	40/60		0.0	
								0.6	
			13					0.5	
				M-3B				0.0	
			14					0.0	
								0.0	E.O.B. at 15'
			15						Temporary monitoring well MW03 installed to 15' bgs, screened from 10' to 15' bgs. MW03 was removed and the borehole was backfilled with No. 2 sand to grade surface.
			16						
			17						
			18						
			19						
			20						

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Log of Boring **SB-04** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/8/21 — Date Finished: 7/8/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 9 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-12") 12-inch-thick Concrete	0					0.1	
				M-1A				0.1	
		M-1B (12-24") Tan to brown fine SAND, trace fine gravel, brick, concrete (dry)[FILL]	1					0.0	
				M-1B				22.7	
		M-1C (24-42") Tan to brown fine SAND, some gravel, concrete (dry)[FILL]	2		Macrocore	42/60		4.0	
			3					2.3	
								11.8	
			4	M-1C					
		M-2A (0-12") Brown to light-gray fine SAND, trace fine gravel, brick (dry)[FILL]	5						
				M-2A					
		M-2B (12-16") Dark brown to olive fine SAND, trace fine gravel (dry)[FILL]	6	M-2B					
		M-2C (16-24") Light brown to gray fine SAND, trace fine gravel, concrete (dry)[FILL]	7		Macrocore	24/60		6.5	
								9.7	
			8					2.7	Petroleum-like odors and staining
								50.3	
		▽	9	M-2C				5.1	Sample SB04_8-9 collected.
		M-3A (0-18") Light brown to gray fine SAND, trace fine gravel, brick (wet)[FILL]	10					8.8	
								4.7	
			11	M-3A				2.1	
		M-3B (18-60") Brownish-black fine SAND, some silt, trace fine gravel (moist)						12.9	
			12		Macrocore	60/60		3.7	
								5.9	
			13					2.0	
								1.3	
			14	M-3B				1.1	
								2.0	
			15					1.3	E.O.B. at 15'
			16						Temporary monitoring well MW04 installed to 14.4' bgs, screened from 4.4' to 14.4' bgs. MW04 was removed and the borehole was backfilled with No. 2 sand and capped at grade with portland cement.
			17						
			18						
			19						
			20						

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Log of Boring **SB-05** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/8/21 — Date Finished: 7/8/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 8 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-8") 8-inch-thick Concrete	0	M-1A				0.0	
		M-1B (8-16") Brown fine SAND, some concrete, trace fine gravel (dry)	1	M-1A				0.2	
		M-1C (16-28") Tan to light-brown medium SAND, trace fine gravel (dry)[FILL]	1	M-1B				0.1	Sample SB05_1-2 collected.
		M-1D (28-38") Brown fine SAND, trace fine gravel, trace silt (dry)[FILL]	2	M-1C	Macrocore	38/60		0.1	
			2	M-1C				0.1	
			3	M-1D				0.1	
			3	M-1D				0.0	
		M-2A (0-30") Brown to tan fine SAND, trace fine gravel, brick (dry)[FILL]	4	M-1D					
			5	M-2A					
			6	M-2A					
			7	M-2A				0.0	
		M-2B (30-36") Brown silty fine SAND, trace clay (wet) ▽	7	M-2B	Macrocore	42/60		0.0	
		M-2C (36-42") Brown medium SAND, trace fine gravel (moist)	8	M-2B				0.0	
			8	M-2C				0.0	
			9	M-2C				0.0	
			9	M-2C				0.0	
		M-4A (0-48") Brown to tannish-brown fine SAND, some silt, trace fine gravel (moist)	10	M-2C				0.0	
			10	M-3A				0.0	
			11	M-3A				0.0	
			11	M-3A				0.0	
			12	M-3A				0.0	
			12	M-3A	Macrocore	57/60		0.0	
			13	M-3A				0.0	
			13	M-3A				0.0	
		M-4B (48-57") Dark-brown coarse SAND (moist)	14	M-3A				0.0	
			14	M-3B				0.2	
			15	M-3B				0.0	
			15	M-3B				0.0	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with portland cement.
			16						
			17						
			18						
			19						
			20						

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Log of Boring **SB-06** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/8/21 — Date Finished: 7/8/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 11.2 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-4") 4-inch-thick Asphalt	0	M-1A				0.1	
		M-1B (4-14") Light gray fine SAND, trace fine gravel, concrete (dry)[FILL]	1	M-1B				0.0	
		M-1C (14-60") Brown fine SAND, some silt, trace fine gravel (dry)[FILL]	2		Macrocore	60/60		0.0	Sample SB06_2-3 collected.
			3					0.0	
			4	M-1C				0.0	
		M-2A (0-12") Brown fine SAND, some silt, trace fine gravel, brick (dry)[FILL]	5					0.0	
		M-2B (12-15") Light gray fine GRAVEL (dry)[FILL]	6	M-2A / M-2B					
		M-2C (15-30") Light brown fine SAND, trace fine gravel (dry)[FILL]	7		Macrocore	30/60		0.0	
			8					0.0	
			9	M-2C				0.0	
		M-3A (0-15") Light brown to brown fine SAND, trace fine gravel (dry)[FILL]	10					0.0	
			11	M-3A				0.0	
		M-3B (15-60") Brown fine SAND, trace silt (wet)	12		Macrocore	60/60		0.0	
			13					0.0	
			14	M-3B				0.0	
			15					0.0	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with portland cement.
			16						
			17						
			18						
			19						
			20						

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Log of Boring **SB-07** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 11 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-54") Grayish-brown medium SAND, trace fine gravel (dry)[FILL]	0	M-1	Macrocore	54/60		0.2	
			1					0.2	
			2					0.2	
			3					0.3	
			4					0.2	
			5					0.2	
			6					0.2	
		M-2A (0-36") Tannish-brown to olive medium SAND, trace fine gravel (dry)[FILL]	7	M-2A	Macrocore	60/60		0.2	
			8					0.2	
		M-2B (36-60") Dark grayish black fine SAND, some silt, trace fine gravel (dry)[FILL]	9	M-2B				0.4	
			10					0.4	
		M-3A (0-12") Light gray medium SAND, some fine gravel, trace silt (dry)[FILL]	11	M-3A				0.4	
		M-3B (12-36") Grayish-olive silty fine SAND (wet)	12	M-3B	Macrocore	60/60		0.4	
			13					0.4	
		M-3C (36-60") Brownish-olive silty fine SAND, trace fine gravel (moist)	14	M-3C				0.4	
			15					0.4	
			16						
			17						
			18						
			19						
			20						

Sample SB07_8-9 collected.

E.O.B. at 15'
Backfilled with drill cuttings and No. 2 sand to grade surface.

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Log of Boring **SB-08** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/8/21 — Date Finished: 7/8/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 11 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-24") Tannish-brown fine SAND, some fine gravel, trace silt, brick, concrete (dry)[FILL]	0					0.0	
			1	M-1A	Macrocore	56/60		0.1 0.6	Sample SB08_1-2 collected.
		M-1B (24-46") Light gray to light brown fine SAND, trace fine gravel, concrete (dry)[FILL]	2					1.5 3.6	
			3	M-1B				1.6 2.4	
		M-1C (46-50") 4-inch-thick layer of concrete	4	M-1C				1.0 0.5	
		M-1D (50-56") Brown medium SAND (dry)		M-1D				0.3	
		M-2A (0-10") Tan to orangish-brown medium SAND, trace fine gravel (dry)	5	M-2A					
		M-2B (10-28") Tan to orangish-brown fine SAND, some silt (dry)	6						
			7	M-2B	Macrocore	46/60		0.0 0.0	
		M-2C (28-34") Dark brown to dark gray SILT, trace clay (dry)		M-2C				0.0	
		M-2D (34-46") Dark brown to orangish brown coarse SAND, some medium sand (moist)	8					0.0	
			9	M-2D				0.0 0.0	
		M-3A (0-12") Brown fine SAND (moist)	10	M-3A				0.0 0.0	
		M-3B (12-36") Dark grayish-brown coarse SAND, some medium sand (wet)	11					0.0	
			12	M-3B	Macrocore	48/60		0.0 0.0	
		M-3C (36-48") Dark grayish-brown fine SAND, some silt (wet)	13					0.0 0.0	
			14	M-3C				0.0 0.2	
			15					0.1	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand to grade surface.
			16						
			17						
			18						
			19						
			20						

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Log of Boring **SB-09** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 4 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 9.5 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-6") 6-inch-thick Concrete	0	M-1A					
		M-1B (6-12") Tan to dark brown fine SAND, trace fine gravel, brick, concrete (dry)[FILL]		M-1B					
		M-1C (12-48") Brown to dark brown silty fine SAND, some medium sand, brick (dry)[FILL]	2		Macrocore	48/60			
			4	M-1C					
		M-2A (0-24") Brown fine SAND, trace fine gravel, brick (dry)[FILL]	6	M-2A				0.1 2.5 0.6	
		M-2B (24-30") Orangish-brown silty fine SAND, trace fine gravel, brick (wet)[FILL]	8		Macrocore	30/60		0.5 0.4	
				M-2B					
		M-3A (0-6") Orangish-brown silty fine SAND, trace fine gravel, brick (wet)[FILL]	10	M-3A				0.3	
		M-3B (6-18") Dark reddish-brown silty fine SAND (wet)[FILL]		M-3B				0.4	Organic-like odor
		M-3C (18-41") Dark gray medium SAND, some fine gravel (wet)[FILL]	12		Macrocore	41/60		0.3 0.3 0.2 0.4	Sample SB09_13-14 collected.
			14	M-3C				1.4 0.5 0.3	
		M-4A (0-14") Brown coarse SAND, trace fine gravel, brick (wet)[FILL]		M-4A				0.3	E.O.B. at 15'
		M-4B (14-60") Dark gray to dark brown silty fine SAND, some silt, peat (moist)	16					0.2 0.2	Backfilled with drill cuttings and No. 2 sand and capped at grade with portland cement.
			18		Macrocore	60/60		0.3 0.2 0.3 0.2 6.1 0.3	Organic-like odor
			20	M-4B					
			22						
			24						
			25						

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Log of Boring **SB-10** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 4 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 9.8 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-6") 6-inch-thick Concrete	0	M-1A				0.3	
		M-1B (6-36") Brown fine SAND, trace fine gravel, brick (dry)[FILL]						0.2	
			2	M-1B	Macrocore	45/60		0.2	
								0.3	
								0.1	
		M-1C (36-43") Black fine SAND, trace fine gravel (dry)[FILL]		M-1C				0.1	Sample SB10_3-4 collected.
		M-1D (43-45") Dark brown fine SAND, concrete (dry)[FILL]	4					1.1	
				M-1D				0.0	
								0.0	
		M-2A (0-8") Light gray medium SAND, some fine gravel, brick (dry)[FILL]	6	M-2A					
		M-2B (8-17") Brown to orangish-brown silty fine SAND, brick (wet)[FILL]			Macrocore	17/60			
			8						
				M-2B				0.1	
		▽						0.2	
		M-3A (0-9") Dark brown silty fine SAND, some fine gravel, brick (wet)[FILL]	10					0.2	
				M-3	Macrocore	9/60			
			12						
			14					0.2	
		M-4A (0-4") Brown fine SAND, trace fine gravel, brick (wet)[FILL]		M-4A				0.2	E.O.B. at 15'
		M-4B (4-46") Dark brown silty fine SAND, peat (moist)	16						Backfilled with drill cuttings and No. 2 sand and capped at grade with portland cement.
					Macrocore	46/60		0.2	
			18					0.2	
				M-4B				0.2	
								0.2	
								0.2	
			20					0.2	
			22						
			24						
			25						

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Log of Boring **SB-11** Sheet 1 of 1

Project: 57-00 47th Street Maspeth	Project No.: 170686701
Location: Maspeth, NY	Elevation and Datum: NA
Drilling Company: Eastern Environmental Solutions, Inc.	Date Started: 7/7/21 — Date Finished: 7/7/21
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft — Rock Depth: NA
Size and Type of Bit: 2" Direct Push	Number of Samples: Disturbed 3 — Undisturbed NA — Core NA
Casing Diameter (in): NA — Casing Depth (ft): NA	Water Level (ft.): First ▽ 10 — Completion ▼ NA — 24 HR. ▼ NA
Casing Hammer: NA — Weight (lbs): NA — Drop (in): NA	Drilling Foreman: Ernesto Santiago
Sampler: 5' Macrocore 2" diameter	Field Engineer: Michael Au
Sampler Hammer: NA — Weight (lbs): NA — Drop (in): NA	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
		M-1A (0-6") 6-inch-thick Concrete	0	M-1A				0.0	
		M-1B (6-27") Brownish-tan SAND, some fine gravel, brick (dry)[FILL]	1					4.8	
			2		Macrocore	27/60		1.3	
			3					0.0	
			4	M-1B					
		M-2A (0-8") Brownish-tan SAND, some fine gravel, brick (dry)[FILL]	5	M-2A					
		M-2B (8-12") Brownish-tan SAND, some fine gravel, brick, concrete (dry)[FILL]	6	M-2B				0.6	
		M-2C (12-45") Brownish-tan silty SAND, some fine gravel, brick (moist)[FILL]	7		Macrocore	45/60		4.8	
			8					29.2	
			9	M-2C				10.2	
			10 ▽					1.7	
		M-3A (0-36") Dark brown silty fine SAND (wet)[FILL]	11					1.6	
			12	M-3A				1.2	
			13		Macrocore	60/60		1.1	
		M-3B (36-48") Black medium SAND (wet)	14	M-3B				1.1	Sample SB11_13-14 collected.
		M-3C (48-60") Dark gray medium SAND, some fine gravel (wet)	15	M-3C				6.3	
			16					1.2	
			17					0.9	
			18					0.0	
			19					0.0	
			20					1.7	
								0.5	
								0.0	E.O.B. at 15' Backfilled with drill cuttings and No. 2 sand and capped at grade with portland cement.

\\LANGAN.COM\DATA\NYC\DATA7\170686701\PROJECT DATA_DISCIPLINE\ENV\IRONMENTAL\GINTLOGS\170686701_ENTERPRISE.GPJ ... 7/15/2021 2:09:35 AM ... Report: Log - LANGAN

APPENDIX D
WELL CONSTRUCTION AND GROUNDWATER SAMPLING LOGS

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW01

PROJECT		PROJECT NO.	
57-00 47th Street		170686701	
LOCATION		**ELEVATION AND DATUM**	
Maspeth, NY		N/A	
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
Eastern Environmental Solutions, Inc.		7/7/2021	7/8/2021
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 7822 DT		Ernesto Santiago	
SIZE AND TYPE OF BIT		**INSPECTOR**	
2-inch Direct Push		Michael Au	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
2 inches		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	1 inch	No. 2 Sand	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 20 Slot	1 inch	No. 2 Sand	Bentonite

METHOD OF INSTALLATION

Geoprobe 7822 DT was used to advance soil boring SB01 to approximately 20 feet below grade surface (bgs). A 1-inch PVC temporary monitoring well was installed, which consisted of 10 feet of 20 slot (0.020-inch) well screen, and 10 feet of PVC riser. Well screen was installed from approximately 10 to 20 feet bgs with riser from 10 feet bgs to grade surface. The annular space of the monitoring well was backfilled with No. 2 sand to 2 inches bgs and the upper 2 inches of the borehole was sealed to grade surface with bentonite. Following groundwater sample collection, the temporary monitoring well was removed, the borehole was filled to grade surface with No. 2 sand and was patched with portland cement.

WELL DEVELOPMENT DATA

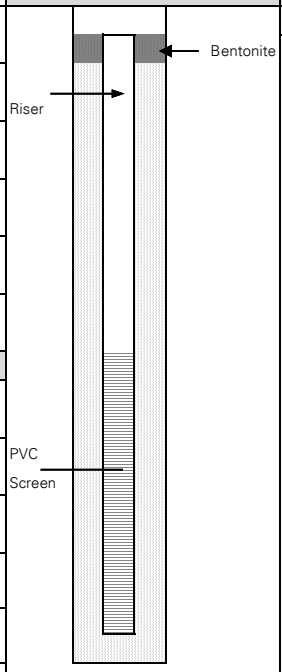
SURGE BLOCK DIAMETER	N/A	**TYPE PUMP**	Peristaltic	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2 LPM	Well developed from 13:48 to 13:53 until purged groundwater was no longer turbid.
NUMBER OF SURGE CYCLES	N/A	**TOTAL VOLUME**	3 Gallons	

TOP OF CASING	**ELEVATION** N/A	**DEPTH (ft)** 0
TOP OF SEAL	**ELEVATION** N/A	**DEPTH (ft)** 0
TOP OF FILTER	**ELEVATION** N/A	**DEPTH (ft)** 0.17
TOP OF SCREEN	**ELEVATION** N/A	**DEPTH (ft)** 10.0
BOTTOM OF BORING	**ELEVATION** N/A	**DEPTH (ft)** 20
SCREEN LENGTH		10 feet
SLOT SIZE		No. 20 Slot; 0.020 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
N/A	7/7/2021	11 ft
N/A	7/8/2021	9.54 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
Refer to soil boring log SB01.	0
	10
	20

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW02

PROJECT		PROJECT NO.	
57-00 47th Street		170686701	
LOCATION		**ELEVATION AND DATUM**	
Maspeth, NY		N/A	
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
Eastern Environmental Solutions, Inc.		7/8/2021	7/9/2021
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 7822 DT		Ernesto Santiago	
SIZE AND TYPE OF BIT		**INSPECTOR**	
2-inch Direct Push		Michael Au	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
2 Inches		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	1 inch	No. 2 Sand	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 20 Slot	1 inch	No. 2 Sand	Bentonite

METHOD OF INSTALLATION

Geoprobe 7822 DT was used to advance soil boring SB02 to approximately 20 feet below grade surface (bgs). A 1-inch PVC temporary monitoring well was installed, which consisted of 10 feet of 20 slot (0.020-inch) well screen, and 10 feet of PVC riser. Well screen was installed from approximately 9 to 19 feet bgs with riser from 9 feet bgs to about 1 foot above grade surface. The annular space of the monitoring well was backfilled with No. 2 sand to 2 inches bgs and the upper 2 inches of the borehole was sealed to grade surface with bentonite. Following groundwater sample collection, the temporary monitoring well was removed, the borehole was filled to grade surface with No. 2 sand and was patched with portland cement.

WELL DEVELOPMENT DATA

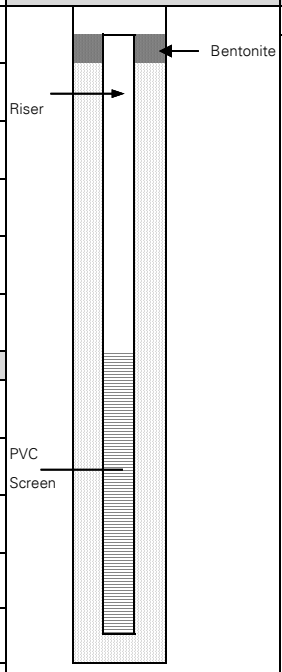
SURGE BLOCK DIAMETER	N/A	**TYPE PUMP**	Peristaltic	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	0.95 LPM	Well developed from 7:54 - 8:02 until purged groundwater was no longer turbid.
NUMBER OF SURGE CYCLES	N/A	**TOTAL VOLUME**	2 Gallons	

	ELEVATION	DEPTH (ft)
TOP OF CASING	N/A	-1
TOP OF SEAL	N/A	0
TOP OF FILTER	N/A	0.17
TOP OF SCREEN	N/A	9
BOTTOM OF BORING	N/A	19
SCREEN LENGTH		10 feet
SLOT SIZE		No. 20 Slot; 0.020 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
N/A	7/8/2021	10.13 ft
N/A	7/9/2021	9.6 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	-1
Refer to soil boring log SB02.	0
	9
	19

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW03

PROJECT		PROJECT NO.	
57-00 47th Street		170686701	
LOCATION		**ELEVATION AND DATUM**	
Maspeth, NY		N/A	
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
Eastern Environmental Solutions, Inc.		7/7/2021	7/9/2021
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 7822 DT		Ernesto Santiago	
SIZE AND TYPE OF BIT		**INSPECTOR**	
2-inch Direct Push		Michael Au	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
2 Inches		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	1 inch	No. 2 Sand	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 20 Slot	1 inch	No. 2 Sand	Bentonite

METHOD OF INSTALLATION

Geoprobe 7822 DT was used to advance soil boring SB03 to approximately 15 feet below grade surface (bgs). A 1-inch PVC temporary monitoring well was installed, which consisted of 5 feet of 20 slot (0.020-inch) well screen, and 10 feet of PVC riser. Well screen was installed from approximately 10 to 15 feet bgs with riser from 10 feet bgs to grade surface. The annular space of the monitoring well was backfilled with No. 2 sand to 2 inches bgs and the upper 2 inches of the borehole was sealed to grade surface with bentonite. Following groundwater sample collection, the temporary monitoring well was removed and the borehole was filled to grade surface with No. 2 sand.

WELL DEVELOPMENT DATA

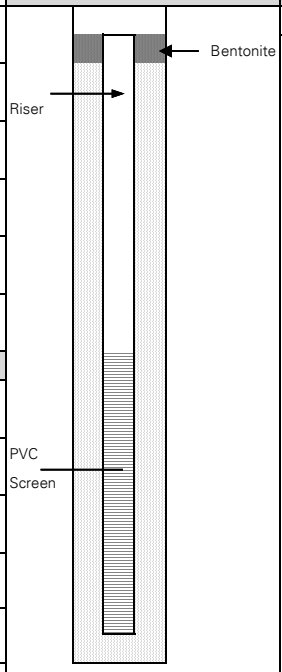
SURGE BLOCK DIAMETER	N/A	**TYPE PUMP**	Peristaltic	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	0.57 LPM	Well developed from 9:48 to 9:58 until purged groundwater was no longer turbid.
NUMBER OF SURGE CYCLES	N/A	**TOTAL VOLUME**	1.5 Gallons	

TOP OF CASING	**ELEVATION** N/A	**DEPTH (ft)** 0
TOP OF SEAL	**ELEVATION** N/A	**DEPTH (ft)** 0
TOP OF FILTER	**ELEVATION** N/A	**DEPTH (ft)** 0.17
TOP OF SCREEN	**ELEVATION** N/A	**DEPTH (ft)** 10.0
BOTTOM OF BORING	**ELEVATION** N/A	**DEPTH (ft)** 15
SCREEN LENGTH		5 feet
SLOT SIZE		No. 20 Slot; 0.020 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
N/A	7/7/2021	10 ft
N/A	7/8/2021	9.43 ft
N/A	7/9/2021	9.37 ft
N/A		
N/A		
N/A		

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
	10
Refer to soil boring log SB03.	
	15

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW04

PROJECT		PROJECT NO.	
57-00 47th Street		170686701	
LOCATION		**ELEVATION AND DATUM**	
Maspeth, NY		N/A	
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
Eastern Environmental Solutions, Inc.		7/8/2021	7/9/2021
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 7822 DT		Ernesto Santiago	
SIZE AND TYPE OF BIT		**INSPECTOR**	
2-inch Direct Push		Michael Au	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
2 inches		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	1 inch	No. 2 Sand	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 20 Slot	1 inch	No. 2 Sand	Bentonite

METHOD OF INSTALLATION

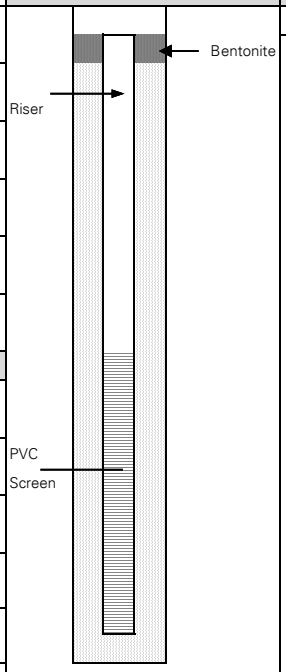
Geoprobe 7822 DT was used to advance soil boring SB04 to approximately 15 feet below grade surface (bgs). A 1-inch PVC temporary monitoring well was installed, which consisted of 10 feet of 20 slot (0.020-inch) well screen, and 5 feet of PVC riser. Well screen was installed from approximately 4.4 to 14.4 feet bgs with riser from 4.4 feet bgs to about 0.6 feet above grade surface. The annular space of the monitoring well was backfilled with No. 2 sand to 2 inches bgs and the upper 2 inches of the borehole was sealed to grade surface with bentonite. Following groundwater sample collection, the temporary monitoring well was removed, the borehole was filled to grade surface with No. 2 sand and was patched with portland cement.

WELL DEVELOPMENT DATA

SURGE BLOCK DIAMETER	N/A	**TYPE PUMP**	Peristaltic	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	0.38 LPM	Well developed from 11:35 to 11:45 until purged groundwater was no longer turbid.
NUMBER OF SURGE CYCLES	N/A	**TOTAL VOLUME**	1 Gallon	

TOP OF CASING **ELEVATION** N/A	**DEPTH (ft)** -0.6	
TOP OF SEAL **ELEVATION** N/A	**DEPTH (ft)** 0	
TOP OF FILTER **ELEVATION** N/A	**DEPTH (ft)** 0.17	
TOP OF SCREEN **ELEVATION** N/A	**DEPTH (ft)** 4.4	
BOTTOM OF BORING **ELEVATION** N/A	**DEPTH (ft)** 14.4	
SCREEN LENGTH	10 feet	
SLOT SIZE	No. 20 Slot; 0.020 Inches	

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	-0.6
Refer to soil boring log SB04.	0.0
	4.4
	14.4

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
N/A	7/8/2021	11.47 ft
N/A	7/9/2021	10.8 ft
N/A		
N/A		
N/A		
N/A		

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Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	57-00 47th Street	**Well No:**	MW01	**Water Quality Device Model:**	Horiba U-52	**Weather:**	75 F - 84 F, Overcast		MW01_070821
Project Number:	170686701	**Well Depth:**	20 feet	**Pine Number:**	21394	**Background PID (ppm):**	0.0	**Sample(s):**	
Site Location:	Maspeth, NY	**Well Diameter:**	1 inch	**Pump Make and Model:**	Pine Peri-Pump	**PID Beneath Inner Cap (ppm):**	0.2		
Sampling	Michael Au	**Well Screen**	10 feet	**Pine Number:**	44667	**Pump Intake Depth:**	15 feet	**Sample Date:**	7/8/2021
Personnel:	Audrey Seery	**Interval:**	20 feet	**Tubing Diameter:**	1/4" ID x 3/8" OD	**Depth to Water Before Purge:**	9.53 feet	**Sample Time:**	15:00

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	PH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY ntu (+/- 10%) above 5 NTU	DO mg/l (+/- 10%) above 0.5 mg/l	Flow Rate (gpm) <0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING										
2:15	23.30	7.46	-103	0.859	79.7	6.85		0	light yellow	**N/A**
2:20	21.51	7.29	-111	0.859	82.5	5.93	0.075	0.375	light yellow	**N/A**
2:25	21.40	7.27	-117	0.884	81.6	5.35	0.025	0.5	light yellow	**N**
2:30	21.65	7.32	-119	0.895	87.5	5.16	0.15	1.25	light yellow	**N**
2:35	21.61	7.31	-118	1.050	85.4	5.15	0.1	1.75	light yellow	**N**
2:40	21.45	7.42	-116	1.060	81.3	5.16	0.2	2.25	clear	**N**
2:45	20.94	7.50	-115	1.080	85.3	4.89	0.1	2.75	clear	**N**
2:50	20.74	7.57	-112	1.110	88.2	4.81	0.1	3.25	clear	**N**
2:55	20.96	7.60	-113	1.100	88.9	4.76	0.1	3.75	clear	**Y**

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

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	57-00 47th Street	**Well No:**	MW02	**Water Quality Device Model:**	Horiba U-52	**Weather:**	72 F - 86 F, Rain		MW02_070921
Project Number:	170686701	**Well Depth:**	19 feet	**Pine Number:**	21394	**Background PID (ppm):**	0.0	**Sample(s):**	
Site Location:	Maspeth, NY	**Well Diameter:**	1 inch	**Pump Make and Model:**	Pine Peri-Pump	**PID Beneath Inner Cap (ppm):**	8.6		
Sampling	Michael Au	**Well Screen**	9 feet	**Pine Number:**	44667	**Pump Intake Depth:**	14 feet	**Sample Date:**	7/9/2021
Personnel:	Audrey Seery	**Interval:**	19 feet	**Tubing Diameter:**	1/4" ID x 3/8" OD	**Depth to Water Before Purge:**	9.60 feet	**Sample Time:**	8:05

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	PH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY ntu (+/- 10%) above 5 NTU	DO mg/l (+/- 10%) above 0.5 mg/l	Flow Rate (gpm) <0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING										
8:05	26.41	5.45	-43	1.250	83.7	0.79		0	light gray, petroleum-like odor	**N/A**
8:10	18.43	7.05	-112	1.200	10.9	0.00	0.1	0.5	slight sheen	**N/A**
8:15	18.16	7.46	-123	1.160	0.0	0.00	0.2	1.5	petroleum-like odor	**N**
8:20	18.19	7.51	-123	1.160	0.0	0.00	0.15	2.25	petroleum-like odor	**N**
8:25	18.15	7.63	-125	1.150	0.0	0.00	0.15	3	petroleum-like odor	**N**
8:30	18.24	7.78	-126	1.150	0.0	0.00	0.2	4	petroleum-like odor	**N**
8:35	18.73	7.91	-125	1.160	0.0	0.00	0.1	4.5	petroleum-like odor	**N**
8:40	18.28	7.91	-125	1.160	0.0	0.00	0.1	5	petroleum-like odor	**N**
8:45	18.32	8.00	-128	1.160	0.0	0.00		5.5	petroleum-like odor	**Y**

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

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	57-00 47th Street	**Well No:**	MW03	**Water Quality Device Model:**	Horiba U-52	**Weather:**	72 F - 86 F, Rain		MW03_070921
Project Number:	170686701	**Well Depth:**	15 feet	**Pine Number:**	21394	**Background PID (ppm):**	0.0	**Sample(s):**	
Site Location:	Maspeth, NY	**Well Diameter:**	1 inch	**Pump Make and Model:**	Pine Peri-Pump	**PID Beneath Inner Cap (ppm):**	0.2		
Sampling	Michael Au	**Well Screen**	10 feet	**Pine Number:**	44667	**Pump Intake Depth:**	12 feet	**Sample Date:**	7/9/2021
Personnel:	Audrey Seery	**Interval:**	15 feet	**Tubing Diameter:**	1/4" ID x 3/8" OD	**Depth to Water Before Purge:**	9.37 feet	**Sample Time:**	11:00

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	PH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY ntu (+/- 10%) above 5 NTU	DO mg/l (+/- 10%) above 0.5 mg/l	Flow Rate (gpm) <0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING										
10:00	17.88	8.64	-111	0.642	42.6	10.11		0	yellow to light-brown	**N/A**
10:05	17.52	8.53	-106	0.698	23.6	9.02	0.2	1	yellow to light-brown	**N/A**
10:10	17.92	8.64	-104	0.738	0.0	8.34	0.05	1.25	clear	**N**
10:15	17.78	8.73	-100	0.759	0.0	8.11	0.1	1.75	clear	**N**
10:20	17.76	8.72	-99	0.781	0.0	7.75	0.1	2.25	clear	**N**
10:25	17.31	8.77	-110	0.824	0.0	7.12	0.1	2.75	clear	**N**
10:30	17.27	8.87	-109	0.852	0.0	6.67	0.1	3.25	pump battery dies	**N**
10:35								3.25		**N**
10:40	16.90	9.10	-103	0.873	55.5	7.64	0.15	4	clear	**N**
10:45	16.90	9.03	-98	0.910	0.0	6.57	0.1	4.5	clear	**N**
10:50	17.00	8.67	-94	0.940	0.0	6.72	0.1	5	clear	**N**
10:55	16.71	8.58	-91	0.945	0.0	6.78	0.1	5.5	clear	**N**
11:00	16.81	8.59	-94	0.954	0.0	6.80	0.1	6	clear	**Y**

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

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	57-00 47th Street	**Well No:**	MW04	**Water Quality Device Model:**	Horiba U-52	**Weather:**	72 F - 86 F, Rain		MW04_070921
Project Number:	170686701	**Well Depth:**	14.4 feet	**Pine Number:**	21394	**Background PID (ppm):**	0.0	**Sample(s):**	
Site Location:	Maspeth, NY	**Well Diameter:**	1 inch	**Pump Make and Model:**	Pine Peri-Pump	**PID Beneath Inner Cap (ppm):**	49.7		
Sampling	Michael Au	**Well Screen**	4.4 feet	**Pine Number:**	44667	**Pump Intake Depth:**	13 feet	**Sample Date:**	7/9/2021
Personnel:	Audrey Seery	**Interval:**	14.4 feet	**Tubing Diameter:**	1/4" ID x 3/8" OD	**Depth to Water Before Purge:**	10.8 feet	**Sample Time:**	13:00 PM

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	PH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY ntu (+/- 10%) above 5 NTU	DO mg/l (+/- 10%) above 0.5 mg/l	Flow Rate (gpm) <0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING										
11:50	20.66	9.15	-138	0.683	560.0	7.31		0	light-brown , petroleum-like odor	**N/A**
11:55	20.44	8.66	-133	0.737	101.0	7.38	0.05	0.25	light-brown , petroleum-like odor	**N/A**
12:00	20.35	8.71	-134	0.774	144.0	7.93	0.05	0.5	light-brown , petroleum-like odor	**N**
12:05	20.37	8.00	-128	0.836	22.9	8.43	0.1	1	light-brown , petroleum-like odor	**N**
12:10	20.36	8.76	-125	0.852	31.6	8.22	0.1	1.5	light-brown , petroleum-like odor	**N**
12:15	20.34	8.76	-122	0.874	23.4	8.20	0.1	2	light-brown , petroleum-like odor	**N**
12:20	20.37	8.64	-124	0.901	8.2	9.69	0.1	2.5	light-brown , petroleum-like odor	**N**
12:25	20.37	8.74	-119	0.918	16.8	8.48	0.05	2.75	clear	**N**
12:30	20.20	8.84	-119	0.942	6.6	7.90	0.15	3.5	clear	**N**
12:35	20.18	8.90	-119	0.947	9.1	7.84	0.05	3.75	clear	**N**
12:40	20.23	8.91	-119	0.953	7.0	7.76	0.05	4	clear	**N**
12:45	20.20	8.93	-117	0.962	4.0	7.63	0.1	4.5	pump malfunctioning	**N**
12:50	20.43	8.42	-118	1.080	276.0	7.37	0.05	4.75	clear	**N**
12:55	20.44	8.40	-116	1.100	56.5	7.32	0.1	5.25	clear	**N**
13:00	20.48	8.40	-114	1.110	11.4	7.22	0.05	5.5	clear	**N**

Notes:

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3. PID = Photoionization Detector
4. PPM = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
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APPENDIX E
LABORATORY ANALYTICAL REPORTS