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Soil Vapor Intrusion Investigation

92 to 98 Nagle Avenue
New York, New York
Block 2174 Lot 93
DEC Site No. 231134

July 2019

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SOIL VAPOR INTRUSTION INVESTIGATION WORK PLAN
92-98 NAGLE AVENUE
NEW YORK, NEW YORK
DEC SITE NO. 231134
CASTLETON PROJECT NUMBER: NJBM1801
MARCH 2019

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1.0 INTRODUCTION

Castleton Environmental Geologic Services, DPC (Castleton) has prepared the following Soil Vapor Intrusion Investigation Work Plan and Health and Safety Plan (HASP) for 92-98 Nagle Avenue in the Fort George section of Manhattan, New York (the Site). This work is being performed pursuant to a New York Department of Environmental Conservation (NYSDEC) Stipulation Agreement for DEC Site No. 231134 until such time as the site has been accepted into the New York State Brownfield Cleanup Program. This Work Plan describes the proposed investigation that will address the environmental concerns identified in the Phase Supplemental Investigation report prepared by Castleton dated December 11, 2018. The site-specific HASP (Appendix number) addresses potential hazards, contaminants of concern based on past use and safety requirements associated with investigation activities in accordance with ASTM and OSHA guidelines.

1.1 Site Location and Current Usage

The Site is located in the Fort George section of Manhattan, New York and is identified as Block 2174 and Lot 93 on the New York City Tax Map. Figure 1 is a Site location map. The Site is 15,000-square feet and is bounded by a residential building to the north, Nagle Avenue to the south, road, Sickles Street the east, and a mixed-use building to the west. Currently, the Site is improved with a 6-story mixed-use building with a basement. The building has an estimated gross floor area of 70,323 square feet and is improved with a one (1) six-story mixed use residential/commercial building. Retail/commercial units are restricted to the ground floor of the building. The site building contains a full basement and was constructed in 1927 on a 0.345-acre parcel (the building appears to cover the entire site with the exception of narrow exterior courtyards). No changes in site usage are planned.

The Site is listed under NYSDEC PBS as 9298 LLC, 2-12 Sickles Street aka 98 Nagle Avenue with site number 2-197106 for a 4,000-gallon above ground fuel oil storage tank.

1.2 Description of Surrounding Property

The surrounding properties are zoned R7-2 and C1-4 for mixed residential and commercial buildings. A map showing area usage in included as Figure 2.

2.0 PREVIOUS ENVIRONMENTAL DOCUMENTATION

The following environmental work plans and reports were developed for the Site:

- Phase I Environmental Site Assessment Report (ESA) dated May 11, 2018 by Middleton Environmental Inc. (Appendix A)
- Focused Subsurface Site Investigation (FSSI) dated June 19, 2018 by Merritt Environmental Consulting Corp (MECC). (Appendix B)
- Supplemental Phase II ESA Report dated December 11, 2018 by Castleton Environmental. (Appendix C)

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2.1 May 2018 MEI Phase I ESA

The Phase I Environmental Site Assessment (ESA) was completed by Middleton Environmental Inc. (MEI) dated May 2018. The following recognized environmental condition (REC) was identified by MEI:

1. A review of available City Directory information indicated that one of the retail stores (98 Nagle Ave) has been utilized by a dry cleaning/cleaner from at least 1964 to 2014. The historic use of the site as a dry cleaner with on-site hazardous waste generation represents a REC.

MEI recommended that a Phase II ESA be conducted to determine if the historic use as a dry cleaner with on-site hazardous waste generation has caused a vapor encroachment condition pertaining to the site.

2.2 June 2018 MECC FSSI

The focus of the MECC FSSI dated June 2018 was specifically conducted within the basement of the vacant dry cleaner space within the site building as reported in the Phase I ESA. Currently, the basement under the former dry cleaner contains the boiler room, storage of miscellaneous resident-owned items and the aboveground heating oil storage tank vault. Support columns reaching from the basement floor to the ceiling in the former dry cleaner basement were observed; such columns are typical installations to support the weight of a dry-cleaning machine on the ground floor.

The FSSI included the collection and laboratory analysis of one groundwater sample which identified tetrachloroethene (PCE) at a concentration of 39,000 micrograms per liter (ug/l). The applicable regulatory limit for PCE in groundwater is 5.0 ug/l. An additional water sample was collected from a sump pit in the basement floor, which also identified PCE (46 ug/l), which is obviously a much lower contaminant concentrations. Notably, soil samples collected at the groundwater table interface from three boring locations, revealed PCE concentrations well below soil quality standards for Unrestricted Use. MECC recommended further investigation to better delineate site contamination.

2.3 December 2018 Castleton Supplemental Phase II ESA

The Supplemental Phase II ESA was conducted by Castleton in December 2018. The objective of this site characterization effort was to assess and delineate subsurface quality impacts, particularly in soil and groundwater. The investigation included a geophysical survey, soil boring installation and soil sampling and groundwater monitoring well installation, elevation survey and sampling.

Seven soil borings (SB01 through SB07) were advanced within the basement of the building in the dry cleaner space to assess soil conditions. Soil samples were collected continuously from borings, logged and field screened with a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). Elevated field sensory (PID), olfactory or visible evidence of

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impacts to soil were observed. Soil was observed to consist of silty sand with brick (fill) to approximately 5 feet below grade. In SB01, SB03, SB05, SB06, and SB07 groundwater was encountered approximately 1.5 feet below the basement slab. In SB02, which was installed in the lowest portion of the basement, groundwater was encountered immediately below the basement slab. In SB04 groundwater was not encountered. Twelve soil samples were collected from the soil borings SB01 and SB03 through SB07. Soil quality analytical results were compared to NYSDEC Part 375 Soil Cleanup Objectives (SCOs). Analytical results reported concentrations of chlorinated VOCs related to former dry cleaning operations to be concentrated to the southeastern portion of the basement, east of the fuel oil tank.

An attempt to install two monitoring wells northeast of the basement area within the exterior courtyard and sidewalk was completed by direct push technology (Geoprobe®). Bedrock refusal was encountered within three separate locations from 10 to 12 feet below grade. Groundwater was not encountered at each of the locations and therefore, the monitoring wells were not installed.

Five monitoring wells (MW01 through MW05) were installed within the basement to assess overall groundwater quality and determine site-specific groundwater flow direction. Monitoring wells were constructed of one-inch PVC and all monitoring wells consist entirely of screened PVC. Two rounds of groundwater samples were collected. Analytical results reported concentrations of chlorinated related to former dry cleaning operations to be concentrated to the southeastern portion of the basement, east of the fuel oil tank. Groundwater flows from east to west and the chlorinated VOCs have migrated with flow direction, however, not to the magnitude reported east of the fuel oil AST.

Castleton reported these findings to regulatory agencies prior to the completion of further delineation and/or remediation work. [I ASSUME YOU DID IN FACT REPORT THESE LEVELS CORRECT? IF SO, PLEASE STATE THAT REPORTING WAS MADE.]

The current site plan is included as Figure 3.

3.0 SOIL VAPOR INTRUSION INVESTIGATON

A soil vapor intrusion investigation is being performed to further delineate the presence of chlorinated VOCs, most notably, PCE on Site. The rationale for the vapor and ambient air sampling locations is as follows:

- Six sub-slab vapor samples will be collected within the basement of the building to assess sub-slab vapor quality.
- Six indoor ambient air sample will be collected concurrently in the locations of the sub-slab vapor samples.
- One indoor air sample will be collected within the first floor commercial space (former dry cleaner unit). This unit is currently occupied by a small grocery store. [WHAT TYPE OF

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TENANT IS IN THIS SPACE NOW OR IS IT VACANT? IS ALL THE DRY CLEANING EQUIPMENT GONE?]

- One indoor air sample will be collected on the second floor common area.
- One outdoor ambient air sample will be collected to assess background air conditions.

All samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006). Proposed vapor and air sample locations are shown on Figure 4.

3.1 Sub-Slab Vapor Sampling

The sub-slab vapor samples points will be set no more than two inches below the basement slab. A hammer drill will be used to drill through the concrete slab. Dedicated polyethylene tubing will be used at each sample point. The sample point will be sealed with bentonite or other another non-VOC containing and non-shrinking product.

As part of the vapor intrusion evaluation, a tracer gas (helium) will be used in accordance with NYSDOH protocols to serve as a quality assurance/quality control (QA/QC) device to verify the integrity of the soil vapor probe seal. Helium will be used as the tracer gas and a box will serve to keep it in contact with the probe during testing. A portable monitoring device will be used to analyze a sample of soil vapor for the tracer prior to sampling. If the tracer sample results show a significant presence of the tracer, the probe seals will be adjusted to prevent infiltration.

One to three volumes will be purged prior to sample collection to ensure samples collected are representative. Sub-slab vapor samples will be collected in Summa canisters which have been certified clean by the laboratory and analyzed by using USEPA Method TO-15. Flow rate of both purging and sampling will not exceed 0.2 L/min. Sampling will occur for 24 hours. A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody protocols.

At the conclusion of the sampling round, tracer monitoring will be performed a second time to confirm the integrity of the probe seals.

3.2 Indoor and Outdoor Ambient Air Sampling

Indoor air samples will be placed approximately 3 to 5 feet above the basement slab prior to sample collection commencing. The outdoor air sample will be placed 3 to 5 feet above street level. Samples will be collected using Summa canisters (batch certified clean by the laboratory) fitted with flow controllers not to exceed 200 ml/min and will run for approximately 24 hours.

Indoor and outdoor ambient air samples will be submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory and analyzed for VOCs by EPA Method TO-15.

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Documentation during the indoor and outdoor air sampling will include:

- A product inventory survey documenting sources of volatile chemicals present at the building during the indoor air sampling that could potentially influence the sample results
- Use of heating or air conditioning systems
- Site sketch with locations of sampling locations, chemical storage areas, location of basement sumps and subsurface drains, doorways, stairways, and any other pertinent information
- Outdoor site sketch showing the building, sampling location, streets, and paved areas
- Weather conditions and ventilation conditions
- Any observations or readings from field instrumentation should be recorded.

3.4 Reporting

A Soil Vapor Intrusion Investigation Summary Report will be prepared following completion of the field activities and receipt of the laboratory data. The Report will provide detailed summaries of the investigative findings of vapor and air analytical results compared to the Decision Matrices in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006) and as updated in May 2017. The Report will include an updated Site Plan and remedial recommendations, as warranted.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

4.1 Quality Assurance/Quality Control Procedures

QA/QC procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used (1) to document that samples are representative of actual conditions at the Site and (2) identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. A summary of the field and laboratory QA/QC procedures is provided below.

4.2 Field QA/QC

Field QA/QC will include the following procedures:

- Calibration of field equipment, including PID, on a daily basis;
- Use of dedicated and/or disposable field sampling equipment;
- Proper sample handling and preservation;
- Proper sample chain of custody documentation; and
- Completion of report logs.

The above procedures will be executed as follows:

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- Disposable sampling equipment, including acetate sleeves, latex gloves, and disposable bailers (or sample tubing), will be used to minimize cross-contamination between samples;
- For each of the parameters analyzed, a sufficient sample volume will be collected to adhere to the specific analytical protocol, and provide sufficient sample for reanalysis if necessary;
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.

4.3 Sample Custody

Sample handling in the field will conform to appropriate sample custody procedures. Field custody procedures include proper sample identification, chain-of-custody forms, and packaging and shipping procedures. Sample labels will be attached to all sampling canisters before field activities begin to ensure proper sample identification. Each label will identify the site and sample location.

After each sample is collected and appropriately identified, the following information will be entered into the chain-of-custody form:

- sample identification,
- date and time of sample collection,
- sampling depth,
- identity of samplers,
- sampling methods and devices,
- soil vapor purge volumes,
- volume of soil vapor extracted,
- if canisters used, vacuum of canisters before and after samples collected,
- apparent moisture content (dry, moist, saturated, etc.) of the sampling zone, and
- chain of custody protocols and records used to track samples from sampling point to analysis.
-

The sampler will sign and date the "Relinquished" blank space prior to removing one copy of the custody form and sealing the remaining copies of the form in a Ziploc plastic bag. The canisters will be picked up by a laboratory representative from the Site or hand delivered to the laboratory.

4.4 Report Logs

Field logs and borings logs will be completed during the course of this investigation. A field log will be completed on a daily basis which will describe all field activities including:

- Project number, name, manager, and address;
- The date and time;
- The weather conditions;
- On-site personnel and associated affiliations;
- Description of field activities; and

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- Pertinent sample collection information including sample identification numbers, description of samples, location of sampling points, number of samples taken, method of sample collection and any factors that may affect its quality, time of sample collection, name of collector, and field screening results.

4.5 Laboratory QA/QC

An ELAP-certified laboratory will be used for all sample analyses. The laboratory will follow the following QA/QC protocols. All samples will be delivered to the laboratory within 24 hours of sample collection. Samples will be received by laboratory personnel, who will inspect the sample cooler(s) to check the integrity of the custody seals. The cooler(s) will then be opened, the samples unpackaged, and the information on the chain-of-custody form examined. If the shipped samples match those described on the chain-of-custody form, the laboratory sample custodian will sign and date the form on the next "Received" blank and assume responsibility for the samples. If problems are noted with the sample shipment, the laboratory custodian will sign the form and record problems in the "Remarks" box. The custodian will then immediately notify the Project Manager so appropriate follow-up steps can be implemented on a timely basis.

A record of the information detailing the handling of a particular sample through each stage of analysis will be maintained by the laboratory. The record will include:

- Job reference, sample matrix, sample number, and date sampled;
- Date and time received by laboratory, holding conditions, and analytical parameters;
- Extraction date, time and extractor's initials (if applicable), analysis date, time, and analyst's initials; and
- QA batch number, date reviewed, and reviewer's initials.

4.6 Data Usability Summary Report (DUSR)

A Data Usability Summary Report (DUSR) will be prepared by a third-party contractor, which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

5.0 HEALTH AND SAFETY PLAN (HASP)

The investigation Health and Safety Plan (HASP) is included in Appendix D. The Site Safety Coordinator will be Jessica Ferngren. Investigative work performed under this Work Plan will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the investigation work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations.

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign a HASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form. Potential on-site chemicals of concern include VOCs. Information fact sheets for each contaminant group and/or MSDS' are included in the HASP.

An emergency contact sheet with names and phone numbers for all pertinent project personnel as well as regulatory hotline information is included in the HASP. That document will define the specific project contacts for use in case of emergency.

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FIGURES

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APPENDIX A – PHASE I ESA – MAY 11, 2018

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APPENDIX B – FSSI REPORT – JUNE 2018

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APPENDIX C – SUPPLEMENTAL PHASE II ESA DECEMBER 2018

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APPENDIX D – HASP

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