REMEDIAL INVESTIGATION WORK PLAN

For the Property Located at
1299 1St Avenue
New York, NY 10021
NYSDEC BCP No. C231072

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
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CONTENTS

LIST OF APPENDICIES

Appendix A Merritt Engineering Consultants Phase I ESA

Appendix B Hydro Tech Environmental Phase II ESA (2007)

Appendix C Hydro Tech Environmental Subsurface Investigation (2008)

Appendix D Hydro Tech Environmental Groundwater Investigation (May 2010)

Appendix E Hydro Tech Environmental Groundwater Investigation (July 2010)

Appendix F Hydro Tech Environmental Records Review Report

Appendix G Integral Engineering Soil Vapor and Indoor Air Investigation Results Memo (2013)

Appendix H Field Sampling Plan (FSP)

Appendix I Quality Assurance Project Plan (QAPP)

Appendix J Health and Safety Plan with Community Air Monitoring Plan (HASP/CAMP)

Appendix K Citizen Participation Plan (CPP)

LIST OF FIGURES

LIST OF TABLES

CERTIFICATION

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

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

Date signed and sealed:

Keith P. Brodock, P.E.
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1 INTRODUCTION

Integral Engineering, P. C. (Integral) has prepared this Remedial Investigation Work Plan (RIWP) on behalf of 3SK Corporation (3SK) (Participant), for the property located at 1299 1st Avenue (Block 1444, Lot 30), New York, NY (Site). The Site is currently enrolled in the New York State Brownfield Cleanup Program (BCP) and listed as Site No. C231072. This Revised RIWP includes a summary of Site history, a summary of previous environmental assessments and investigations (including the results of the soil vapor investigation completed in March 2013), a description of the Site geologic and hydrogeologic setting, a summary of subsurface features, an assessment of data gaps, and a plan for the evaluation of onsite subsurface conditions.

The information and data collected during the previous investigations demonstrate that chlorinated solvent contamination is present in the soil and groundwater beneath the Site. Although several environmental investigations were conducted at the Site between 2007 and 2010, available data was limited to soil and groundwater, and on-site sample locations were limited to areas that were accessible at the time. The absence of soil vapor/indoor air samples, inconsistent sampling procedures, access limitations and inconsistent reporting, represent significant data gaps. Data gaps are discussed in Section 2.1.3.1 of this RIWP.

In March 2013, in advance of the Remedial Investigation (RI) and at the request of the New York State Department of Environmental Conservation (NYSDEC), a soil vapor and indoor air investigation (SVI) was performed on-site and off-site (western adjacent property) in order to evaluate potential human health risks associated with elevated concentrations of chlorinated solvents in on-site soil and groundwater. The results of this investigation are discussed in Section 2.1.2.6 of this RIWP.

1.1 SITE DESCRIPTION

The Site is located in a commercial and residential area of the Upper East Side section of the Borough of Manhattan. The Site is comprised of an approximately 1,957 square foot rectangular parcel located on the corner of the block and is bounded to the north by 70th Street; to the east by 1st Avenue; to the south by 69th Street; and to the west by 2nd Avenue. Adjacent properties include mixed use commercial and residential buildings to the south, west and east; and a senior center to the north. The Site is identified on New York City tax maps as Block 1444, Lot 30. A Site location map is provided as Figure 1. A map showing the Site property boundaries is included as Figure 2.

The Site is currently developed with a 4-story commercial/residential building (measuring approximately (25'x 65'). The first floor of the building is utilized as a convenience store and pharmacy. The basement depth is approximately six (6) feet (ft) below sidewalk grade (bsg) and

is divided into two sections, both of which are used for storage. Two (2) 275-gallon above ground storage tanks (ASTs) containing number two fuel oil are located in the western section of the basement. Residential units occupy floors two through four, with two units per floor. Within the footprint of the Site is a separate one-story building (measuring approximately (12' x 25') located west of the main Site building. This building is presently utilized as a drycleaning drop-off and pick up facility and shares a wall with the main building. There is a small (10'x20') space located beneath the one story building that contains a boiler. Integral understands that this boiler services both onsite buildings.

The Site is currently zoned C2-8 for commercial districts that are predominantly residential. This RI is not being performed in association with the redevelopment of the Site.

Based on a review of the New York City Mayor's Office of Environmental Remediation's (OER's) Searchable Property Environmental E-Database (SPEED), there are no hospitals and no schools present within 500 ft of the Site. One day care facility is located approximately 200 feet northwest of the Site.

1.2 REGULATORY INTERACTION

On April 5, 2011, NYSDEC designated the Site as eligible to be an inactive hazardous waste disposal site, but did not list it on the Registry of Inactive Hazardous Waste Disposal Sites. In October 2011, 3SK entered into an Order on Consent (Order) with NYSDEC reflecting this. On February 4, 2013, Integral and 3SK met with NYSDEC to discuss a plan of action moving forward. During this meeting, NYSDEC requested that an SVI be performed under the existing Order, at the Site and adjacent properties to the west and south[1]. On July 11, 2013 the Site was accepted into the BCP; on August 30, 2013 the Order was terminated by NYSDEC. The work to be performed under this RI work plan, when approved by NYSDEC, and all future remedial work will be performed in accordance with the requirements set forth in the BCP.

1.3 SITE HISTORY

According to the Record Review Report prepared by Hydro Tech Environmental (Hydro Tech), historic Sanborn Maps indicated that a drycleaner was present on-site between 1976 and 1996. City Directory search records list a drycleaner (NU Brite Cleaners) in operation at the Site between 1950 and 1988 and identified it as a Resource Conservation Recovery Act (RCRA) Non-Generator of hazardous wastes between 1999 and 2007.

Additionally, Hydro Tech reported that between 2000 and 2005, the rear portion of the commercial space was leased to Global Entrepreneurship Inc., which provided drycleaning

[1] The SVI was conducted on March 26 and 27, 2013, by Integral at the Site and western adjacent property; the owner of the adjacent property to the south declined access.

services with off-site dry cleaning operations. It is unclear if the "rear portion" of the commercial space refers to the small one-story building located west of the main building or to another section of the main commercial space. The Site was utilized as an auto body repair shop from 1927 to 1942.

1.4 PURPOSE

This RIWP has been developed to achieve the following BCP objectives:

- To define the nature and extent of contamination on and off-site
- To identify if residual contaminant source areas are present at the Site
- To determine whether remedial action is needed to protect human health and the environment
- To produce data of sufficient quantity and quality to support the remediation of the Site

This RIWP was developed in general accordance with NYSDEC's Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10), dated May 2010.

Specifically, this RIWP provides a summary of environmental conditions including the following:

- Relevant information from existing environmental reports and previously conducted Site investigations
- Technical overview and findings from previous reports
- Planned investigation activities as outlined in Section 3 for the RIWP (including soil, soil vapor mitigation pilot test, and groundwater investigations)
- Site base mapping, supporting figures presenting sampling results/data, and locations of planned investigational activities
- Quality Assurance Project Plan (QAPP)
- Site Specific Health & Safety Plan (HASP)
- Community Air Monitoring Plan (CAMP)
- Field Sampling Plan (FSP)
- Citizen Participation Plan (CPP)

References used in assessment of this Site and for development of this Work Plan are identified in the References section at the end of this document.

2 BACKGROUND

2.1 SUMMARY OF PREVIOUS INVESTIGATIONS AND ASSESSMENTS

In accordance with the DER-10, this Draft RIWP incorporates a summary of the previous Environmental Site Assessments and Site Investigations, which provide the basis for identifying areas of concern (AOCs) and the principal constituents of concern (COCs) at the Site.

2.1.1 Phase I Environmental Site Assessment

A Phase I Environmental Assessment (ESA) was conducted by Merritt Engineering Consultants, P.C. (MEC), dated September 7, 2006. An incomplete Phase I document was provided to Integral by NYSDEC in January 2013. To date, we have been unsuccessful in recovering a complete Phase I Report. The summary provided below is a culmination of summaries provided in subsequent reports by Hydro Tech and Integral's evaluation of available Sanborn maps, New York City Department of Building (NYCDOB) records, and discussions with the Participant.

As mentioned above in section 1.3, Sanborn maps and City directory search records indicated that an active drycleaner was present operating on-site between 1950 and 1999. Records also indicated that the Site was utilized as an auto body repair shop from 1927 to 1942 and listed as a RCRA Non-Generator of hazardous wastes between 1999 and 2007.

The Phase I report recommended that a Phase II Investigation, including the advancement of soil borings, be conducted on-site due to the historic presence of a drycleaner. Available portions of MECs Phase I ESA are included as Appendix A.

A Records Search Report and subsequent subsurface investigations conducted by Hydro Tech are summarized in sections 2.1.2.1 and 2.1.2.5 below. The SVI conducted by Integral is summarized in Section 2.1.2.6.

2.1.2 Subsurface Investigations

Subsurface investigations were conducted at the Site by Hydro Tech in 2007, 2008 and 2010. Integral's SVI was performed in March 2013. The investigations included the completion of a total of ten (10) soil borings, seven (7) groundwater monitoring wells, and five (5) soil vapor probes. Sample locations from all previous investigations are depicted on Figure 3. Soil sample analytical exceedences, from all previous investigations, are depicted on Figure 4. Groundwater sample analytical exceedences, from all previous investigations, are depicted on Figure 5. Soil vapor sample analytical results, from Integral's investigation are depicted on Figure 6.

2.1.2.1 Hydro Tech Phase II ESA (2007)

Scope of Work

Three (3) soil borings were advanced in the basement of the Site building using a Stanley (limited access) probe machine that utilized direct-push technology. Borings were advanced to refusal; encountered from six (6) to eight (8) feet below basement. Integral deduces that soil boring locations were chosen based on general Site coverage. A total of three (3) soil samples were collected (one from each boring) from depths 2 to 6 ft below basement grade (bbg). Soil samples were analyzed for volatile organic compounds (VOCs) via EPA Method 8260. Soil sample results were originally compared against NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046, Determination of Soil Cleanup Objectives (SCOs). Since the date of this report, TAGM SCOs have been replaced with NYSDEC Commissioner's Policy 51 (CP-51) soil cleanup levels (SCLs), which serve to supplement the 6 NYCRR Part 375-6.8(b) (Part 375) cleanup objectives (SCOs).

Integral compared the results of the soil analysis to NYSDEC Part 375 Unrestricted Use and Restricted Residential Use SCOs in conjunction with CP-51 SCLs. The Unrestricted Use SCOs are listed in 6 NYCRR Part 375-6.8(a). The Restricted-Residential Use SCOs are listed in 6 NYCRR Part 375-6.8(b) and October 21, 2010 NYSDEC Policy CP-51. The Unrestricted Use SCOs are generally the NYSDEC's most conservative cleanup objectives and represent the concentration of a contaminant in soil which, when present at or below this level on a site, will require no use restrictions for the protection of public health, groundwater and ecological resources. The Restricted Residential SCOs are use-based criteria that are compatible with the current usage of the Site and surrounding area.

Findings

- PID readings/olfactory observations indicated elevated levels of VOCs in Site soils (refer to Table 1 for PID readings for all soil samples collected onsite)
- Tetrachloroethene (PCE) was detected in soil sample SP-2[2-4'] at 12,000 milligrams per kilogram (mg/kg), exceeding its respective Restricted Residential SCOs of 5.5 mg/kg
- 1,2,4-trimethylbenzene and n-butylbenzene were detected in soil sample SP-1[2-4'] at concentrations below their respective Unrestricted SCOs
- PCE was detected in soil sample SP-3[4-6'] at a concentration below its Unrestricted SCO

Soil analytical results for Hydro Tech's investigation compared to Unrestricted and Restricted Residential SCOs are provided as Table 2. Hydro Tech's Phase II ESA Report is included as Appendix B.

2.1.2.2 Hydro Tech Focused Subsurface Investigation (2008)

Scope of Work

Hydro Tech performed this subsurface investigation to delineate the extent of PCE in soil and to determine if it had impacted the groundwater. Hydro Tech notes that due to the shallow basement height and the presence of shelves and boxes throughout the basement, the boring locations within the basement were limited by access. Hydro Tech's Focused Subsurface Investigation Report is included as Appendix C.

Soil Borings

Four (4) soil borings (SP-4 through SP-7) were advanced in the basement of the Site using a remote operated probing machine fitted with Geoprobe® tools and sampling equipment. Three (3) soil borings were advanced in the sidewalk adjacent to the Site building: SP-8 and SP-10 were advanced along 70th Street, north of the Site and SP-9 was advanced along 1st Avenue, east of the Site. Soil borings conducted in the basement were advanced to refusal, encountered between six (6) to twelve (12) ft-bbg. Sidewalk borings were advanced to 16 feet below grade (ft-bsg) using a track-mounted 6620DT Geoprobe® drill rig.

Two (2) foot interval samples with the highest PID reading were collected from soil borings SP-4[4-6'], SP-5[6-8'] and SP-10[10-12']. No visual/olfactory indications of impact, or PID readings were associated with borings SP-6, SP-7, SP-8 and SP-9. Samples obtained from these borings, were collected at the deepest dry interval ranging between six (6) to sixteen (16) ft.

Soil samples were analyzed for VOCs via EPA Method 8260. Soil sample results were compared against NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046, Determination of Soil Cleanup Objectives (SCOs). As stated above, TAGM SCOs have been replaced by CP-51 SCLs, which supplement Part 375 SCOs.

Groundwater

Four (4) soil borings were converted into permanent 1-inch monitoring wells. Three (3) monitoring wells were installed in the sidewalk along the perimeter of the Site. One (1) monitoring well was installed in the basement. The following soil borings were converted to monitoring wells:

- SP-6/MW-1: total depth = 14 ft-bbg (20 ft-bsg, based on a 6' basement height)
- SP-8/MW-2: total depth = 25 ft-bsg; sidewalk 70th Street
- SP-9/MW-3: total depth = 22 ft-bsg; sidewalk 1st Avenue
- SP-10/MW-4: total depth = 23 ft-bsg; sidewalk 70th Street

Monitoring well construction consisted of 1 inch diameter PVC riser and screen portions with a slot size of 0.020 inches. Each well was constructed with a 10 foot screened interval. All wells were installed with a sand pack and bentonite seal and finished at

grade with a 5 inch diameter manhole cover. Hydro Tech surveyed the wells using a David White LT8-300 Transit. Based on their calculations the groundwater elevation fluctuated 11 ft across a distance of 30 ft. A formal well survey will be conducted as part of the RI in order to establish accurate groundwater elevations and flow direction.

Each monitoring well was sampled using disposable polypropylene weighted bailers and analyzed for VOCs via EPA Method 8260. Groundwater sample analysis was compared against NYSDEC Division of Water Technical Operational Guidance Series (TOGS) 1.1.1, Class GA Water Quality Standards and Guidance Values (Class GA Standards).

Findings

Soil

Integral compared the results of the soil analysis to NYSDEC Part 375 Unrestricted Use and Restricted Residential Use SCOs in conjunction with CP-51 SCLs. Soil analytical results for Hydro Tech's investigation are included as Table 2.

Analytical results for soil samples indicate the following:

- No VOCs were detected above Unrestricted SCOs in soil samples SP-6, SP-7, SP-8, SP-9 and SP-10
- PCE was detected in soil sample SP-4[4-6'] at 3.4 mg/kg exceeding its Unrestricted SCO of 1.3 mg/kg
- PCE was detected in soil sample SP-5[6-8] at 1,000 mg/kg exceeding its Restricted Residential SCO of 5.5 mg/kg and trichloroethene (TCE) was detected at 3.1mg/kg exceeding its Unrestricted SCO of .47 mg/kg
- Petroleum related compounds (1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, Naphthalene, sec-Butylbenzene, and n-Butylbenzene) were detected in soil sample SP-10 at concentrations below their respective Unrestricted SCOs
- Chlorinated solvent impacts to soil are generally limited to the central and southeastern portions of the Site

Groundwater

Groundwater results were compared to TOGS Class GA Standards. The Class GA Standards represent levels that are protective of the groundwater as a source of drinking water; groundwater in New York City is not considered a potable source of water.

Groundwater analytical results for Hydro Tech's investigation are included as Table 3. Analytical results for groundwater samples indicate the following:

- Concentrations of PCE and cis-1,2-dichloroethene (DCE) exceeding Class GA Standards (both, 5 micro grams per liter [µg/L]) were detected in samples MW-2 (PCE at 5,500 µg/L and DCE at 280 µg/L), MW-3 (PCE at 120 µg/L and DCE at 1,400 µg/L) and MW-4 (PCE at 69 µg/L and DCE at 8.3 µg/L)

- TCE concentration in sample MW-2 (190 μg/L) exceeded its Class GA Standard of 5 μg/L
- Vinyl chloride concentration in the sample MW-3 (1,200 μg/L) exceeded its Class GA Standard of 2 μg/L
- No VOCs were detected above Class GA Standards in sample MW-1

2.1.2.3 Hydro Tech Groundwater Investigation (May 2010)

Scope of Work

In May 2010, Hydro Tech installed three off-site monitoring wells: MW-5 is located on the sidewalk of the northeastern corner of the intersection between 1st Avenue and 70th Street and; MW-6 and MW-7 are located across from the Site on the northern sidewalk along 70th Street. Wells were installed using an ATV-mounted Geoprobe® 5410 unit. Wells were constructed using of 1 inch diameter PVC riser and screen with a slot size of 0.020 inches. All wells were installed with a sand pack and bentonite seal and finished at grade with a 5 inch diameter manhole cover. MW-5 was installed to a total depth of 11 ft-bsg, MW-6 to a total depth of 15 ft-bsg and MW-7 to a total depth of 24 ft-bsg. According to the Hydro Tech, each well was installed atop bedrock. Soil sampling was not conducted as part of this investigation. Hydro Tech surveyed the wells using a David White LT8-300 Transit. A formal well survey will be conducted as part of the RI.

Groundwater samples were collected from MW-1, MW-2, MW-4, and MW-7 using disposable polypropylene weighted bailers and analyzed for VOCs via EPA Method 8260. Groundwater samples were not collected from wells MW-3, MW-5 and MW-6, because they were determined to be dry.

Findings

Groundwater results were compared to TOGS Class GA Standards. Groundwater analytical results for Hydro Tech's investigation are included as Table 3. Hydro Tech's May 2010 Groundwater Investigation Report is provided as Appendix D.

Analytical results for groundwater samples indicate the following:

- Concentrations of PCE, DCE and TCE exceeding Class GA Standards (all 5 μg/L) were detected in sample MW-1(PCE at 3,300 μg/L, DCE at 140 μg/L and TCE at 120 μg/L)
- Vinyl chloride concentration in the sample MW-4 (160 μg/L) exceeded its Class GA Standard of 2 μg/L
- No VOCs were detected above Class GA Standards in samples MW-2 and MW-4

2.1.2.4 Hydro Tech Groundwater Investigation (July 2010)

Scope of Work

In July 2010, Hydro Tech reinstalled two off-site wells (MW-5 and MW-6) that were determined to be dry after their initial installation in May 2010. The reinstalled wells were designated MW-5A and MW-6A. This investigation was performed in order to assess the extent of groundwater impact from historic on-site drycleaner operations. Both wells were installed to a depth of approximately 25 ft-bsg. Well construction consisted of 1 inch diameter PVC riser and 15 ft screen with a slot size of 0.020 inches. All wells were installed with a sand pack and bentonite seal and finished at grade with a 5 inch diameter manhole cover. Soil sampling was not conducted as part of this investigation. Hydro Tech surveyed the wells using a David White LT8-300 Transit, but did not perform a formal well survey. Groundwater samples were collected from both wells using disposable polypropylene weighted bailers and analyzed for VOCs via EPA Method 8260. Groundwater samples were not collected from previously installed wells.

Findings

Groundwater results were compared to TOGS Class GA Standards. Groundwater analytical results for Hydro Tech's investigation are included as Table 3. Hydro Tech's July 2010 Groundwater Investigation Report is provided as Appendix E.

Analytical results for groundwater samples indicate the following:

- The chloroform concentration in the sample MW-6A (7.24 µg/L) exceeded its Class GA Standard of 7 µg/L
- DCE was detected in sample MW-6A at a concentration below its Class GA Standard
- No VOCs were detected above Class GA Standards in sample MW-5A

2.1.2.5 Hydro Tech Records Search Report (2011)

Scope of Work

A records search was performed for the Site in December 2011 in order to comply with the Order executed by NYSDEC and 3SK in October 2011. The purpose of the report was to provide a record of all historical and current environmental conditions at the Site and its vicinity. The report provided a detail of the following:

- A summary of all available environmental data and information regarding environmental conditions at or emanating from the Site
- A comprehensive list of all existing relevant reports with titles, authors and subject matter as well as a description of the results of all previous investigation of the Site and areas immediately surrounding the Site which are or might be affected by the on-site chlorinated solvent impacts
- A concise summary of information held by the Responsible Party and the Responsible Party's attorney with respect to a history and description of the Site,

the types, quantities, physical state, locations, methods, and dates of disposal or release of hazardous waste at or emanating from the Site; a description of the current Site security, the names and addresses of all person(s) responsible for disposal of hazardous waste, including the dates of such disposal and any proof linking each such person responsible with the hazardous waste identified

Findings

All environmental reports included within the Records Search Report are described in sections 2.1.1 and 2.1.2, above. A summary of all environmental data collected at the Site is included in section 2.1.3, below. This report did not provide any new information that has not been previously discussed in the aforementioned sections. Hydro Tech's Records Search Report as provided to NYSDEC is provided as Appendix F.

2.1.2.6 Integral Soil Vapor and Indoor Air Investigation, March 2013

The Work Plan was prepared at the request of the NYSDEC to assess subsurface soil vapor and indoor air quality at the Site and adjacent properties. The SVI Work Plan was approved by NYSDEC on March 15, 2013; the investigation was performed on March 26 and 27, 2013. As discussed in Section 1.2, the Work Plan included an off-site investigation of the western adjacent property. The adjacent property owner to the south of the Site declined Integral access to their property. The purpose of the SVI was to evaluate the potential for soil vapor intrusion into the on-site building and adjacent building to the west (Lot 130). Below is a summary of the scope of work and results.

Scope of Work

Prior to the sub-slab soil vapor, indoor and ambient air sampling, an inventory of any used or stored materials within the building basements that may contain VOCs was prepared. The list included the VOC(s) contained within each product as listed on the Material Safety Data Sheet (MSDS) for that product, assuming MSDSs are readily available.

Prior to sampling, all soil vapor point locations were cleared for utilities and subsurface infrastructure using Ground Penetrating Radar (GPR).

For each sub-slab soil vapor, indoor air, and ambient air sample, the start time, end time, maximum and minimum temperature, and beginning and final ambient temperature was recorded.

Sub-Slab Soil Vapor

Sub-slab soil vapor samples were collected on March 26th and 27th from five (5) temporary soil vapor points located inside the building basements on Lots 30 (3 soil vapor sample points) and 130 (2 soil vapor sample points), as follows:

Lot 30 (Site): One (1) soil vapor point was installed in the northwest section of the basement within the area of the highest detected PCE concentration in soil; one (1) soil vapor point was installed along the southern basement wall to assess potential off-site migration of vapors to the south; and one (1) soil vapor point was installed within the sub-grade utility room located beneath the drop-off drycleaner to assess potential migration of vapors from the main Site building.

Lot 130 (West): One (1) soil vapor point was installed in either the building foyer (located at the front of the building) and one (1) soil vapor point was installed in the boiler room (located at the back of the building). The building on Lot 130 does not contain a basement; soil vapor points were installed in the first floor of the building.

Soil vapor samples were collected using a probe with a retractable slotted tip advanced through the subsurface at the site and installed at a depth of approximately two (2) inches into the underlying soil beneath the basement floor slab. As required by the New York State Department of Health (NYSDOH) Guidance, a helium (He) tracer was used as part of the sampling process, and the testing followed the NYSDOH guidance. Prior to sample collection, a multi-gas meter was used to measure the concentration of O_2, CO_2, and CH_4 in each probe, to assess to assess the subsurface chemistry (e.g. redox state).

Sub-slab soil vapor samples were collected at flow rates no greater than 200 ml/min over a period of two (2) hours. Soil vapor samples were analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory. One (1) duplicate sample was collected for quality assurance/quality control (QA/QC).

Indoor and Ambient Air

Four (4) indoor air samples and one (1) ambient air sample (per sampling day) were collected prior to the collection of the sub-slab soil vapor samples. [2] One (1) indoor air sample was collected from each building's lowest level. In addition, one (1) indoor air sample was collected within the commercial space located on the first floor of Lot 30 and within the sub-grade utility room located beneath the drop-off drycleaner.

[2] This limits interference with the indoor air results from the soil vapor matrix.

Indoor and ambient air samples were collected at flow rates no greater than 200 ml/min. over a period of eight (8) hours and were analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory.

Findings

The results of the sub-slab and indoor air samples were compared to NYSDOH Air Guideline Values (AGVs) and NYSDOH soil vapor and indoor air matrices found in the *Guidance for Evaluating Soil Vapor Intrusion in New York State* (NYSDOH 2006). While AGVs are guidance values for indoor air concentrations, they are applied here solely as a screening tool for soil vapor. This is a considerably conservative comparison, as it assumes that soil vapor is entering the building un-attenuated.

Subject Site (Block 1444, Lot 30)

Concentrations of tetrachloroethene (PCE) and trichloroethylene (TCE) in soil vapor exceed indoor air AGVs in sub-slab soil vapor samples (SV-1, SV-2, and SV-3) collected within the footprint of the site building.

PCE was detected in one indoor air sample collected in the site building's basement at 66µg/m3 exceeding its AGV of 30µg/m3. However, the basement is not continuously occupied, therefore this concentration does not represent an immediate risk to human health. PCE was detected at concentrations below its AGV in indoor air samples collected from the first floor and boiler room of the site building and TCE was detected at concentrations below its AGV in all indoor air samples collected from within the site building.

Western Adjacent Building (Block 1444, Lot 130)

PCE and TCE were detected in soil vapor and indoor air at concentrations below the indoor air screening level AGVs.

A summary of the SVI analytical results is presented in Table 4 and depicted on Figure 6. A comparison of the SVI results to NYSDOH matrices is discussed below in Section 2.1.3. The SVI Results Memo is provided as Appendix G.

2.1.3 Summary of Previous Investigations

The following conclusions are based on the results of the investigations conducted to date:

- Chlorinated solvent impacts are present in soils beneath the Site. The impacts have not been completely delineated, partially due to access issues. Previous investigations indicate that impacts are generally limited to the central and

southwestern portions of the Site. Vertical delineation indicates impacts exist between 2 to 8 ft-bbg.

- Chlorinated solvents present in Site soils could be the result of historic usage of the Site as a drycleaner.
- No chlorinated solvent impacts were identified in soils observed during the installation of the off-site monitoring wells. Soil samples were not collected as part of the off-site scope of work.
- In 2008, analysis of groundwater collected beneath Site adjacent sidewalks to the north and east, indicated concentrations of PCE and/or its breakdown products exceeding Class GA Standards present in wells MW-2, MW-3 and MW-4. At this time, no VOCs were detected above Class GA Standards in the groundwater collected from the on-site basement well, MW-1.
- In May 2010, analysis of groundwater collected from MW-1 indicated concentrations of PCE, TCE and DCE exceeding Class GA Standards; PCE and TCE were detected below Class GA Standards in groundwater collected from MW-2; Vinyl chloride was detected above Class GA Standards and PCE was detected below Class GA Standards in groundwater collected from MW-4; no VOCs were detected above Class GA Standard in groundwater collected from off-site well MW-7; and wells MW-3, MW-5 and MW-6 were not sampled due to lack of sample volume (i.e. groundwater in the wells).
- In July 2010, off-site wells MW-5 (hydraulically downgradient) and MW-6 (hydraulically cross-gradient) were reinstalled and renamed MW-5A and MW-6A. No VOCs were detected above Class GA Standards in groundwater collected from MW-5A. Analysis of groundwater collected from MW-6A indicated chloroform exceeded its Class GA Standard of 7 μg/L. DCE was detected below its Class GA Standard in MW-6A.
- Data gaps associated with Hydrotech's investigations exist and are described below in Section 2.1.3.1.
- Comparison of the soil vapor results for the subject property to NYSDOH matrices indicate that mitigation will be required to address elevated PCE, TCE and DCE concentrations in soil vapor under the site building. Mitigation is required as a preventive measure to restrict elevated concentrations of soil vapor from entering the indoor air should building conditions change.
- Although indoor air concentrations of PCE collected within the basement exceeded its AGV, the basement is not continuously occupied. Further, indoor air concentrations collected from the first floor commercial space do not exceed NYSDOH AGVs. Therefore, concentrations of indoor air do not represent an immediate threat to human health.

- Comparison of the soil vapor and indoor air results for the western adjacent building to NYSDOH matrices indicate no further action is necessary.
- The performance of the SVI adequately addressed onsite soil vapor sampling necessary for the evaluation of the contaminant source area and potential offsite impacts to the west, associated with contaminant migration.
- The results of the SVI sufficiently delineate soil vapor contamination on and off-site to the west, and confirm that a soil vapor mitigation system (for the Site building) is a necessary component of the Remedial Action (RA).
- Additional onsite investigation is needed to delineate chlorinated solvent impacts to soil and groundwater.
- Additional offsite investigation is needed to evaluate potential impacts to bedrock and soil vapor north, east and south of the Site.

2.1.3.1 Data Gaps

- Section 3.2 of Hydro Tech's 2007 Phase II Report indicates that soil boring refusal for all three (3) soil borings (SP-1 through SP-3), ranged from six (6) to eight (8) ft-bbg. The boring log for SP-1 indicates the boring was terminated at 10 ft-bbg and Figure 5 of Hydro Tech's 2008 Investigation indicates that SP-1 was driven to 12 ft-bbg.
- Section 3.2 of Hydro Tech's 2008 Report states that refusal was encountered at 12 ft-bbg at soil boring SP-6. The well log for MW-1, the well that was installed concurrent with SP-6, indicates the well depth at 14 ft-bbg.
- Section 3.3 of Hydro Tech's 2008 Report states that the Site specific groundwater flow is to the northeast. This was based on well casing elevations that were surveyed by Hydro Tech. Table 2 of the report shows an 11.68 foot difference in groundwater elevation across an approximate distance of 30 feet between wells MW-1 and MW-2, with MW-1 having the lower elevation (groundwater flow in this scenario would be to the southwest). Figure 3 "Groundwater Flow Contour Map – August 2008" depicts groundwater flow to the east/northeast and provides a table that indicates an 11.84 foot difference in groundwater elevation between MW-1 and MW-2, with MW-2 having the lower elevation. It is improbable that groundwater elevation would drop so dramatically over such a short distance, unless groundwater is perched atop bedrock and flows within fractures. This investigation will assess the accuracy of this statement.
- Continuous PID readings were not recorded for soil borings SP-8 through SP-10. Table 1 lists continuous PID reading for soil borings SP-1 through SP-7 and sample interval readings for SP-8 through SP-10.
- Hydro Tech's May 2010 Groundwater Report indicates that monitoring wells MW-1 through MW-7 were installed during the 2010 groundwater investigation. Monitoring

wells MW-1 through MW-4 were installed as part of Hydro Tech's 2008 Subsurface Investigation.

2.2 PHYSICAL SETTING

The Site incorporates approximately .45 acres of fairly level land situated in the City of New York, New York County, New York. The Site is mapped on the *Central Park, NY-NJ and Brooklyn* Quadrant 7.5 Minute Topographic Map, published by the United States Geological Survey (USGS). Review of the topographic map indicates that the Site is located approximately 50 feet above sea level (NGVD 1988).

2.2.1 Geologic Setting

Previous reports have characterized the sediment beneath the Site as poorly graded brown sand with some pebbles.

Bedrock geology in the vicinity of the Site is characterized as the Hartland Formation (Middle Ordovician to Lower Cambrian). The Hartland formation consists of interbedded units of fine-grained quartz-feldspar, fine- to coarse-grained quartzofeldspathic, muscovite-biotite-garnet schist, and quartz-biotite-hornblend amphibolite. Much of the schist is magnetic and is in thrust-fault contact with the underlying Manhattan Schist on the Cameron's Line thrust, which goes beneath the Triassic and Triassic Newark basin sediments. Depth to bedrock is expected to be 10 to 17 feet below street grade (Baskerville, 1994).

2.2.2 Hydrogeologic Setting

Groundwater has been measured at depths ranging from approximately 15 to 20 ft-bsg. Regional groundwater flow is expected to be east-northeast towards the East River; local groundwater follow is assumed to be the same. The topography of the Site is relatively flat. No formal elevation survey has been conducted to provide exact groundwater elevations; a formal elevation survey will be performed as part of this RI. See section 3.4. Previous investigations indicate that groundwater is perched atop bedrock and follows the bedrock contour; this conclusion will be evaluated as part of the RI.

No wetlands or surface water bodies are present at the Site. The nearest surface water body is the East River, located approximately 1,500 feet to the east.

3 REMEDIAL INVESTIGATION

The work described in this RIWP will be conducted in accordance with 6 NYCRR Part 375 Brownfield Cleanup Regulations, and in general conformance with the NYSDEC DER-10. The RI work will also comply with the QAPP and FSP appended to this RIWP. The investigation process will involve a sub-slab communication pilot test and sampling of soil/fill, native soil, groundwater, bedrock, offsite soil vapor, and ambient air. This RIWP includes offsite investigation and sampling of soil vapor and groundwater in accordance with the Participant requirements set forth in the BCP. Exploration and testing locations may be modified during the field program based on observations made in the field, access or subsurface obstruction.

3.1 PURPOSE AND OBJECTIVES

The purpose of this RIWP is to define the nature and extent of contamination at the Site; to determine the extent that contamination onsite warrants remedial action on-site and off-site; and to provide data of sufficient quantity and quality to support development of a Remedial Action Alternatives Analysis, in the event remedial action is warranted for the Site. This RIWP was developed to meet the following specific objectives:

- Delineate the extent of potential sources of residual contaminants identified in previous assessments and investigations
- Further delineate the extent of chlorinated solvents in soil and groundwater at the Site in accordance with the requirements of the BCP using previously collected data as the basis and assumed source for the investigation
- Evaluate the general appropriateness of sub-slab depressurization for the mitigation of soil vapor intrusion into the Site building
- Evaluate the potential for soil vapor to migrate offsite to the north, east and south via preferred pathways, if present
- Evaluate potential off-site impacts to groundwater from identified contamination
- Evaluate potential off-site impacts to bedrock from identified contamination

3.2 SCOPE OF REMEDIAL INVESTIGATIONS

Implementation of the RI will begin after NYSDEC approval of this RIWP. The Draft RIWP previously submitted to NYSDEC on March 29, 2013 has satisfied the mandatory 30 day public comment period. The RI will include the installation of a maximum of; fourteen (14) soil borings[3], three (3) monitoring wells, two (2) bedrock wells, and three (3) permanent soil vapor points, within areas on and off-site that have not been investigated previously and/or are

[3] Four (4) of the 14 soil boring are contingent based upon observations made in the field

identified as data gaps. The type, location, and rationale for each exploration are detailed in the sections below. Installation of soil borings, groundwater monitoring wells, and soil vapor sampling points will be completed in accordance with sections 3.3.1, 3.4.1 and 3.5.1 below and the standard procedures included in the FSP, included as Appendix H.

A summary table of all proposed sampling locations and QA/QC samples is included as Table 5.

3.3 SOIL VAPOR COMMUNICATION PILOT TEST

In order to determine the general appropriateness of sub-slab depressurization for the mitigation of on-site soil vapor intrusion and inform the subsequent mitigation system design, a series of sub-slab air communication tests will be performed at the Site.

Prior to the performance of the vapor mitigation pilot test, the concrete basement slab of the Site will be adequately sealed by applying polyurethane sealant to visible cracks in the floor. Once the basement slab of the Site is adequately sealed, a sub-slab air communication test will be performed. The test procedure will include drilling small diameter test holes into the concrete and creating a cavity in the sub-slab material at likely suction point locations and likely useful vacuum monitoring points. Enough holes will be drilled to gain a working understanding of the sub-slab characteristics for all areas of the building. Once the holes are drilled, a known vacuum will be applied to potential suction points and differential pressure measurements are recorded at neighboring test points to evaluate sub-slab communications. All test holes will be repaired with polyurethane caulk applied over a closed cell backer rod.

A sub-slab depressurization system (SSDS) design document will prepared by using the data collected from the sub-slab communication pilot test to design an SSDS. The design document will include the placement of the suction point(s) and vapor monitoring points, the location and size of the suction fan(s), and other design and installation details. The SSDS design document will be included as part of the Remedial Action Work Plan (RAWP).

3.4 SOIL SAMPLING

In order to further characterize impacts within the unsaturated soil at the Site, the following scope of work will be implemented:

- Advance a maximum fourteen (14) soil borings at the Site. The borings are intended to further evaluate the horizontal and vertical extent of chlorinated solvent impacts; assess the area around to the ASTs, address data gaps in previous sampling intervals, assist in the presentation of Alternative Analysis and remedy recommendations; and evaluate potential sources (off and on-site)

- Evaluate physical characteristics of the entire soil column encountered in each boring and identify appropriate intervals from which samples will be collected;
- Assess bedrock depth and evaluate potential impacts to bedrock (degraded bedrock samples will only be collected if the procedure and equipment necessary for their collection is capable of preventing cross-contamination);
- Collect soil samples:
  - EPA Method 5035/5035A
- Analyze soil samples:
  - TCL VOCs via EPA Method 8260C

Soil analytical data from previous investigations indicate that Site specific COCs fall within the EPA Method 8260 list of parameters, however in order to satisfy the requirements of the BCP, 25% of the soil samples collected will also be analyzed, for the following, for documentation purposes only:

- TCL SVOCs via EPA Method 8270D;
- TAL Metals via EPA Method 6010B/7470A;
- Total PCBs via EPA Method 8082; and
- Pesticides via EPA Method 8081A.

If bedrock samples are collected, they will be analyzed for VOCs via EPA Method 8260C.

The following is a description and rationale for the placement of specific borings or groups of borings across the Site. These locations are specifically proposed to delineate the on-site chlorinated solvent impacts and investigate areas of the Site that have not been previously investigated and are identified as data gaps. All proposed soil boring locations are shown on Figure 7.

3.4.1 Proposed Boring Locations and Rationale for Placement

- SP-11, SP-12, SP-13, SP-14 and SP-15: located in the proximity of previously identified chlorinated solvent impacts to soil. These are delineation borings, the results of which will aid in evaluating a remedy.
- SP-16, SP-17, SP-18 and SP-22: located in areas on and off-site not previously sampled and radiating out from the area of chlorinated solvent impacts previously detected in soil. These are contingent borings; their installation is dependent on obvious signs of impact in the delineation boring installed closest to them. Installation of contingent borings will be determined in the field.
- SP-19: located in the area of the ASTs to evaluate potential petroleum impacts from usage.
- SP-20 and SP-21: located in areas that were not previously investigated.

- SP-23 and SP-24: located in areas off-site to the northeast and southeast to evaluate and document off-site soil conditions.

Based on field measurements and observations during the investigation, boring locations may be moved, added or deleted. NYSDEC will be made aware of modifications during the investigation.

Prior to the advancement of soil borings, all locations will be cleared for utilities and subsurface infrastructure using GPR. Continuous soil sampling will be conducted for all boring. It is anticipated that one (1) soil sample will be analyzed per boring. As a default, the soil sample selected for analysis will be directly above the termination of the boring, expected to be at bedrock refusal (15-20 ft-bsg), or directly above the groundwater interface (whichever is encountered first). However, in the event the soil or fill material at a different interval above the water table/bedrock exhibits obvious signs of impacts, the sample will be analyzed from the area of highest suspected impact. Shallow (0-2 ft below grade) soil samples will only be selected for analysis if obvious signs of impacts are observed. Delineation borings are proposed in the area of the highest previous PCE detection, assuming that the area of highest impact is in the proximity of former soil sample SP-2. Soil samples analyzed from delineation borings identified as SP-11, SP-12, SP-13, SP-14 and SP-15, and their associated contingent boring, will be selected at the highest suspected impact. Delineation borings will be advanced radiating out from former sample SP-2 until no obvious signs of impacts are observed. Samples analyzed from delineation boring showing no impacts will be selected consistent with the previous sample selected from the delineation boring that exhibited impacts. The analysis of impacted soil will assist in evaluation of the remedy.

Impact will be determined in the field by an environmental professional via screening for VOCs using a photoionization detector (PID) and visual/olfactory indication.

Due to access limitations, soil borings located in the basement will be advanced using a manual slide hammer hand Geoprobe unit. Sidewalk soil borings (SP-23 and SP-24) will be advanced using a track mounted hollow stem auger (HAS) drill rig capable of spinning casings and collecting a discrete degraded bedrock sample. Soil borings will be advanced to refusal, approximately 4 to 11 feet below basement grade and 10 to 17 feet below sidewalk grade. Continuous soil samples will be collected in the basement using two (2) or four (4) foot macrocore samplers fitted with dedicated acetate liners. Continuous soil samples will be collected beneath the sidewalk utilizing two (2) foot split spoon samplers. Proper decontamination procedures will be followed after each sampler is recovered.

The soil/fill retrieved from each sampler will be field screened with a PID for VOCs and described by Integral field personnel on boring logs. Evidence of contamination (e.g., Non Aqueous Phase Liquid [NAPL], sheens, odors, staining, elevated PID readings) will be documented by Integral field personnel. Product samples, if encountered, will be submitted for gas chromatography-mass spectrometer fingerprint analysis.

Soil samples selected for laboratory analysis will be placed in laboratory supplied containers, sealed and labeled, and placed in a cooler and chilled to 4°C for transport under chain-of-custody procedures. Soil samples will be submitted to a NYSDOH ELAP-certified laboratory via courier service under standard chain-of-custody protocol and analyzed for all of the VOCs included in NYCRR Part 375 SCOs and Final CP-51 SCLs. Laboratory analytical parameters and methods are outlined above, in Section 3.4. QA/QC procedures to be followed are described in the QAPP included as Appendix I.

3.5 GROUNDWATER SAMPLING

The following scope of work is proposed to further characterize on-site groundwater impacts on and assist in the evaluation of off-site migration of contaminants:

- Install three (3) additional groundwater monitoring wells to top of bedrock or refusal
- Install two (2) bedrock wells to evaluate potential impacts to bedrock down and crossgradient of the Site
- Gauge all existing wells to determine if samples can be obtained and properly decommission any wells that are dry
- Survey the existing and newly installed wells, as no formal well elevation survey had previously been undertaken
- Evaluate groundwater elevations and present groundwater contours
- Collect one (1) round of depth-to-groundwater measurements from existing and newly-installed wells
- Purge all wells in accordance with DER-10 requirements and collect samples for laboratory analysis. All purging and sampling will be performed in accordance with proper program protocols. Samples will be collected from each of the viable wells
- Analyze groundwater samples for:
    - TCL VOCs via USEPA Method 8260C;

Groundwater analytical data from previous investigations indicate that Site specific COCs fall within the full scan VOC analysis, however in order to satisfy the requirements of the BCP, 25% of the groundwater samples collected will also be analyzed for the following, for documentation purposes only:

- TCL SVOCs via EPA Method 8270D;
- TAL Metals via EPA Method 6010B/7470A;
- Total PCBs via EPA Method 8082; and
- Pesticides via EPA 8081A.

The locations of the proposed wells and rationale for placement are listed below. Proposed well locations are shown on Figure 7.

3.5.1 Proposed Monitoring Well Locations and Rationale for Placement

- MW-8: located in the area of the highest concentration of chlorinated solvent impacts previously detected in soil. The placement of this well will aid in our evaluation of chlorinated solvent impacts to groundwater.
- MW-9: located east and downgradient of onsite chlorinated solvent impacts. The placement of this well will aid in determining potential off-site migration of chlorinated solvent in groundwater.
- MW-9(BR): bedrock well located next to MW-9, east and downgradient of onsite chlorinated solvent impacts. The placement of this well will aid in determining potential off-site migration of chlorinated solvent in bedrock.
- MW-10: located south of onsite chlorinated solvent impacts. The placement of this well will aid in the delineation of onsite chlorinated solvent impacts detected in groundwater previously collected from MW-1.
- MW-10(BR): bedrock well located next to MW-10, south of onsite chlorinated solvent impacts. The placement of this well will aid in determining potential off-site migration of chlorinated solvent in bedrock.

Overburden monitoring well construction will be determined in the field and will be based on refusal depth and estimated depth to groundwater. Overburden monitoring wells will be installed atop bedrock, approximately 4 to 11 ft-bbg and 10 to 17 ft-bsg. Monitoring well construction will generally follow the protocol described below.

Overburden monitoring wells to be installed in the basement will be installed concurrent with soil borings utilizing a limited access drilling unit capable of direct push technology. Basement wells will be constructed of 1″ diameter PVC riser and screen and will follow the same general construction as the 2″ sidewalk wells described below.

Sidewalk overburden monitoring wells will be installed concurrent with soil boring/degraded bedrock sample locations using a track mounted HSA rig outfitted with 4¼″ hollow-stem auger attachments. Augers will be spun to the top of bedrock allowing for the collection of a discreet bedrock sample. The holes created from the sampling of degraded bedrock will be sealed using bentonite prior to the construction of the monitoring wells.

Sidewalk overburden wells will be constructed of 2″ diameter PVC riser with .020″ slotted PVC screen set atop bedrock. The length of the well screen will be determined in the field and will depend on the groundwater table depth relative to the total depth of the well. The annular space around the well will be filled with No. 2 Morie quartz sand to a depth of 2′ above the top of the well screen, followed by 2′ of bentonite, then backfilled with screened (un-impacted) soil

cuttings to approximately 6" below grade. The wells will be finished with 6" of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron. Monitoring wells will be developed after a competent bentonite seal has been established.

Bedrock wells will be installed using a track mounted HSA rig utilizing mud rotary drilling. The mud rotary drilling method consists of a drill bit attached to the drill rod that rotates and advances into the borehole using a drill mud of bentonite or polymer slurry. Steel casing will be spun continuously and to approximately 2 feet into competent bedrock. Steel riser will be installed and sealed to the borehole walls using pressure pumped grout containing no more than 5% bentonite. This riser will seal the well from potential contaminant infiltration from overlying sediments. The cement will be left to cure overnight, after which a roller bit will be used to remove the grout from inside the riser and a 2"core barrel will be used to core approximately 15 feet into bedrock. Bedrock cores will be evaluated for fractures and staining and a rock quality designation will be calculated. No soil samples will be collected during the installation of the bedrock wells.

Sampling of the bedrock and overburden monitoring wells is anticipated to take place approximately one week following their installation. Following purging, one (1) representative groundwater sample will be collected from each well, using dedicated polyethylene tubing attached to a bladder pump capable of low flow control. Water quality indicators (pH, temperature, specific conductivity, and turbidity) will be monitored periodically while purging overburden monitoring wells. Groundwater samples will be collected according to EPA's *Low Flow Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells* (Low Flow Procedures, January 2010).

The groundwater samples will be pumped directly into laboratory-supplied sample bottles. Samples will be collected, cooled, properly packaged to prevent breakage, and submitted to a NYSDOH ELAP-certified laboratory via courier service under standard chain-of-custody protocol. Laboratory analytical parameters and methods are outlined above, in Section 3.4. QA/QC procedures to be followed are described in the QAPP included as Appendix I.

3.6 SOIL VAPOR SAMPLING

The following scope of work is proposed to further characterize the soil vapor off-site to the north, east and south:

- Install three (3) permanent soil vapor points
- Purge and collect soil vapor samples from three (3) points
- Collect one (1) ambient air sample per soil vapor sampling event
- Analyze all soil vapor and ambient air samples for VOCs via EPA Method TO-15

The locations of the proposed samples and rationale for placement are listed below. Proposed soil vapor sampling locations are shown on Figure 7.

3.6.1 Proposed Soil Vapor Locations and Rationale for Placement

- SV-6: located in the sidewalk north of the delineation sample SP-11. The results will further aid in assessing the potential for off-site migration of soil vapor north of the Site.
- SV-7: located in the sidewalk east of the Site. The results will further aid in assessing the potential for off-site migration of soil vapor west of the Site.
- SV-8: located in the sidewalk south of the Site. The results will further aid in assessing the potential for off-site migration of soil vapor south of the Site.

Permanent soil vapor points will be installed to the depth of the Site basement (approximately 6.5 ft-bsg) using a track mounted HSA drill rig. Each permanent soil vapor point will be constructed of a 6"stainless steel soil vapor implant with a double woven stainless steel wire .15mm pore screen size. The soil vapor implant will be attached to dedicated 1/8" Teflon tubing to grade. The annular space around the implant will be filled with No. 00 Morie quartz sand to a depth of 2' above the top of the screen, followed by a bentonite/grout mixture to approximately 6" below grade to prevent ambient air from entering the area around the probe. The points will be finished with 6" of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron.

The bentonite seal will be left to set overnight. Once the seal is secure, a "T" fitting and valve will be connected on the above-surface end of the tubing. A syringe will be used to purge the vapors in the probe and tubing of three volumes. As required by the NYSDOH, a helium (He) tracer will be used as part of the sampling process and all testing will follow the NYSDOH Soil Vapor Guidance[4]. Prior to sample collection, the He vapor will be screened using a field meter and the measurement recorded at each soil vapor sampling location (NYSDOH allows for 10% as a measure to determine a competent seal). Prior to sample collection, a multi-gas meter will be used to measure the concentration of O_2, CO_2, and CH_4 in each probe, to assess the subsurface chemistry (e.g. redox state). Following this procedure, the soil vapor samples will be collected in clean, batch certified, two (2) liter Summa™ canisters at flow rates no greater than 200 ml/min.

Soil vapor samples will be collected over a period of two (2) hours. Soil vapor samples will be analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory.

Ambient Air Sample

Background (ambient) air commonly contains VOCs at measurable but low concentrations, and can contribute a positive bias to soil vapor samples. To characterize such "background" concentrations, an ambient working conditions air sample will be collected along with the soil vapor samples. One background ambient air sample will also be collected per day along 70th

[4] *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Final*. October 2006.

Street, at the rear of Lot 30 or in front of Lot 30 along 1st Avenue. The ambient air sample will be collected using a clean, batch certified Summa™ canister over an 8-hour period. The Summa™ canister will be placed at a height of 4-6 feet above grade to simulate breathing zone elevation.

3.7 INVESTIGATION DERIVED WASTE

It is anticipated that soil cuttings and groundwater will be generated during Site characterization activities. The cutting from drilling operations will be placed on protective sheeting, screened with a PID, and either used to backfill the bore hole (if screening indicates no/minimal VOCs) or placed into 55-gallon drums. Cutting determined to be inadequate for backfill, along with redevelopment and purge water, will be drummed, characterized and disposed of off-site in accordance with federal, state and local regulations.

Used personal protective equipment (PPE) and other non-hazardous materials that come into contact with chlorinated solvents will be drummed and disposed of off-site in accordance with federal, state and local regulations.

3.8 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

Samples will be collected in accordance with the QAPP included as Appendix I.

Sample analysis will be performed by a NYSDOH ELAP certified laboratory. The laboratory will report sample results on a 5-day turnaround time. An independent sub-consultant will validate sample results and a Data Usability Summary Report (DUSR) will be prepared.

3.9 SUMMARY TABLE OF PROPOSED SAMPLING LOCATIONS

As required by Section 3.3(b) 3 of DER-10, a sampling and analysis table with all proposed sampling locations and QA/QC samples is included as Table 5.

3.10 QUALITATIVE EXPOSURE ASSESSMENT

Following receipt of the sample results, a qualitative exposure assessment (EA) will be completed. The assessment will be performed in accordance with Section 3.3(c) 4 of DER-10 and the NYSDOH guidance for performing a qualitative EA (NYSDEC DER-10; Technical Guidance for Site Investigation and Remediation; Appendix 3 B). The results will be included in the RI Report (RIR).

3.11 HEALTH AND SAFETY PLAN (HASP)

All work at the Site will be completed in accordance with the Health and Safety Plan (HASP) included in Appendix J.

3.12 AIR MONITORING

The NYSDOH Generic Community Air Monitoring Plan (CAMP), included as Appendix 1A of DER-10, will be implemented during all ground-intrusive sampling activities, unless otherwise appealed by Integral and approved by NYSDEC/NYSDOH. Details of the CAMP are included in the HASP (Appendix J).

3.13 REPORTING

A RIR describing the investigation will be prepared to document Site conditions and will meet the requirements of DER-10. The report will include results of the pilot test, details of the sampling, tabulated sample results and an assessment of the data and conclusions. If warranted, recommendations for additional actions will be included.

Soil sample results will be compared to the Unrestricted SCOs and Restricted Residential SCOs as included in Part 375-6.8 and CP-51. Groundwater sample results will be compared to the Class GA Standards. Soil vapor sample results will be compared to NYSDOH AGVs and matrices.

The report will also include the qualitative exposure assessment, CAMP results, laboratory data packages, DUSR, geologic logs, well construction diagrams and well purging/sampling logs. All data will also be submitted electronically to NYSDEC via the Environmental Information Management System (EIMS) in EQuIS format.

4 SCHEDULE

Based upon current knowledge of the Site, the following Remedial Investigation schedule, subject to change, is proposed. A minimum of 5-day notice will be provided to NYSDEC in advance of field sampling.

Task	**Task Duration**	**Total Duration**
NYSDEC/NYSDOH Approval of RIWP	0	0
Mobilization/Coordination with Owner and Tenant	4 Weeks	4 Weeks
Implement RI	2 Weeks	6 Weeks
Prepare Draft RI Report	6 Weeks	12 Weeks

5 KEY PROJECT CONTACT LIST

Name	Title	Phone Number	Email
Bryan Wong	NYSDEC Project Manager	718-482-6358	yywong@gw.dec.state.ny.us
Stephanie Selmer	NYSDOH Project Manager	518-402-7860	slh09@health.state.ny.us.
Alana Carroll	Integral Project Manager	212-962-4301	acarroll@integral-corp.com
Sang Kim (3SK Corp.)	Responsible Party	917-656-8095	tkosk1@gmail.com
1299 First LLC Ron Obadiah	Current Site Owner	(212) 693-9000	robadiah@homestateproperties.com

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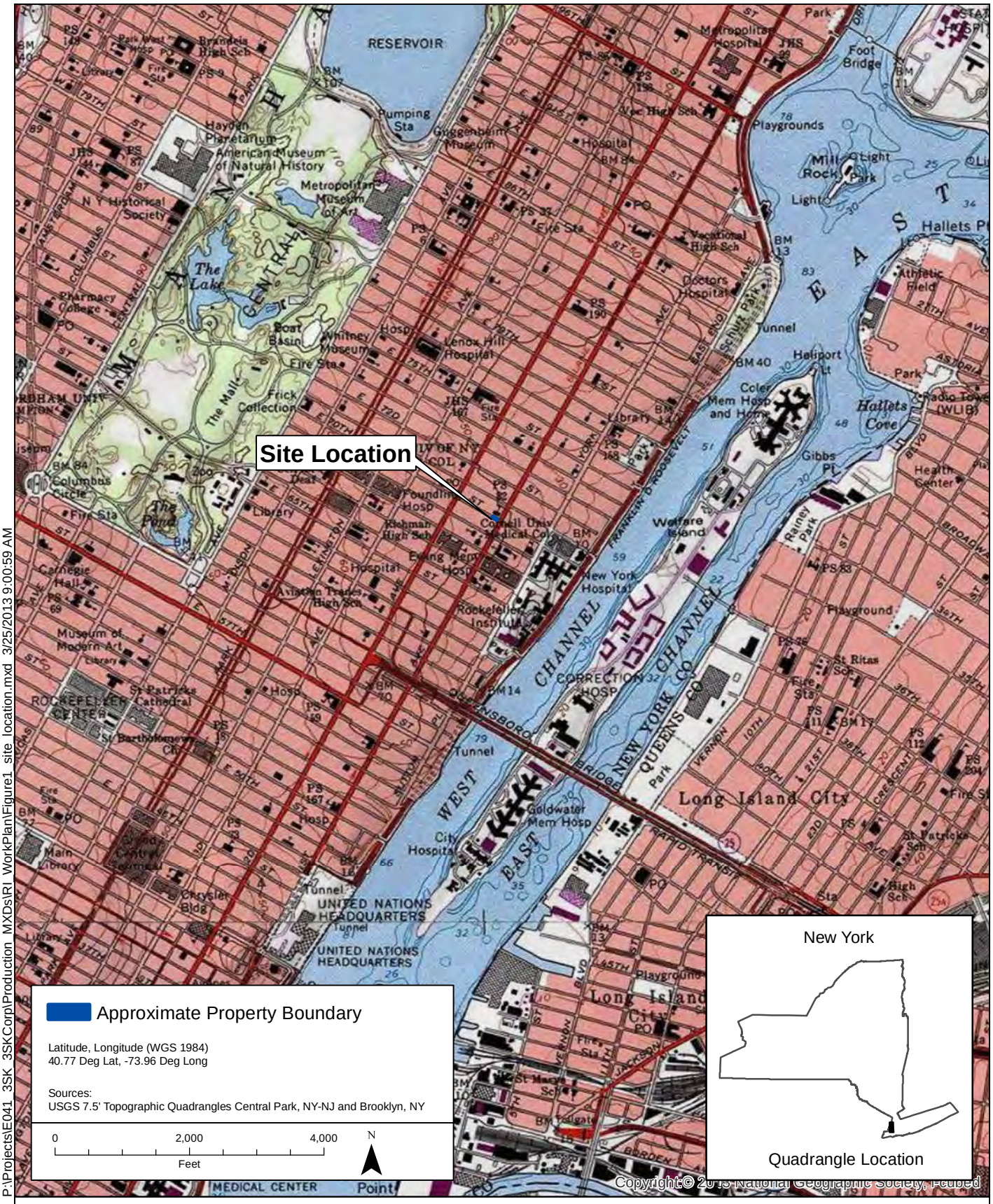
FIGURES



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integral engineering p.c.
61 Broadway, Suite 1601
New York, New York
www.integral-corp.com

Figure 1.
Site Location Map
1299 1st Avenue
New York, New York

E 70th Street

N

Sidewalk

1-Story
Dry Cleaner
(Lot 30)

4-Story Commercial/
Residential Building

LOT 30

5-Story
Residental
Building

LOT 130

Rear Yard
(Lot 29)

4-Story Commercial/
Residential Building

LOT 29

Sidewalk

1st Avenue

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61 BROADWAY, SUITE 1601
NEW YORK, NEW YORK
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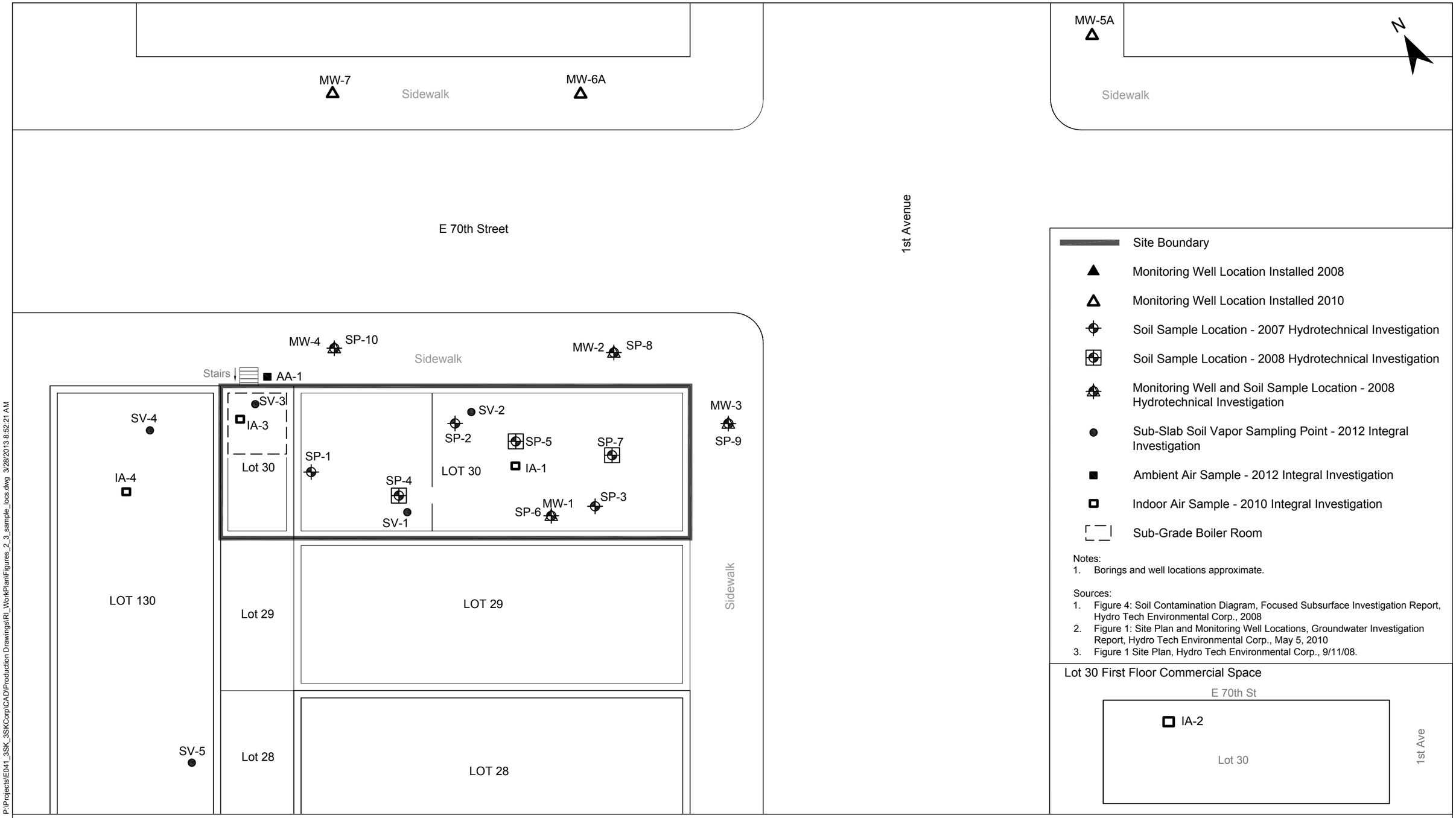
0 4 8
Feet

Site Boundary

Notes:
1. Building locations approximate.

Sources:
1. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

Figure 2.
Site Plan
1299 1st Avenue
New York, New York



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Feet

Figure 3.
Sample Location Plan - All Previous Investigations
1299 1st Avenue
New York, New York

E 70th Street

SP-10 (10' - 12')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	1.3
1,3,5-Trimethylbenzene	0.75
Naphthalene	0.7
n-Butylbenzene	0.9
sec-Butylbenzene	0.71
Tetrachloroethene	ND
Trichloroethene	ND

SP-10

SP-2 (2' - 4')	
	11/7/07
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	**12000**
Trichloroethene	ND

Sidewalk

SP-2

SP-5 (6' - 8')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	1.5
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	**1000**
Trichloroethene	***3.1***

SP-5

SP-8 (14' -16')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	ND
Trichloroethene	ND

SP-8

SP-1 (2' - 4')	
	11/7/07
VOCs	mg/kg
1,2,4-Trimethylbenzene	**2.9**
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	1.6
sec-Butylbenzene	ND
Tetrachloroethene	ND
Trichloroethene	ND

SP-1

Lot 30

LOT 30

SP-7 (6' - 8')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	0.028
Trichloroethene	ND

SP-7

SP-4

SP-6

SP-3

SP-9

Sidewalk

1st Avenue

SP-4 (4' - 6')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	2.7
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	**3.4**
Trichloroethene	ND

SP-6 (10' - 12')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	ND
Trichloroethene	ND

SP-3 (4' - 6')	
	11/7/07
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	0.091
Trichloroethene	ND

SP-9 (14' - 16')	
	8/25/08
VOCs	mg/kg
1,2,4-Trimethylbenzene	ND
1,3,5-Trimethylbenzene	ND
Naphthalene	ND
n-Butylbenzene	ND
sec-Butylbenzene	ND
Tetrachloroethene	ND
Trichloroethene	ND

Lot 29

N

Site Boundary

Soil Sample Location 2007 Hydro Tech Investigation

Soil Sample Location 2008 Hydro Tech Investigation

Sample ID (Depth)	Part 375 Unresricted Use SCO*	Part 375 Restricted Residential Use SCO**
	Date	Date
VOCs	mg/kg	mg/kg
1,2,4-Trimethylbenzene	3.6	47
1,3,5-Trimethylbenzene	8.4	47
Naphthalene	12	100
n-Butylbenzene	12	NA
sec-Butylbenzene	11	100
Tetrachloroethene	1.3	5.5
Trichloroethene	0.47	10

Notes:
1. Boring locations approximate.
2. *=6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs
3. **=6 NYCRR Part 375-6.8(b) Restricted Residential Use SCOs
4. All results are in mg/kg
5. ND = Not Detected
6. Only compounds that exceeded SCOs are shown. **Bolded** results exceed Unrestricted SCOs, **Bolded shaded** results exceed Unrestricted and Restricted Residential SCOs

Sources:
1. Figure 4: Soil Contamination Diagram, Focused Subsurface Investigation Report, Hydro Tech Environmental Corp., 2008
2. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

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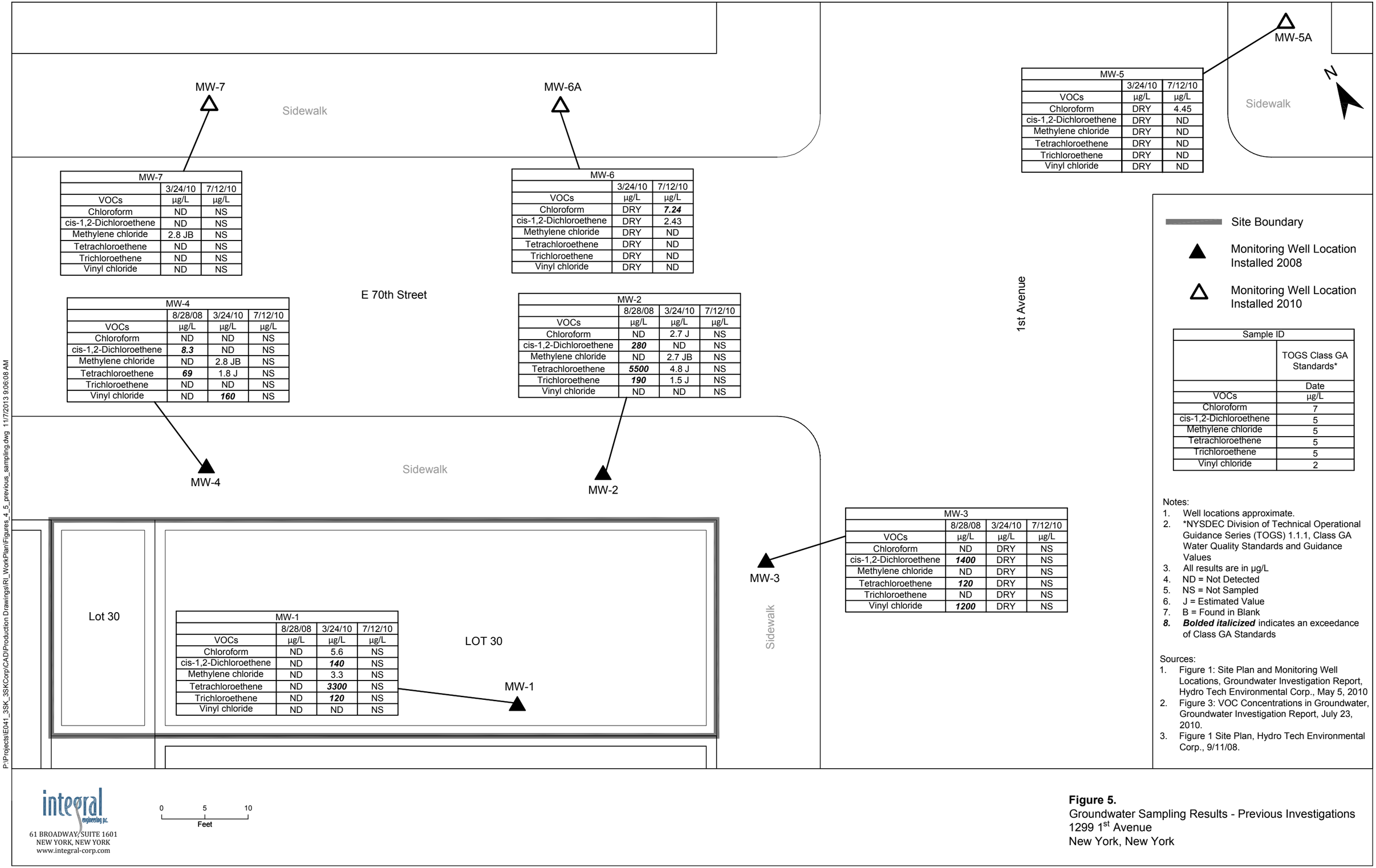
Figure 4.
Soil Sample Results - Previous Investigations
1299 1st Avenue
New York, New York



MW-7		
	3/24/10	7/12/10
VOCs	µg/L	µg/L
Chloroform	ND	NS
cis-1,2-Dichloroethene	ND	NS
Methylene chloride	2.8 JB	NS
Tetrachloroethene	ND	NS
Trichloroethene	ND	NS
Vinyl chloride	ND	NS

MW-6		
	3/24/10	7/12/10
VOCs	µg/L	µg/L
Chloroform	DRY	***7.24***
cis-1,2-Dichloroethene	DRY	2.43
Methylene chloride	DRY	ND
Tetrachloroethene	DRY	ND
Trichloroethene	DRY	ND
Vinyl chloride	DRY	ND

MW-5		
	3/24/10	7/12/10
VOCs	µg/L	µg/L
Chloroform	DRY	4.45
cis-1,2-Dichloroethene	DRY	ND
Methylene chloride	DRY	ND
Tetrachloroethene	DRY	ND
Trichloroethene	DRY	ND
Vinyl chloride	DRY	ND

MW-4			
	8/28/08	3/24/10	7/12/10
VOCs	µg/L	µg/L	µg/L
Chloroform	ND	ND	NS
cis-1,2-Dichloroethene	***8.3***	ND	NS
Methylene chloride	ND	2.8 JB	NS
Tetrachloroethene	***69***	1.8 J	NS
Trichloroethene	ND	ND	NS
Vinyl chloride	ND	***160***	NS

MW-2			
	8/28/08	3/24/10	7/12/10
VOCs	µg/L	µg/L	µg/L
Chloroform	ND	2.7 J	NS
cis-1,2-Dichloroethene	***280***	ND	NS
Methylene chloride	ND	2.7 JB	NS
Tetrachloroethene	***5500***	4.8 J	NS
Trichloroethene	***190***	1.5 J	NS
Vinyl chloride	ND	ND	NS

MW-3			
	8/28/08	3/24/10	7/12/10
VOCs	µg/L	µg/L	µg/L
Chloroform	ND	DRY	NS
cis-1,2-Dichloroethene	***1400***	DRY	NS
Methylene chloride	ND	DRY	NS
Tetrachloroethene	***120***	DRY	NS
Trichloroethene	ND	DRY	NS
Vinyl chloride	***1200***	DRY	NS

MW-1			
	8/28/08	3/24/10	7/12/10
VOCs	µg/L	µg/L	µg/L
Chloroform	ND	5.6	NS
cis-1,2-Dichloroethene	ND	***140***	NS
Methylene chloride	ND	3.3	NS
Tetrachloroethene	ND	***3300***	NS
Trichloroethene	ND	***120***	NS
Vinyl chloride	ND	ND	NS

Sample ID	TOGS Class GA Standards*
	Date
VOCs	µg/L
Chloroform	7
cis-1,2-Dichloroethene	5
Methylene chloride	5
Tetrachloroethene	5
Trichloroethene	5
Vinyl chloride	2

Notes:
1. Well locations approximate.
2. *NYSDEC Division of Technical Operational Guidance Series (TOGS) 1.1.1, Class GA Water Quality Standards and Guidance Values
3. All results are in µg/L
4. ND = Not Detected
5. NS = Not Sampled
6. J = Estimated Value
7. B = Found in Blank
8. ***Bolded italicized*** indicates an exceedance of Class GA Standards

Sources:
1. Figure 1: Site Plan and Monitoring Well Locations, Groundwater Investigation Report, Hydro Tech Environmental Corp., May 5, 2010
2. Figure 3: VOC Concentrations in Groundwater, Groundwater Investigation Report, July 23, 2010.
3. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

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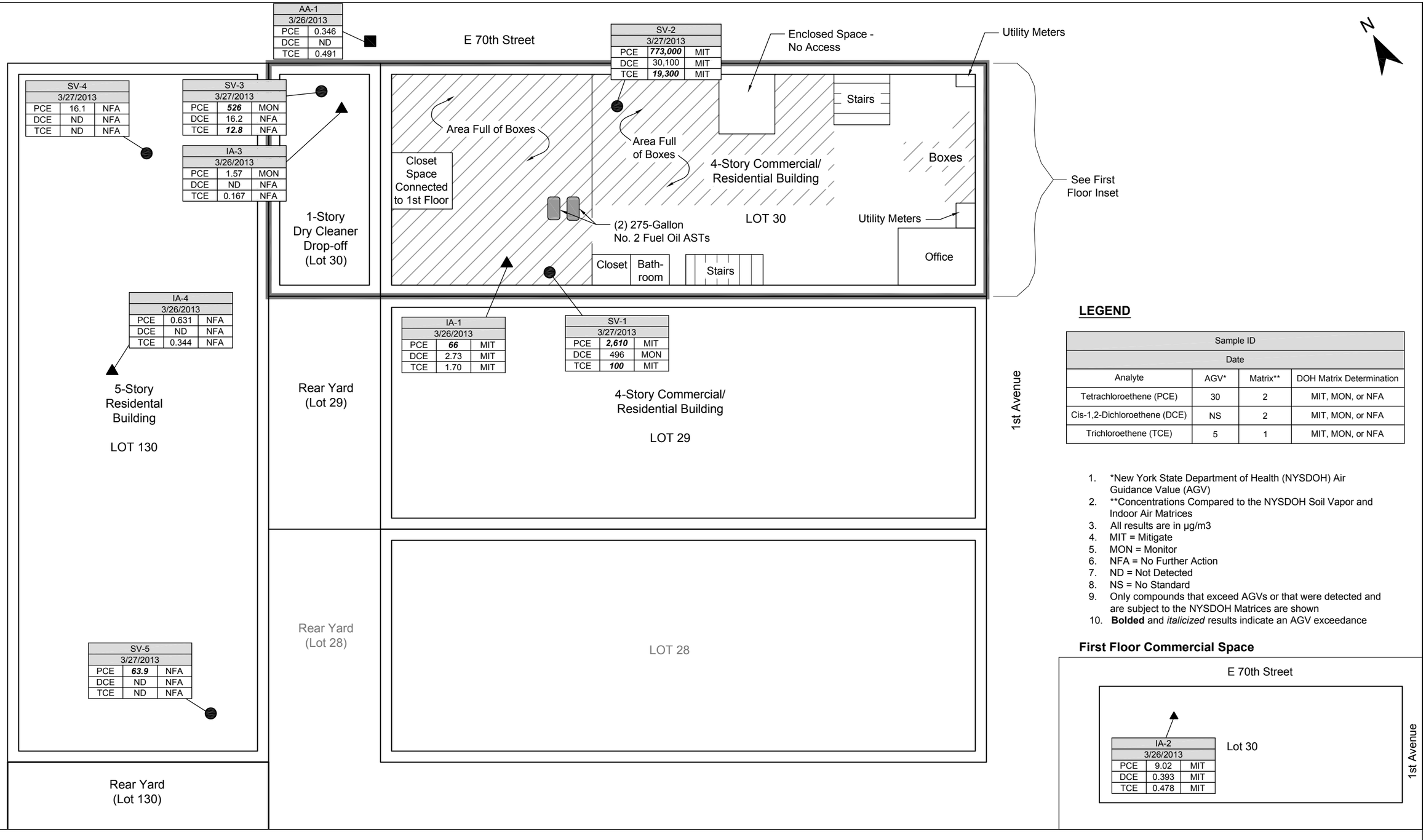
Figure 5.
Groundwater Sampling Results - Previous Investigations
1299 1st Avenue
New York, New York



LEGEND

Sample ID			
Date			
Analyte	AGV*	Matrix**	DOH Matrix Determination
Tetrachloroethene (PCE)	30	2	MIT, MON, or NFA
Cis-1,2-Dichloroethene (DCE)	NS	2	MIT, MON, or NFA
Trichloroethene (TCE)	5	1	MIT, MON, or NFA

1. *New York State Department of Health (NYSDOH) Air Guidance Value (AGV)
2. **Concentrations Compared to the NYSDOH Soil Vapor and Indoor Air Matrices
3. All results are in µg/m3
4. MIT = Mitigate
5. MON = Monitor
6. NFA = No Further Action
7. ND = Not Detected
8. NS = No Standard
9. Only compounds that exceed AGVs or that were detected and are subject to the NYSDOH Matrices are shown
10. **Bolded** and *italicized* results indicate an AGV exceedance

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Site Boundary
Sub-Slab Soil Vapor Sampling Point
Ambient Air Sample
Indoor Air Sample

Notes:
1. Building and sample locations approximate.

Sources:
1. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

Figure 6.
Soil Vapor and Indoor Air Sample Results
On and Off-site Soil Vapor Investigation
1299 1st Avenue
New York, New York

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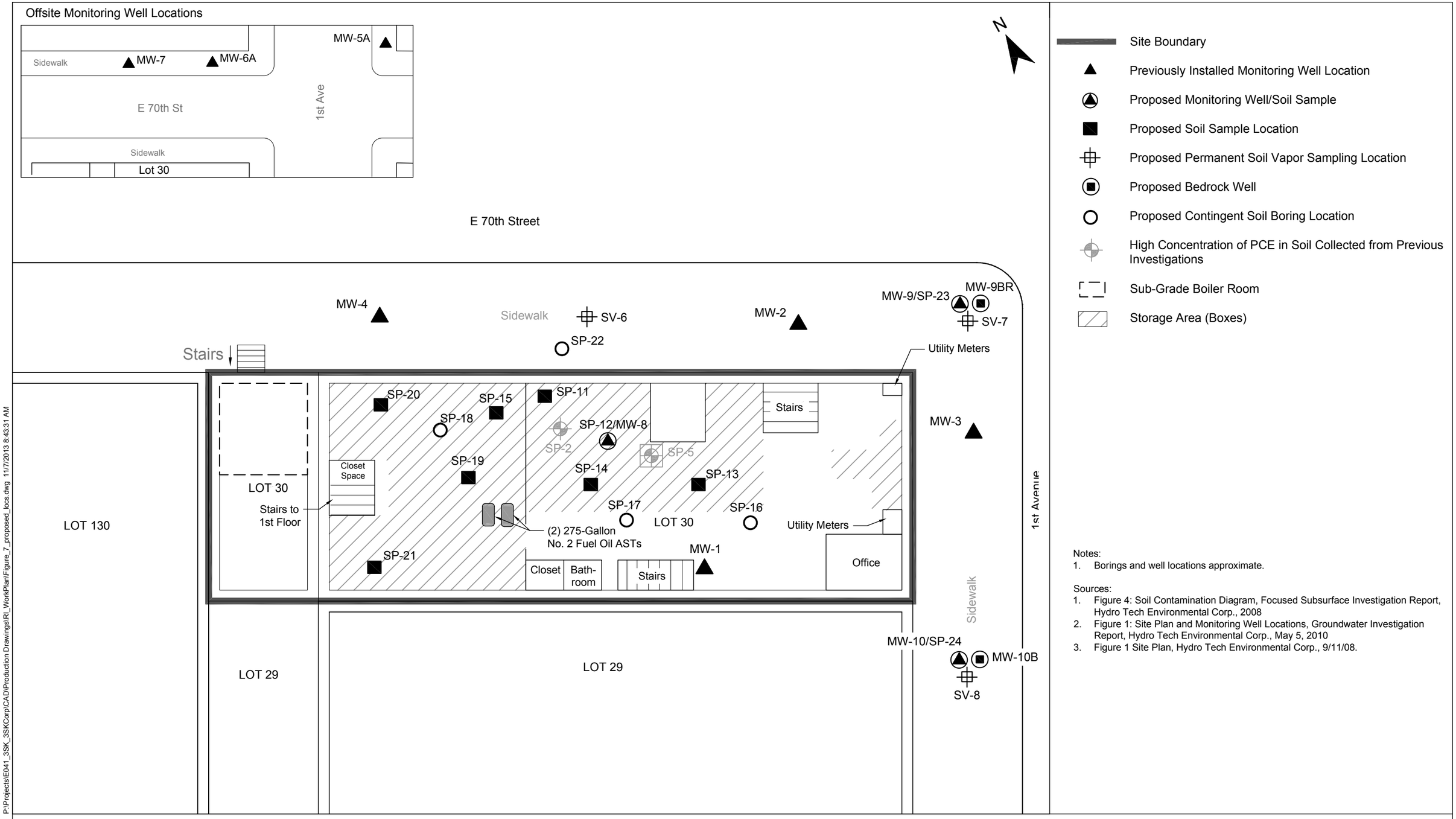

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Notes:
1. Borings and well locations approximate.

Sources:
1. Figure 4: Soil Contamination Diagram, Focused Subsurface Investigation Report, Hydro Tech Environmental Corp., 2008
2. Figure 1: Site Plan and Monitoring Well Locations, Groundwater Investigation Report, Hydro Tech Environmental Corp., May 5, 2010
3. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

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Figure 7.
Proposed RIWP Sample Location Plan
1299 1st Avenue
New York, New York

TABLES

Table 1
PID Detections for Soil Samples
1299 1st Avenue
New York, NY

	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	SP-8	SP-9	SP-10
Year	2007	2007	2007	2008	2008	2008	2008	2008	2008	2008
Depth (ft)	PID Reading (ppm)									
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
2	290	117	0.0	0.0	0.0	0.0	0.0	--	--	--
4	2866	9999	64.8	5	0.0	0.0	0.0	--	--	--
6	700	2225	79	7.4	24.7	0.0	0.0	--	--	--
8	2133	--	47.8		25.1	0.0	0.0	--	--	--
10	1077	--	--	--	--	0.0	--	--	--	5.6
12	890	--	--	--	--	0.0	--	--	--	5.6
14	--	--	--	--	--	--	--	0.0	0.0	--
16	--	--	--	--	--	--	--	0.0	0.0	--

Notes:
-- = Not Available
PID = Photoionization Detector
ppm = parts per million

Table 2
Soil Analytical Data
Volatile Organic Compounds
1299 1st Avenue
New York, NY

Sample ID Sample Media Sample Date Sample Depth Unit of Measure	Part 375 Unrestricted Use SCO*	Part 375 Restricted Residential Use SCO**	SP-1 Soil 11/7/2007 2-4' mg/kg	SP-2 Soil 11/7/2007 2-4' mg/kg	SP-3 Soil 11/7/2007 4-6' mg/kg	SP-4 Soil 8/25/2008 6' mg/kg	SP-5 Soil 8/25/2008 8' mg/kg	SP-6 Soil 8/25/2008 12' mg/kg	SP-7 Soil 8/25/2008 8' mg/kg	SP-8 Soil 8/25/2008 14-16' mg/kg	SP-9 Soil 8/25/2008 14-16' mg/kg	SP-10 Soil 8/25/2008 10-12' mg/kg
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.68	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.27	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.33	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	3.6	47	2.9	ND	ND	2.7	ND	ND	ND	ND	ND	1.3
1,2-Dibromo-3-chloropropane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.02	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8.4	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.75
1,3-Dichlorobenzene	2.4	17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.8	9.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Isopropyltoluene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	0.05	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.06	2.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.76	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1.1	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.37	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.25	59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromoethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone	0.12	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl t-butyl ether (MTBE)	0.93	62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	51	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	ND	ND	ND	ND	1.5	ND	ND	ND	ND	0.7
n-Butylbenzene	12	--	1.6	ND	ND	ND	ND	ND	ND	ND	ND	0.9
n-Propylbenzene	3.9	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	11	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.71
Styrene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	5.9	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	5.5	ND	**12000**	0.091	**3.4**	**1000**	ND	0.028	ND	ND	ND
Tetrahydrofuran (THF)	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.26	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.19	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,4-dichloro-2-butene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	10	ND	ND	ND	ND	**3.1**	ND	ND	ND	ND	ND
Trichlorofluoromethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorotrifluoroethane	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.02	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Bold value indicates concentration exceeds Unrestricted SCOs
Bold and Shaded value indicates concentration exceeds Restricted Residential SCOs
ND = Not Detected
-- = No Standard
* = 6 NYCRR Part 375-6.8(a) Unrestricted Use Soil Cleanup Objectives (SCOs)
** = 6 NYCRR Part 375-6.8(b) Restricted Residential SCOs

Table 3
Groundwater Analytical Data
Volatile Organic Compounds
1299 1st Avenue
New York, NY

Sample ID Sample Media Sample Date Unit of Measure	NYSDEC TOGS Class GA Standards*	MW-1 Groundwater 08/28/08 µg/L	Q	MW-1 Groundwater 3/24/2010 µg/L	Q	MW-2 Groundwater 8/28/2008 µg/L	Q	MW-2 Groundwater 3/24/2010 µg/L	Q	MW-3 Groundwater 08/28/08 µg/L	Q	MW-4 Groundwater 08/28/08 µg/L	Q	MW-4 Groundwater 3/24/2010 µg/L	Q	MW-7 Groundwater 3/24/2010 µg/L	Q	MW-5a Groundwater 7/12/2010 µg/L	Q	MW-6a Groundwater 7/12/2010 µg/L	Q
VOLATILE ORGANIC COMPOUNDS																					
1,1,1,2-Tetrachloroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,1-Trichloroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,2,2-Tetrachloroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5	NA		ND		NA		ND		NA		NA		ND		ND		ND		ND	
1,1,2-Trichloroethane	1	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloroethene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloropropene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,3-Trichlorobenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,3-Trichloropropane	0.04	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,4-Trichlorobenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,4-Trimethylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dibromo-3-chloropropane	0.04	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dibromoethane	--	NA		ND		NA		ND		NA		NA		ND		ND		ND		ND	
1,2-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloroethane	0.6	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloropropane	1	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3,5-Trimethylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3-Dichloropropane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,2-Dichloropropane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Chlorotoluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Hexanone	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Isopropyltoluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Chlorotoluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Methyl-2-pentanone	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Acetone	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Acrylonitrile	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Benzene	1	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromobenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromochloromethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromodichloromethane	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromoform	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromomethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Carbon Disulfide	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Carbon tetrachloride	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chlorobenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chloroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chloroform	7	ND		5.6		ND		2.7	J	ND		ND		ND		ND		4.45		**7.24**	
Chloromethane	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
cis-1,2-Dichloroethene	5	ND		**140**		**280**		ND		**1400**		**8.3**		ND		ND		ND		2.43	
cis-1,3-Dichloropropene	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dibromochloromethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dibromoethane	--	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dibromomethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dichlorodifluoromethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Ethylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Hexachlorobutadiene	0.5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Isopropylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
m&p-Xylene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methyl Ethyl Ketone	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methyl t-butyl ether (MTBE)	10	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methylene chloride	5	ND		3.3	J,B	ND		2.7	J,B	ND		ND		2.8	J,B	2.8	J,B	ND		ND	
Naphthalene	10	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Butylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Propylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
o-Xylene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
p-Isopropyltoluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
sec-Butylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Styrene	930	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
tert-Butylbenzene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Tetrachloroethene	5	ND		**3300**		**5500**		4.8	J	**120**		**69**		1.8	J	ND		ND		ND	
Tetrahydrofuran (THF)	50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Toluene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Total Xylenes	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
trans-1,2-Dichloroethene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
trans-1,3-Dichloropropene	0.4	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
trans-1,4-dichloro-2-butene	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Trichloroethene	5	ND		**120**		**190**		1.5	J	ND		ND		ND		ND		ND		ND	
Trichlorofluoromethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Trichlorotrifluoroethane	5	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vinyl chloride	2	ND		ND		ND		ND		**1200**		ND		**160**		ND		ND		ND	

Notes:
Bold and Shaded value indicates concentration exceeds TOGS Class GA Standards
NA = Not Analyzed
ND = Not Detected
-- = No Standard
Q = Laboratory Qualifiers
J= Estimated
B = Found in Blank
* = NYSDEC TOGS 1.1.1 Ambient Water Quality Standards

Table 4
Air Analytical Data
Volatile Organic Compounds
1299 1st Avenue
New York, NY

LOCATION SAMPLING DATE LAB SAMPLE ID	NYSDOH AGVs** (µg/m3)	SV-1 3/27/2013 L1305358-01	SV-2 3/27/2013 L1305358-02	SV-3 3/27/2013 L1305358-03	SV-DUP 3/27/2013 L1305358-04	SV-4 3/27/2013 L1305358-05	SV-5 3/27/2013 L1305358-06	AA-1 3/26/2013 L1305358-08	IA-1 3/26/2013 L1305358-11	IA-2 3/26/2013 L1305358-10	IA-3 3/26/2013 L1305358-09	IA-4 3/26/2013 L1305358-07
Volatile Organics in Air												
Propylene	NS	5.44	ND	13.7	16	ND	1.02	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NS	ND	ND	1.62	ND	1.6	1.86	1.78	2.07	1.52	1.83	1.55
Chloromethane	NS	ND	ND	ND	ND	ND	0.5	0.935	1.16	1.1	1.03	1.07
Freon-114	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride*	NS	2.97	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Butadiene	NS	ND	ND	2.96	3.36	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethanol	NS	ND	ND	19.2	24.5	6.41	51.1	32.8	200	170	10.5	127
Vinyl bromide	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	NS	93.6	ND	542	618	46.1	141	15.2	170	68.2	34.2	228
Trichlorofluoromethane	NS	ND	ND	1.18	ND	1.25	3.14	1.24	1.35	1.29	1.24	1.28
Isopropanol	NS	ND	ND	4.77	5.85	ND	12.9	7.2	270	283	2.93	8.58
1,1-Dichloroethene*	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	60	ND	ND	ND	ND	ND	6.81	ND	ND	ND	ND	ND
3-Chloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NS	10.3	ND	5.04	5.82	0.894	11.3	ND	ND	ND	ND	ND
Freon-113	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	NS	24.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl acetate	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NS	21.9	ND	116	137	16.9	36.9	1.67	1.63	1.16	0.734	1.9
cis-1,2-Dichloroethene*	NS	496	30100	16.2	23.6	ND	ND	ND	2.73	0.393	ND	ND
Ethyl Acetate	NS	ND	ND	ND	ND	ND	ND	ND	2	6.7	ND	30.1
Chloroform	NS	9.03	ND	1.81	2.61	98.2	95.2	ND	ND	ND	ND	1.05
Tetrahydrofuran	NS	ND	ND	1.53	1.86	1.4	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	NS	37.3	ND	8.18	9.07	3.35	20.1	ND	ND	ND	ND	ND
n-Hexane	NS	14.8	ND	5	5.67	ND	3.09	ND	1.1	0.966	ND	ND
1,1,1-Trichloroethane*	NS	ND	ND	4.75	5.3	ND	ND	ND	ND	ND	ND	ND
Benzene	NS	9.2	ND	6.64	7.83	0.856	4.98	0.802	1.28	2.02	0.754	0.994
Carbon tetrachloride*	NS	ND	ND	ND	ND	ND	ND	0.491	0.629	0.705	0.497	0.415
Cyclohexane	NS	30.4	ND	2.76	3.24	ND	2.32	ND	ND	ND	ND	2.68
1,2-Dichloropropane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	ND	ND	ND	ND	8.17	5.82	ND	ND	ND	ND	ND
1,4-Dioxane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene*	5	***100***	***19300***	***12.8***	***17.6***	ND	ND	0.419	1.7	0.478	0.167	0.344
2,2,4-Trimethylpentane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptane	NS	86.9	ND	5.74	6.27	ND	2.82	ND	ND	ND	ND	0.852
cis-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NS	ND	ND	13.5	14.3	ND	3.89	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	NS	27.1	ND	34.9	44.5	8.86	44.8	1.4	3.61	2.95	1.42	8.33
2-Hexanone	NS	ND	ND	11.1	10.1	1.26	7.79	ND	ND	ND	ND	ND
Dibromochloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene*	30	***2610***	***773000***	***526***	***787***	16.1	***63.9***	0.346	***66***	9.02	1.57	0.631
Chlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	NS	11.4	ND	10.6	12.5	4.2	19.6	ND	7.43	1.53	0.951	3.91
p/m-Xylene	NS	31.4	ND	38.9	48.2	19.8	83.8	ND	29	5.6	3.99	15.9
Bromoform	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NS	ND	ND	ND	ND	ND	1.88	ND	ND	ND	ND	1.24
1,1,2,2-Tetrachloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	NS	15.5	ND	14.6	18.4	7.69	30.5	ND	9.69	1.8	1.32	5.39
4-Ethyltoluene	NS	9.44	ND	6.24	8.21	5.85	16.9	ND	ND	ND	ND	1.27
1,3,5-Trimethylbenzene	NS	23.4	ND	6.64	8.5	6.34	18.8	ND	ND	ND	ND	2.4
1,2,4-Trimethylbenzene	NS	32.9	ND	25.1	30.5	27	74.2	ND	2.05	ND	ND	7.72
Benzyl chloride	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

** = New York State Department of Health Air Guideline Value
* = VOC subect to NYSDOH Soil Vapor/ Indoor Decision Matrices
Bold and Italicized Indicates Concentration Exceeds NYSDOH Indoor AGV
NS = No Standard
ND = Not Detected

RIWP TABLE 5
1299 1st Avenue
Proposed Sampling and Analysis Table

Sample ID	Matrix	Sample Depth	Drilling Method	Sampling Method	Analytical Method	Rationale
SP-11, SP-12, SP-13, SP-14 and SP-15	Soil	TBD per field screening	Limited Access Geoprobe	PID Screening / Grab	VOCs by EPA Method 8260 25% of soil samples will also be analyzed for SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010B/7470A Total PCBs by EPA Method 8082 Pesticides via EPA 8081A	Evaluate potential soil impacts from the chlorinated solvent AOC located in the central portion of the site
SP-16, SP-17, SP-18 and SP-22						Contingent boring to be conducted if impacts are found in the chlorinated solvent AOC
SP-19						Evaluate potential soil impacts from onsite fuel oil ASTs
SP-20 and SP-21						General Site Coverage; Data Gaps
SP-23 and SP-24	Soil and Degraded Bedrock		Hollow Stem Auger			Evaluate and document off-Site soil conditions. Evaluate potential impacts to bedrock.

RIWP TABLE 5
1299 1st Avenue
Proposed Sampling and Analysis Table

Sample ID	Matrix	Well Depth	Drilling Method	Sampling Method	Analytical Method	Rationale
MW-1, MW-2, MW-3, MW-4, MW-5A, MW-6A, MW-7	Groundwater	Between 11 and 25 feet below sidewalk grade	Installed during Previous Investigations	Low Flow Bladder Pump	VOCs by EPA 8260B 25% of groundwater samples will also be analyzed for SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010B/7470A Total PCBs by EPA Method 8082 Pesticides via EPA 8081A	Evaluate groundwater flow direction, Assess impacts to groundwater on and offsite
MW-8		TBD	Limited Access Geoprobe (1″ well)			Evaluate groundwater flow direction and the nature and extent of groundwater impacts within the chlorinated solvent AOC
MW-9 and MW-10			Hollow Stem Auger (2″ well)			Evaluate groundwater flow direction and potential offsite migration of chlorinated solvents
MW-9BR and MW-10BR			Hollow Stem Auger with Mud			Evaluate potential impacts to bedrock

RIWP TABLE 5
1299 1st Avenue
Proposed Sampling and Analysis Table

Sample ID	Matrix	Sample Depth	Drilling Method	Sampling Method	Analytical Method	Rationale
SV-6, SV-7, and SV-9	Soil Vapor	6.5 feet below sidewalk grade	HAS Rig	2 Hour Summa Canister	VOCs by EPA TO-15	Evaluate potential offsite soil vapor migration

PREVIOUS ENVIRONMENTAL REPORTS (ON CD)

APPENDIX A: MERRITT ENGINEERING CONSULTANTS PHASE I ESA (2006)

APPENDIX B: HYDRO TECH ENVIRONMENTAL PHASE II ESA (2007)

APPENDIX C: HYDRO TECH ENVIRONMENTAL SUBSURFACE INVESTIGATION (2008)

APPENDIX D: HYDRO TECH ENVIRONMENTAL GROUNDWATER INVESTIGATION (MAY 2010)

APPENDIX E: HYDRO TECH ENVIRONMENTAL GROUNDWATER INVESTIGATION (JULY 2010)

APPENDIX F: HYDRO TECH ENVIRONMENTAL RECORDS REVIEW REPORT

APPENDIX G: INTEGRAL ENGINEERING SOIL VAPOR AND INDOOR AIR INVESTIGATION RESULTS MEMO

SUPPORTING PLANS

APPENDIX H: FIELD SAMPLING PLAN (FSP)

APPENDIX I: QUALITY ASSURANCE PROJECT PLAN (QAPP)

APPENDIX J: HEALTH AND SAFETY PLAN WITH COMMUNITY AIR MONITORING PLAN (HASP/CAMP)

APPENDIX K: CITIZEN PARTICIPATION PLAN (CPP)

Appendix H
Field Sampling Plan
Former Nu Brite Cleaners
Remedial Investigation Work Plan

For the Property Located at 1299 1st Avenue
New York, NY 10021
Block 1444, Lot 30
NYSDEC BCP No. C231072

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Hunters Point Plaza
47-40 21stStreet
Long Island City, NY 11101

Prepared for:
3SK Corporation
27-15 27th Street
Astoria, NY 11102

Prepared by:

61 Broadway
Suite 1601
New York, NY 10006

November 2013

CONTENTS

LIST OF FIGURES

1 INTRODUCTION

The following Field Sampling Plan (FSP) describes in detail the sampling and data gathering methods and procedures to be used during the remedial activities at the property located at 1299 1st Avenue (Block 1444, Lot 30), New York, NY (Site), outlined in the Remedial Investigation Work Plan (November, 2013).

This FSP should be used in conjunction with the Quality Assurance Project Plan (QAPP) (Appendix I to the RIWP) and Health and Safety Plan (HASP) (Appendix J to the RIWP), both developed by Integral Engineering P.C. for the RI activities at the Site.

1.1 SITE LOCATION

The Site is located in a commercial and residential area of the Upper East Side section of the Borough of Manhattan. The Site is comprised of an approximately 1,957 square foot rectangular parcel located on the corner of the block and is bounded to the north by 70th Street; to the east by 1st Avenue; to the south by 69th Street; and to the west by 2nd Avenue. Adjacent properties include mixed use commercial and residential buildings to the south, west and east; and a senior center to the north. The Site is identified on New York City tax maps as Block 1444, Lot 30. A Site location map is provided as Figure 1.

1.2 SAMPLING OBJECTIVE

The objective of the sampling is to define the nature and extent of contamination on and off the Site; to identify if residual contaminant source areas are present at the Site; to determine whether remedial action is needed to protect human health and the environment; to produce data of sufficient quantity and quality to support remediation of the Site.

1.3 FIELD ACTIVITIES

The Remedial Investigation (RI) will include the installation of fourteen (14) soil borings , three (3) monitoring wells, two (2) bedrock wells and three (3) permanent soil vapor points, within the footprint of the site and offsite to north, south and east.

All sampling would be conducted consistent with the FSP, QAPP, and HASP.

1.3.1 Onsite Personnel, Roles, and Responsibilities

Personnel:

- Integral Project Manager: Alana Carroll (Office: 212-440-6706; Cell: 646-895-1403)
- Integral Field Staff: Sam McTavey (Office: 212-440-6715; Cell: 914-643-1057)

Roles and Responsibilities:

Integral Project Manager: Oversees the performance of field activities and directs deviations from the RI Work Plan (if necessary).

Integral Field Staff:

- Manages the implementation of the RI
- Oversees and directs subcontractors
- Collects samples for data analysis
- Controls sample handling, packaging and shipment

1.3.2 Field Logbook

All field activities will be carefully documented in field logbooks. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is obtained. The field books will provide a legal record of the activities conducted at the site. Accordingly:

- Field books will be bound with consecutively numbered pages;
- Field books will be controlled by the field staff while field work is in progress;
- Logbooks will be waterproof;
- Entries will be signed and dated at the conclusion of each day of field work;
- Erroneous entries made while fieldwork is in progress will be corrected by the person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction;
- Corrections made after departing the field will be made by the person who made the original entries. The correction will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction; and
- The Integral Project Manager will control field books when fieldwork is not in progress.

At a minimum, daily field book entries will include the following information:

- Date and page number on each page or set of pages;
- Location of field activity;

- Date and time of entry;
- Names and titles of field team members;
- Names and titles of any site visitors and site contacts;
- Weather information: temperature, cloud coverage, wind speed and direction;
- Purpose of field activity;
- A detailed description of the fieldwork conducted, observations and any measurements or readings. Where appropriate, a hand-drawn sketch map will also be included that identifies significant landmarks, features, sample locations, and utilities; and
- When appropriate, boring numbers, well numbers, sample point ID or key activities should be identified on the top of each page to facilitate retrieval of data at a later date.

1.3.3 Sample Collection and Analysis

1.3.3.1 Soil Sampling and Bedrock

In order to further characterize the soil on and offsite, the following scope of work will be implemented:

- Advance a maximum thirteen (14) soil borings at the Site. The borings are intended to further evaluate the horizontal and vertical extent of chlorinated solvent impacts; assess the area around to the ASTs, address data gaps in previous sampling intervals, assist in the presentation of Alternative Analysis and remedy recommendations; and evaluate potential sources (on and offsite);
- Evaluate physical characteristics of the entire soil/fill column in each boring and identify appropriate intervals from which samples will be collected;
- Analyze all soil/fill and bedrock samples for:
    - VOCs via United States Environmental Protection Agency (EPA) Method 8260C;
    - VOC samples will be collected via EPA Method 5035/5035A.
- Analyze 25% soil/fill samples for:
    - SVOCs via EPA Method 8270D;
    - Target Analyte List (TAL) Metals via EPA Method 6010C/7471B;
    - Polychlorinated Biphenyls (PCBs) via USEPA Method 8082A; and
    - Pesticides via USEPA 8081B.

Continuous soil sampling will be conducted for all boring activities. It is anticipated that one (1) soil sample will be analyzed per boring. As a default, the soil sample selected for analysis will be directly above the termination of the boring, expected to be at bedrock refusal (15-20 ft-bsg), or directly above the groundwater interface (whichever is encountered first). However, in the event the soil or fill material at a different interval above the water table/bedrock exhibits obvious signs of impacts, the sample will be analyzed from the area of highest suspected impact. Shallow (0-2 ft below grade) soil samples will only be selected for analysis if obvious signs of impacts are observed. Delineation borings will be advanced radiating out from former sample SP-2 until no obvious signs of impacts are observed. Samples analyzed from delineation boring showing no impacts will be selected consistent with the previous sample selected from the delineation boring that exhibited impacts. The analysis of impacted soil will assist in evaluation of the remedy. All proposed soil boring locations are shown on Figure 2.

Impact will be determined in the field by a qualified environmental professional via screening for VOCs using a photoionization detector (PID) and visual/olfactory indication.

Due to access limitations, soil borings located in the basement will be advanced using a manual slide hammer hand Geoprobe unit. Sidewalk soil borings (SP-23 and SP-24) will be advanced using a track mounted hollow stem auger (HAS) drill rig capable of spinning casings and collecting a discrete degraded bedrock sample. Soil borings will be advanced to refusal, approximately 4 to 11 feet below basement grade and 10 to 17 feet below sidewalk grade. Continuous soil samples will be collected in the basement using two (2) or four (4) foot macrocore samplers fitted with dedicated acetate liners. Continuous soil samples will be collected beneath the sidewalk utilizing two (2) foot split spoon samplers. Proper decontamination procedures will be followed after each sampler is recovered.

The soil/fill retrieved from each sampler will be field screened with a PID for VOCs and described by Integral field personnel on boring logs. Evidence of contamination (e.g., Non Aqueous Phase Liquid [NAPL], sheens, odors, staining, elevated PID readings) will be documented by Integral field personnel. Product samples, if encountered, will be submitted for gas chromatography-mass spectrometer fingerprint analysis.

Soil samples selected for laboratory analysis will be placed in laboratory supplied containers, sealed and labeled, and placed in a cooler and chilled to 4^{o}C for transport under chain-of-custody procedures. Soil samples will be submitted to a NYSDOH ELAP-certified laboratory via courier service under standard chain-of-custody protocol and analyzed for all of the VOCs included in NYCRR Part 375 SCOs and Final CP-51 SCLs. Laboratory analytical parameters and methods are outlined above, in Section 3.3.

QA/QC procedures to be followed are described in the QAPP included as Appendix I of the RIWP.

1.3.3.2 Groundwater Sampling

The following scope of work is proposed to further characterize the groundwater on and offsite Site:

- Install three (3) additional groundwater monitoring wells to top of bedrock or refusal
- Install two (2) bedrock wells 15' into competent bedrock
- Gauge all existing wells to determine if samples can be obtained and properly decommission any wells that are dry
- Survey the existing and newly installed wells, as no formal well elevation survey had previously been undertaken
- Evaluate groundwater elevations and present groundwater contours
- Collect one (1) round of depth-to-groundwater measurements from existing and newly-installed wells
- Purge all wells in accordance with DER-10 requirements and collect samples for laboratory analysis. All purging and sampling will be performed in accordance with proper program protocols. Samples will be collected from each of the viable wells
- Analyze all groundwater samples for:
    - VOCs via USEPA Method 8260C
- Analyze 25% groundwater samples for:
    - SVOCs via EPA Method 8270D;
    - Target Analyte List (TAL) Metals via EPA Method 6010C/7471B;
    - Polychlorinated Biphenyls (PCBs) via USEPA Method 8082A; and
    - Pesticides via USEPA 8081B.

Overburden wells will be installed concurrent with a soil boring location. Proposed well locations are shown on Figure 2.

Overburden monitoring well construction will be determined in the field and will be based on refusal depth and estimated depth to groundwater. Overburden monitoring wells will be installed atop bedrock, approximately 4 to 11 ft-bbg and 10 to 17 ft-bsg. Monitoring well construction will generally follow the protocol described below.

Overburden monitoring wells to be installed in the basement will be installed concurrent with soil borings utilizing a limited access drilling unit capable of direct push technology. Basement wells will be constructed of 1″ diameter PVC riser and screen and will follow the same general construction as the 2″ sidewalk wells described below.

Sidewalk overburden monitoring wells will be installed concurrent with soil boring/degraded bedrock sample locations using a track mounted HSA rig outfitted with 4¼″ hollow-stem auger attachments. Augers will be spun to the top of bedrock allowing for the collection of a discreet bedrock sample. The holes created from the sampling of degraded bedrock will be sealed using bentonite prior to the construction of the monitoring wells.

Sidewalk overburden wells will be constructed of 2″ diameter PVC riser with .020″ slotted PVC screen set atop bedrock. The length of the well screen will be determined in the field and will depend on the groundwater table depth relative to the total depth of the well. The annular space around the well will be filled with No. 2 Morie quartz sand to a depth of 2′ above the top of the well screen, followed by 2′ of bentonite, then backfilled with screened (un-impacted) soil cuttings to approximately 6″ below grade. The wells will be finished with 6″ of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron. Monitoring wells will be developed after a competent bentonite seal has been established.

Bedrock wells will be installed using a track mounted HSA rig utilizing mud rotary drilling. The mud rotary drilling method consists of a drill bit attached to the drill rod that rotates and advances into the borehole using a drill mud of bentonite or polymer slurry. Steel casing will be spun continuously and to approximately 2 feet into competent bedrock. Steel riser will be installed and sealed to the borehole walls using pressure pumped grout containing no more than 5% bentonite. This riser will seal the well from potential contaminant infiltration from overlying sediments. The cement will be left to cure overnight, after which a roller bit will be used to remove the grout from inside the riser and a 2″core barrel will be used to core approximately 15 feet into bedrock. Bedrock cores will be evaluated for fractures and staining and a rock quality designation will be calculated. No soil samples will be collected during the installation of the bedrock wells.

Sampling of the bedrock and overburden monitoring wells is anticipated to take place approximately one week following their installation. Following purging, one (1) representative groundwater sample will be collected from each well, using dedicated polyethylene tubing attached to a bladder pump capable of low flow control. Water quality indicators (pH, temperature, specific conductivity, and turbidity) will be monitored periodically while purging overburden monitoring wells. Groundwater samples will be collected according to EPA's *Low Flow Purging and Sampling Procedures*

for the Collection of Groundwater Samples from Monitoring Wells (Low Flow Procedures, January 2010).

The groundwater samples will be pumped directly into laboratory-supplied sample bottles. Samples will be collected, cooled, properly packaged to prevent breakage, and submitted to a NYSDOH ELAP-certified laboratory via courier service under standard chain-of-custody protocol. Laboratory analytical parameters and methods are outlined above, in Section 3.4. QA/QC procedures to be followed are described in the QAPP included as Appendix I of the RIWP.

1.3.3.3 Soil Vapor Sampling

The following scope of work is proposed to further characterize the soil vapor off-site to the north, east and south:

- Install three (3) permanent soil vapor points
- Purge and collect soil vapor samples from three (3) points
- Collect one (1) ambient air sample per soil vapor sampling event
- Analyze all soil vapor and ambient air samples for VOCs via EPA Method TO-15

Proposed soil vapor sampling locations are shown on Figure 2.

Permanent soil vapor points will be installed to the depth of the Site basement (approximately 6.5 ft-bsg) using a track mounted HSA drill rig. Each permanent soil vapor point will be constructed of a 6"stainless steel soil vapor implant with a double woven stainless steel wire .15mm pore screen size. The soil vapor implant will be attached to dedicated 1/8" Teflon tubing to grade. The annular space around the implant will be filled with No. 00 Morie quartz sand to a depth of 2' above the top of the screen, followed by a bentonite/grout mixture to approximately 6" below grade to prevent ambient air from entering the area around the probe. The points will be finished with 6" of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron.

The bentonite seal will be left to set overnight. Once the seal is secure, a "T" fitting and valve will be connected on the above-surface end of the tubing. A syringe will be used to purge the vapors in the probe and tubing of three volumes. As required by the NYSDOH, a helium (He) tracer will be used as part of the sampling process and all testing will follow the NYSDOH Soil Vapor Guidance[1]. Prior to sample collection, the He vapor will be screened using a field meter and the measurement recorded at each

[1] *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Final*. October 2006.

soil vapor sampling location (NYSDOH allows for 10% as a measure to determine a competent seal). Prior to sample collection, a multi-gas meter will be used to measure the concentration of O_2, CO_2, and CH_4 in each probe, to assess the subsurface chemistry (e.g. redox state). Following this procedure, the soil vapor samples will be collected in clean, batch certified, two (2) liter Summa™ canisters at flow rates no greater than 200 ml/min.

Soil vapor samples will be collected over a period of two (2) hours. Soil vapor samples will be analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory.

One background ambient air sample will also be collected per day along 70th Street, at the rear of Lot 30 or in front of Lot 30 along 1st Avenue. The ambient air sample will be collected using a clean, batch certified Summa™ canister over an 8-hour period. The Summa™ canister will be placed at a height of 4-6 feet above grade to simulate breathing zone elevation.

1.3.4 Equipment Decontamination

Where possible, samples will be collected using new, dedicated sampling equipment so that decontamination is not required. All non-dedicated drilling tools, equipment and sampling equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox) and/or a steam cleaner. All non-dedicated sampling equipment will be decontaminated after each sampler is recovered. Decontamination water will be collected and disposed as investigation-derived waste (IDW).

1.3.5 Investigation Derived Waste

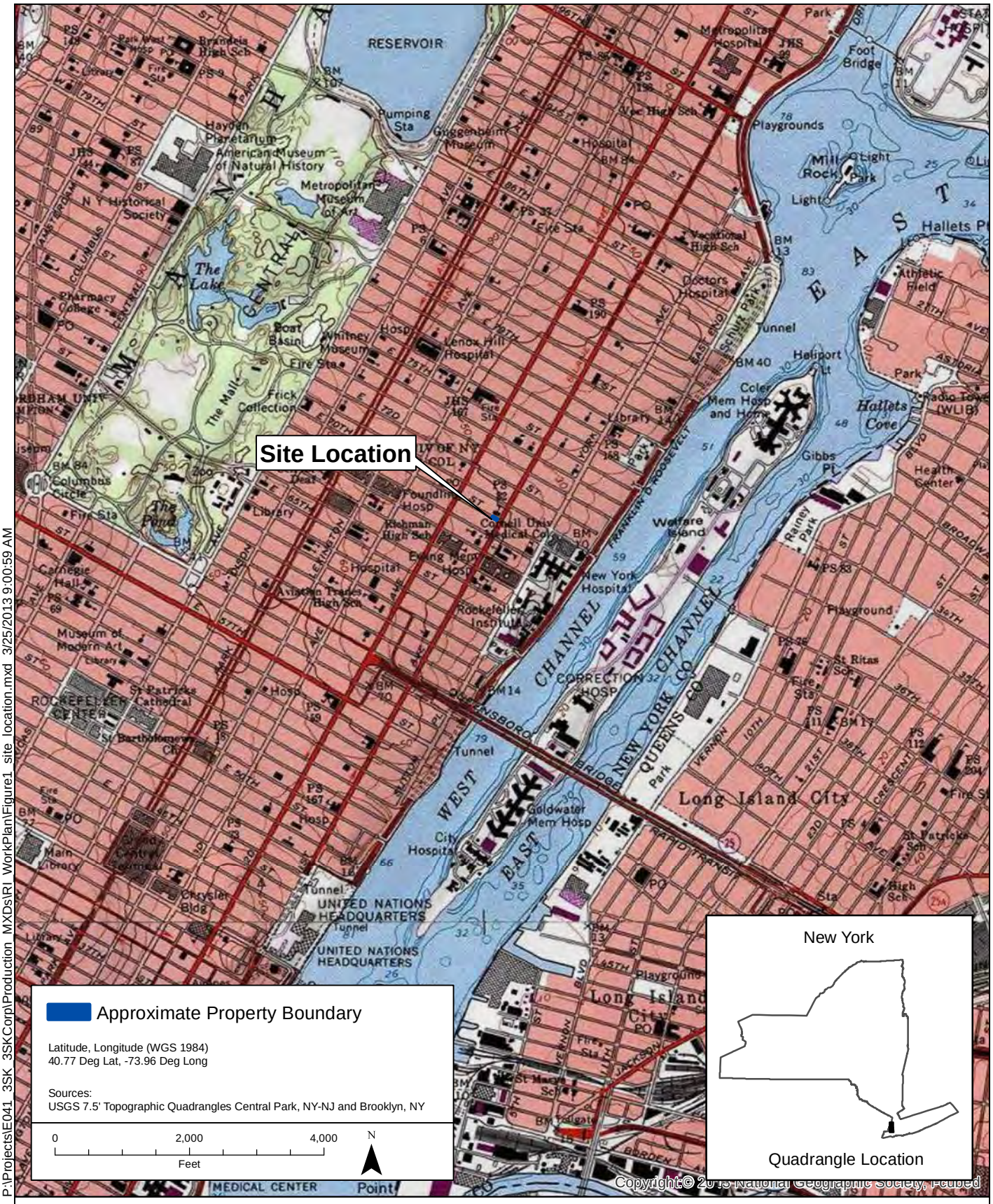
It is anticipated that soil cuttings and groundwater will be generated during Site characterization activities. The cutting from drilling operations will be placed on protective sheeting, screened with a PID, and either used to backfill the bore hole (if screening indicates no/minimal VOCs) or placed into 55-gallon drums. Cutting determined to be inadequate for backfill, along with redevelopment and purge water, will be drummed, characterized and disposed of off-site in accordance with federal, state and local regulations.

Used personal protective equipment (PPE) and other non-hazardous materials that come into contact with chlorinated solvents will be drummed and disposed of off-site in accordance with federal, state and local regulations.

1.3.6 Field Instrument Calibration

All field screening and sampling instruments (e.g., temperature-conductivity-pH probes) that require calibration prior to operation will be calibrated daily in accordance with the

manufacturer's instructions. All instrument calibrations will be documented in the project field book and in instrument calibration logs for the various pieces of equipment. Instrument operating manuals will be maintained onsite by the field team.



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integral engineering p.c.
61 Broadway, Suite 1601
New York, New York
www.integral-corp.com

Figure 1.
Site Location Map
1299 1st Avenue
New York, New York

E 70th Street

N

Sidewalk

1-Story
Dry Cleaner
(Lot 30)

4-Story Commercial/
Residential Building

LOT 30

5-Story
Residental
Building

LOT 130

Rear Yard
(Lot 29)

4-Story Commercial/
Residential Building

LOT 29

Sidewalk

1st Avenue

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integral engineering pc.
61 BROADWAY, SUITE 1601
NEW YORK, NEW YORK
www.integral-corp.com

0 4 8
Feet

Site Boundary

Notes:
1. Building locations approximate.

Sources:
1. Figure 1 Site Plan, Hydro Tech Environmental Corp., 9/11/08.

Figure 2.
Site Plan
1299 1st Avenue
New York, New York

Appendix I
Quality Assurance Project Plan
Former Nu Brite Cleaners
Remedial Investigation Work Plan

For the Property Located at 1299 1st Avenue
New York, NY 10021
Block 1444, Lots 30
NYSDEC BCP No. C231072

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Hunters Point Plaza
47-40 21stStreet
Long Island City, NY 11101

Prepared for:
3SK Corporation
27-15 27th Street
Astoria, NY 11102

Prepared by:

61 Broadway
Suite 1601
New York, NY 10006

November 2013

CONTENTS

1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been developed for the Remedial Investigation Work Plan (RIWP) prepared for the property located in at 1299 1st Avenue, New York, NY (Site).

The Site (Block 1444, Lot 30) is approximately 1,957 square feet in area and is currently developed with a 4-story commercial/residential building (measuring approximately 25'x 65'). The first floor of the building is utilized as a convenience store and pharmacy. Within the footprint of the Site is a separate one (1) story building (measuring approximately 12' x 25') located east of the main Site building. This building is presently utilized as a drycleaning drop-off and pick up facility and shares a wall with the main building.

1.1 PROJECT SCOPE AND QAPP OBJECTIVE

The proposed scope of work includes the following:

- Advancement of borings for soil, groundwater and/or soil vapor sampling at several locations around the site; and,
- Collection of soil, groundwater, degraded bedrock, soil vapor and ambient air samples from soil borings, monitoring wells and permanent soil vapor points.

The objective of the QAPP is to detail the policies, organization, objectives, functional activities and specific quality assurance/quality control (QA/QC) activities designed to achieve the data quality goals or objectives of the Work Plan. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented for quality control (QC) purposes. Specifically, this QAPP address the following:

- The procedures to be used to collect, preserve, package, and transport samples;
- Field data collection and record keeping;
- Data management;
- Chain-of-custody procedures; and,
- Determination of precision, accuracy, completeness, representativeness, decision rules, comparability and level of QC effort.

2 PROJECT ORGANIZATION

The personnel detailed are responsible for the implementation of the QAPP. Integral Engineering LLC (Integral) will implement the Work Plan on behalf of 3SK Corp. (Participant) once approved by the New York State Department of Environmental Conservation (NYSDEC).

The Qualified Environmental Professional will be Kevin McCarty, P.G., principal at Integral. Mr. McCarty is a professional geologist with nearly 20 years of experience in the New York City metropolitan area. He has designed and implemented subsurface investigations and is proficient in groundwater modeling, design of groundwater treatment systems, and soil remediation. He has managed numerous projects focused on compliance with the requirements of the New York State Brownfield Cleanup and spills programs and the New York City "e" designation program. Mr. McCarty also has extensive experience coordinating with New York State and New York City regulatory agencies. Mr. McCarty received his BA in Geology from Western Connecticut State University.

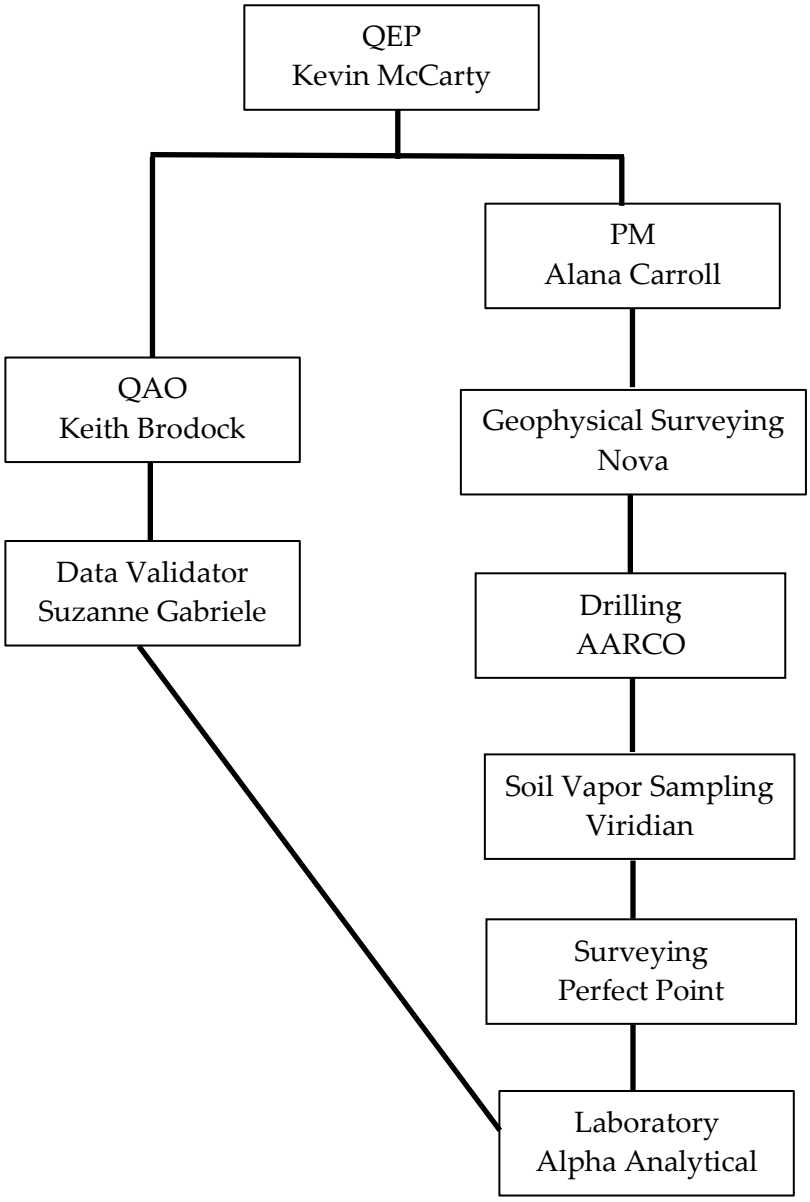
The Quality Assurance Officer will be Mr. Keith Brodock, P.E., managing engineer at Integral. Mr. Brodock is an is a professional engineer with nearly 10 years of experience in environmental risk analysis, real estate portfolio liability estimation, transactional risk evaluation, remediation design, and decision management science. One of his primary responsibilities is managing and quantifying transactional risks for brownfield properties. Mr. Brodock routinely consults purchasers and sellers on the regulatory climate, technical interpretations, and risk mitigation measures. He frequently supports fate and transport modeling of vapor intrusion cases and engineering designs for remediation systems. Mr. Brodock received his BS in Chemical Engineering from Clarkson University. Mr. Brodock has experience with analytical methods, data interpretation and validation, the development of sampling plans, quality control procedures and auditing requirements and techniques. Mr. Brodock will review sampling procedures and certify that the data was collected and analyzed using the appropriate procedures and will not be directly involved in the collection and analysis of samples from the Site. Mr. Brodock has, in conjunction with the Project Manager, developed the sampling and analytical portion of this QAPP.

The Project Manager will be Mrs. Alana Carroll, senior geologist at Integral. Mrs. Carroll is an environmental geologist with experience in all aspects of site assessment, development and implementation of remedial strategies. Her experience involves projects from inception through investigation, remediation and closure. Her expertise includes soil, soil vapor and groundwater remediation; remedial selection and design; field/health and safety oversight and preparation of work plans and reports to satisfy the requirements of various regulatory agencies. Mrs. Carroll received her BS in Geology from Hofstra University.

Project personnel resumes are included in Appendix A.

In addition, Integral will utilize subcontractors for drilling (AARCO Environmental of Lindenhurst, NY) soil vapor sampling (Viridian Inc. of Upper Montclair, NJ), geophysical survey (Nova Geophysical Services of Douglaston, NY), surveying (Perfect Point Land Surveying of Brooklyn, NY), laboratory services (Alpha Analytical of Mahwah, NJ) and data validation (Geosyntec Consultants of Centennial, CO).

An organization chart for the implementation of the Remedial Investigation Work Plan and QAPP is below.



3 SAMPLING AND DECONTAMINATION PROCEDURES

A detailed description of the procedures to be used during this program for collection of the soil, groundwater, degraded bedrock, soil vapor, and ambient air samples is provided below. Proposed sample locations are shown on Figure 7 of the Work Plan. An Analytical Methods/Quality Assurance Summary is provided in Table 1, included in Section 3.11.

3.1 LEVEL OF EFFORT FOR QC SAMPLES

Field blank, trip blank, field duplicate samples and matrix spike (MS) / matrix spike duplicate (MSD) will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. Each type of QC sample is discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.

- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD samples provide information about the effect of the sample matrix on the digestion and measurement methodology

The general level of QC effort will be one (1) field duplicate and one (1) field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one (1) site-specific MS/MSD for every 20 or fewer investigative samples of a given matrix. One (1) trip blank will be included along with each sample delivery group of VOC samples.

The analytical laboratory will be certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) in the appropriate catagories. NYSDEC Analytical Services Protocol (ASP) Category B deliverables will be prepared by the laboratory.

3.2 SAMPLE HANDLING

Samples will be picked up by the laboratory or delivered to the laboratory in person by the sampler, or transported to the laboratory by overnight courier. All samples will be shipped to

the laboratory to arrive within 48 hours after collection, and the laboratory will adhere to the analytical holding times for these analyses, as listed in the July 2005 NYSDEC ASP.

3.3 CUSTODY PROCEDURES

Sample custody will be controlled and maintained through the chain-of-custody procedures. The chain of custody is the means by which the possession and handling of samples is tracked from the site to the laboratory. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following sections (Sections 3.4 and 3.5) describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

3.4 SAMPLE STORAGE

Samples will be stored in secure limited-access areas. Walk-in coolers or refrigerators will be maintained at 4°C, 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location, if necessary.

3.5 SAMPLE CUSTODY

Sample custody is defined by this document as the following:

- The sample is in someone's actual possession;
- The sample is in someone's view after being in his or her physical possession;
- The sample was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering; or,
- The sample is placed in a designated and secured area.
- Samples will be removed from storage areas by the sample custodian or laboratory personnel and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure.

Laboratory documentation used to establish chain of custody and sample identification may include the following:

- Field chains of custody or other paperwork that arrives with the sample;
- Laboratory chain of custody;

- Sample labels or tags attached to each sample container;
- Sample custody seals;
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books, filled out in legible handwriting, and signed and dated by the chemist;
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist;
- Sample storage log (same as the laboratory chain of custody); and,
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

3.6 SAMPLE TRACKING

All samples will be maintained in the appropriate coolers prior to and after analysis. Laboratory analysts will remove and return their samples, as needed. Samples that require internal chain of custody procedures will be relinquished to the analysts by the sample custodians. The analyst and sample custodian will sign the original chain of custody relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original chain of custody returning sample custody to the sample custodian. Sample extracts will be relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department will track internal chain of custody through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the chain of custody (e.g., sample breakage or depletion).

3.7 SOIL SAMPLING

Due to access limitations, soil borings located in the basement will be advanced using a manual slide hammer hand held Geoprobe unit. Sidewalk soil borings (SP-23 and SP-24) will be advanced using a track mounted hollow stem auger (HAS) drill rig capable of collecting a discrete degraded bedrock sample. Soil borings will be advanced to refusal, approximately 4 to 11 feet below basement grade (ft-bbg) and 10 to 17 feet below sidewalk grade (ft-bsg). Continuous soil samples will be collected in the basement using two (2) or four (4) foot macrocore samplers fitted with dedicated acetate liners. Continuous soil samples will be collected beneath the sidewalk utilizing two (2) foot split spoon samplers. Proper decontamination procedures will be followed after each sampler is recovered.

New, dedicated disposable acetate sleeves will be used for all soil samples collected using the Geoprobe. Split spoon samplers used for soil sample collection using the HSA rig will be decontaminated after each sampler is recovered. The sleeve for each sample interval will be opened and the soil within scanned for volatile organic compounds (VOCs) using a photoionization detector (PID) and geologically described using the Unified Soil Classification System, including documentation of observations regarding potential contamination such as odors, staining, etc. All descriptions and observations will be documented in a field notebook.

It is anticipated that one (1) soil sample will be analyzed per boring. As a default, the soil sample selected for analysis will be directly above the termination of the boring, expected to be at bedrock refusal (15-20 ft-bsg), or directly above the groundwater interface (whichever is encountered first). However, in the event the soil or fill material at a different interval above the water table/bedrock exhibits obvious signs of impacts, the sample will be analyzed from the area of highest suspected impact. Shallow (0-2 ft below grade) soil samples will only be selected for analysis if obvious signs of impacts are observed. Samples analyzed from delineation boring showing no impacts will be selected consistent with the previous sample selected from the delineation boring that exhibited impacts.

Degraded bedrock samples will be collected upon refusal from two overburden wells located in the sidewalk and analyzed for VOCs via United States Environmental Protection Agency (EPA) Method 8260C.

VOC soil samples will be placed in laboratory provided En Core samplers (En Novative Technologies, Inc.). All other soil samples will be placed in laboratory supplied glass containers. All samples will be sealed, labeled, cooled to 4°C in the field, and transported under chain-of-custody command to the designated laboratory for analysis. Product samples, if encountered, will be submitted for gas chromatography-mass spectrometer fingerprint analysis.

All soil samples will be analyzed for VOCs via EPA Method 8260C. 25% of soil samples will also be analyzed for: semi-volatile organic compounds (SVOCs) via EPA Method 8270D; Target Analyte List (TAL) Metals via EPA Method 6010C/7471B; Polychlorinated Biphenyls (PCBs) via USEPA Method 8082A; and Pesticides via USEPA 8081B. The samples will be submitted for laboratory analysis with a NYSDEC ASP Category B data package.

3.8 OVERBURDEN AND BEDROCK MONITORING WELL INSTALLATION AND DEVELOPMENT

Overburden monitoring well construction will be determined in the field and will be based on refusal depth and estimated depth to groundwater. Overburden monitoring wells will be installed atop bedrock, approximately 4 to 11 ft-bbg and 10 to 17 ft-bsg. Monitoring well construction will generally follow the protocol described below.

Overburden monitoring wells to be installed in the basement will be installed concurrent with soil borings utilizing a limited access drilling unit capable of direct push technology. Basement

wells will be constructed of 1″ diameter PVC riser and screen and will follow the same general construction as the 2″ sidewalk wells described below.

Sidewalk overburden monitoring wells will be installed concurrent with soil boring/degraded bedrock sample locations using a track mounted HSA rig outfitted with 4¼″ hollow-stem auger attachments. Augers will be spun to the top of bedrock allowing for the collection of a discreet bedrock sample. The holes created from the sampling of degraded bedrock will be sealed using bentonite prior to the construction of the monitoring wells.

Sidewalk overburden wells will be constructed of 2″ diameter PVC riser with .020″ slotted PVC screen set atop bedrock. The length of the well screen will be determined in the field and will depend on the groundwater table depth relative to the total depth of the well. The annular space around the well will be filled with No. 2 Morie quartz sand to a depth of 2′ above the top of the well screen, followed by 2′ of bentonite, then backfilled with screened (un-impacted) soil cuttings to approximately 6″ below grade. The wells will be finished with 6″ of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron. Monitoring wells will be developed after a competent bentonite seal has been established.

Bedrock wells will be installed using a track mounted HSA rig utilizing mud rotary drilling. The mud rotary drilling method consists of a drill bit attached to the drill rod that rotates and advances into the borehole using a drill mud of bentonite or polymer slurry. Steel casing will be spun continuously and to approximately 2 feet into competent bedrock. Steel riser will be installed and sealed to the borehole walls using pressure pumped grout containing no more than 5% bentonite. This riser will seal the well from potential contaminant infiltration from overlying sediments. The cement will be left to cure overnight, after which a roller bit will be used to remove the grout from inside the riser and a 2″core barrel will be used to core approximately 15 feet into bedrock. Bedrock cores will be evaluated for fractures and staining and a rock quality designation will be calculated. No soil samples will be collected during the installation of the bedrock wells.

All wells will be surveyed to a common Site datum.

3.9 GROUNDWATER SAMPLING

Prior to sample collection, static water levels will be measured and recorded from all monitoring wells. Following water level measurement, Integral will purge and sample monitoring wells using low-flow/minimal drawdown purge and sample collection procedures. Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, temperature, turbidity, dissolved oxygen, specific conductance, oxidation-reduction potential and water level, as well as visual and olfactory field observations, will be periodically recorded and monitored for stabilization in overburden wells. Purging will be considered complete when pH, specific conductivity, dissolved oxygen and temperature stabilize and when turbidity measurements fall below 50

Nephelometric Turbidity Units (NTU), or become stable above 50 NTU. If stabilization does not occur or the well has been purged and recovery cannot maintain the pace of low flow purging, a sample will be collected and a notation will be made in the field book.

Stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Wells will be purged and sampled using dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures, as described above. The pump will be decontaminated between samples and the tubing will be replaced.

Groundwater samples will be collected for laboratory analysis through dedicated tubing. Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, dissolved oxygen, turbidity and depth-to-water, as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to the designated laboratory for analysis.

All groundwater samples will be analyzed for VOCs via EPA Method 8260C. 25% of groundwater samples will be also be analyzed for SVOCs via EPA Method 8270D; TAL Metals via EPA Method 6010C/7471B (filtered and unfiltered); PCBs via EPA Method 8082A; and Pesticides via EPA 8081B. The samples will be submitted for laboratory analysis with a NYSDEC ASP Category B data package.

3.10 SOIL VAPOR AND AMBIENT AIR SAMPLING

Permanent soil vapor points will be installed to the depth of the Site basement (approximately 6.5 ft-bsg) using a track mounted HSA drill rig. Each permanent soil vapor point will be constructed of a 6”stainless steel soil vapor implant with a double woven stainless steel wire .15mm pore screen size. The soil vapor implant will be attached to dedicated 1/8” Teflon tubing to grade. The annular space around the implant will be filled with No. 00 Morie quartz sand to a depth of 2’ above the top of the screen, followed by a bentonite/grout mixture to approximately 6” below grade to prevent ambient air from entering the area around the probe. The points will be finished with 6” of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron.

The bentonite seal will be left to set overnight. Once the seal is secure, a “T” fitting and valve will be connected on the above-surface end of the tubing. A syringe will be used to purge the vapors in the probe and tubing of three volumes. As required by the NYSDOH, a helium (He) tracer will be used as part of the sampling process and all testing will follow the NYSDOH Soil

Vapor Guidance[1]. Prior to sample collection, the He vapor will be screened using a field meter and the measurement recorded at each soil vapor sampling location (NYSDOH allows for 10% as a measure to determine a competent seal). Prior to sample collection, a multi-gas meter will be used to measure the concentration of O_2, CO_2, and CH_4 in each probe, to assess the subsurface chemistry (e.g. redox state). Following this procedure, the soil vapor samples will be collected in clean, batch certified, two (2) liter Summa™ canisters at flow rates no greater than 200 ml/min.

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.

Soil vapor samples will be collected over a period of two (2) hours. Soil vapor samples will be analyzed for VOCs via USEPA Method TO-15 at a NYSDOH ELAP-certified analytical laboratory. One (1) ambient air sample will be collected in a laboratory-supplied six (6)-liter canister using an eight (8)-hour regulator during soil vapor sample collection. All soil vapor and ambient air samples will be analyzed for VOCs using EPA Method TO-15.

3.11 ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

A summary of the analytical methods and quality assurance methods are included in Table 1, below.

[1] *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Final*. October 2006.

Table 1
Analytical Methods/Quality Assurance Summary

Matrix	Proposed Samples	QA/QC Samples				Total # Samples	Analytical Parameter	Method	Preservative	Holding Time	Container
		TB	FB	DUP	MS/MSD						
Soil	Unknown	0	0	0	0	--	Fingerprint	8100M	Cool to 4°C	14 days to perform analysis on all except VOCs from EnCores (48 hour HT)	(1) 250 mL glass bottle
	14	5	0	1	1	21	All VOCs; 25% SVOCs; Metals; PCBs: Pests	8260C; 8270D; 6010C/7471B; 8082A; 8081B			(3) 5-gram En Core; All other parameters: (1) 100ml amber glass jar.
Groundwater	12	3	0	1	1	17	All VOCs; 25% SVOCs; Metals; PCBs: Pests	8260C; 8270D; 6010C/7471B; 8082A; 8081B	Cool to 4°C, VOCs: pH<2 with HCl; with HNO3		(3) 40 mL glass vials; (2) 1L amber glass; (1) 500ml plastic bottle preserved; (1) 500ml plastic bottle non preserved; (2) 1L amber glass
Soil Vapor	3	0	0	1	0	4	VOCs	TO-15	None		2 L Summa
Ambient Air	1	0	0	0	0	1					6 L Summa

3.12 DECONTAMINATION

Where possible, samples will be collected using new, dedicated sampling equipment so that decontamination is not required. All non-dedicated drilling tools, equipment and sampling equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox) and/or a steam cleaner. All non-dedicated sampling equipment will also have a final rinse with deionized water. Decontamination water will be collected and disposed as investigation-derived waste (IDW).

3.13 DATA REVIEW AND REPORTING

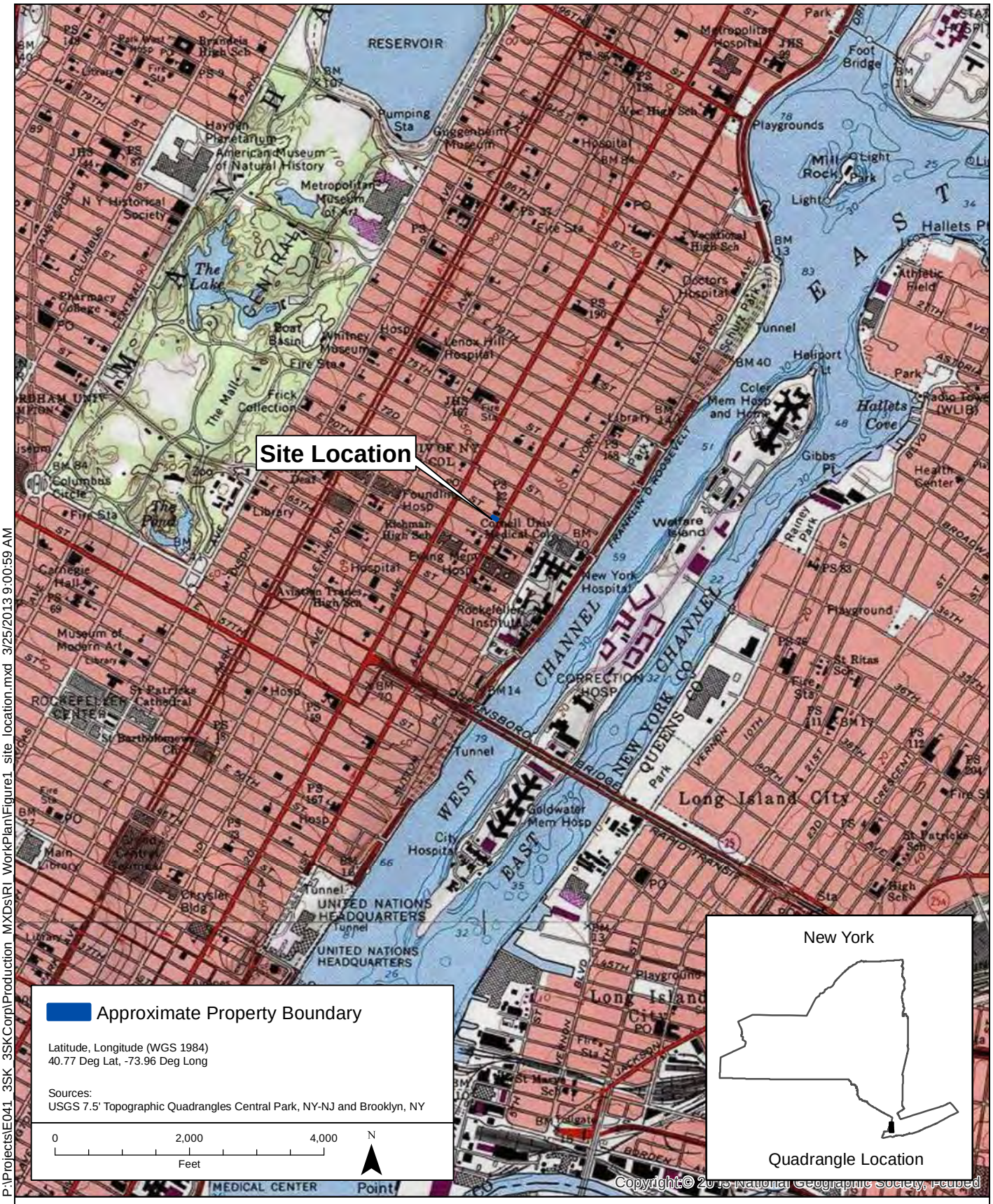
The NYSDEC ASP Category B data package will be validated by an independent data validation subconsultant (resume provided in Appendix A) and a DUSR summarizing the results of the data validation process will be prepared. All reported analytical results will be qualified as necessary by the data validation and will be reviewed and compared against background concentrations and/or applicable New York State criteria:

Soil – Unrestricted, Restricted Residential Soil Cleanup Objectives (SCOs) and Supplemental Soil Cleanup Levels (SCLs) as listed in 6NYCRR Part 375 and NYSDEC Commissioner's Policy CP-51;
Groundwater – Class GA groundwater standards and guidance values for groundwater as listed in NYSDEC Technical and Operations Guidance Series (TOGS) 1.1.1; and,
Soil Vapor – Ambient air sample results.

A report documenting the Remedial Investigation will be prepared, and will describe Site conditions and document applicable observations made during the sample collection. In addition, the report will include a description of the sampling procedures, tabulated sample results and an assessment of the data and conclusions. The laboratory data packages, DUSR, soil vapor point construction diagrams, and field notes will be included in the report as appendices. All data will also be submitted electronically to NYSDEC via the Environmental Information Management System (EIMS) in EqUIS format.

FIGURE 1

SITE LOCATION MAP



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integral engineering p.c.
61 Broadway, Suite 1601
New York, New York
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Figure 1.
Site Location Map
1299 1st Avenue
New York, New York

APPENDIX A

RESUMES

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Kevin P. McCarty, P.G.
Principal Geologist

PROFESSIONAL PROFILE

Mr. Kevin McCarty is principal geologist with more than 25 years of experience providing investigative and remediation technical advice to project managers, coordinating and supervising all section staff, preparing and commenting on work plans and progress, providing guidance on protocols/equipment/specialty contractors, and organizing/ coordinating schedules of staff and equipment in the performance of investigations and remediation on a wide variety of projects. Mr. McCarty worked on a wide variety of project sites that have been involved with regulatory programs and oversight of the New York State Department of Environmental Conservation (NYSDEC). These sites have included each division within NYSDEC and have covered nearly every region within New York State. Mr. McCarty has a long and trusted relationship with all levels of NYSDEC management and works with the department regularly on interpreting and implementing program enhancements. He is highly regarded for his knowledge of solid waste management in construction projects, which encompasses material generated from both upland locations and excavations, demolition of existing structures, and material removed from underwater excavation or dredging. He has worked and continues to work with all three regions of NYSDEC in the application of environmental conservation law and the New York's Solid Waste Management Policy in creating sustainable solutions on large construction efforts.

Mr. McCarty also has extensive environmental construction management experience on above and belowground projects. He has historically managed the environmental construction management aspects for the New York City Department of Environmental Protection (NYCDEP) Bureau of Engineering Design and Construction Combined Sewer Overflow Program. He continues to work with NYCDEP and has recently rewritten the NYCDEP environmental and material management specifications for the Departments $2.1 billion dollar annual capital construction program.

CREDENTIALS AND PROFESSIONAL HONORS

B.A., Geology/Earth Science, Western Connecticut State University, Danbury, Connecticut, 1985

Professional Geologist, Pennsylvania (License No. PG0024455G)

CONTINUING EDUCATION AND TRAINING

Hazardous Waste Operations and Emergency Response 40-Hour Certification (1985; refreshers 1988-2012)
Hazardous Waste Operations Management and Supervisor 8-hour Certification (2008)
First Aid and CPR Certified (1988-2011)

PROFESSIONAL AFFILIATIONS

Board of Directors for the New York City Partnership of Brownfield Practitioners
Board of Directors for New Partners for Community Revitalization
Member of the Downstate Soil Reuse Committee, New York City Department of Environmental Protection
Member of the New York City Brownfields Task Force
Charter Member of the Hudson Valley Brownfields Partnership Steering Committee

RELEVANT EXPERIENCE

Emergency Response

Hurricane Sandy Flood Cleanup in New York City Financial District, New York—Managed pumping and dewatering operations following the flooding of the lower section of Manhattan. Coordinated numerous contractors with pumping capacity to clear 53 million gallons of flooded office and parking garage space that contained water and ruptured fuel oil tank contents. Effort included NYCDEP and NYSDEC permits, insurance company coordination, and building health and safety coordination for the overall effort.

Environmental Investigation

Voluntary Cleanup Agreements at a Former Manufactured Gas Plant, New York—Coordinated with city and state agencies for review and approval of documents related to 13 voluntary cleanup agreements for a former manufactured gas plant site between New York City and the State of New York under Voluntary Cleanup and Brownfields programs.

Environmental Impact Study for a Planned New York City Jail, New York, New York—Managed portions of an environmental impact study to locate a New York City jail on a then currently unclosed construction and demolition landfill.

Environmental Impact Study for a Mixed Use Development, Queens, New York—Managed portions of an environmental impact study for a mixed use commercial, residential, and open space development on more than 60 acres in Willets Point, Queens, New York. Managed all aspects of redevelopment internal to the project, including costs, subsurface geotechnical conditions, mitigation, remediation, FEMA and floodplain issues, and importation and settlement of fill and energy.

Environmental Impact Study for a Multiuse Waterfront Port, New York—Managed portions of an environmental impact study for proposed commercial, residential, and educational facilities at waterfront port and shipping terminal.

Yankee Stadium Pocket Parks Project, New York—Conducted an environmental site assessment for two new replacement parks slated to be constructed as part of the much larger Yankee Stadium rebuild. Both sites had petroleum spills that need to be addressed.

Anheuser Busch/Greenway Remediation and Redevelopment, Bronx, New York—Managed a project involving the classification and reuse of more than 43,000 cubic yards of material generated on adjacent construction project to raise the development site out of the 100-year floodplain. Successful project completion saved the City of New York more than $6 million in disposal costs and the developer more than $0.5 million toward the purchase of new fill. The project was awarded the 2010 Diamond Award for environmental projects in New York State and was a national finalist.

Development of Fulton Fish Market, New York—Evaluated most efficient method of beneficial reuse for excavated material taken from an area historically used to dispose of coal tar. Final selection was incineration in a NYSDEC-permitted waste-to-energy facility where the material would be used for fuel. In the end, a total of 7.6 megawatts of electricity was generated and placed into the local electrical grid as well as a significant amount of steam energy that was supplied via underground piping to local industrial facilities. The electrical generation equivalent was enough to supply 10,000 homes with power for 3.5 months. Project received an ACEC Diamond Award, an EPA Region 2 Phoenix Award, and 2011 New York City Sustainable Remediation Award.

Large Design/Construction Management

Corona Vortex Chamber, Queens, New York—Evaluated the predesign and design of installation of an underground wastewater treatment plant facility within a city street. Prepared a full range of construction specifications, and managed all aspects of material handling, classification, and disposal of more than 70,000 cubic yards of material during construction.

Combined Sewer Overflow Tank, Flushing, New York—Assessed pilot locations for a 28 million gallon underground combined sewer tank. Performed soil and geotechnical assessment of chosen locations, prepared construction specifications for entire construction effort. Effort included excavation to depths 45 ft below water table and *in situ* classification of more than 470,000 cubic yards of material. Construction management included oversight of entire excavation, staging, and approval for disposal. Additional effort included working with NYSDEC to create management efforts for fill material and deposition/testimony for construction change order lawsuit.

PUBLICATIONS

McCarty, K. 2006. Market fresh. *Civil Engineering ASCE.* 76(6):60-65.

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Alana M. Carroll
Senior Scientist

PROFESSIONAL PROFILE

Ms. Alana Carroll is an environmental geologist with experience on a variety of environmental consulting projects in the New York metropolitan area, specializing in remedial investigations, conceptual site modeling, and remedial design and implementation. Ms. Carroll provides analytical, technical, and regulatory guidance to clients, including developers and environmental attorneys, on a variety of projects in various stages of investigation, remediation, and redevelopment and has managed projects in the New York State Brownfield Cleanup Program, the New York State Department of Environmental Conservation (NYSDEC) Spills and Voluntary Cleanup Programs, and New York City "e" Designation Program.

CREDENTIALS AND PROFESSIONAL HONORS

B.S., Geology, Hofstra University, Uniondale, New York, 2003

CONTINUING EDUCATION AND TRAINING

Graduate Coursework, Master's Program, Geology, Brooklyn College, Brooklyn, New York (anticipated completion in 2013)
Hazardous Waste Operations and Emergency Response 40-Hour Certification (2004; refreshers 2005, 2006, 2007, 2009, 2010, 2011, and 2012)
First Aid and CPR Certified (2012)
Amtrak Contractor Safety Training (2010 and 2011)

PROFESSIONAL AFFILIATIONS

Member of Geologic Society of America
Member of New Partners for Community Revitalization

RELEVANT EXPERIENCE

New York State Brownfield Cleanup Program, 34th Street and 42nd Street, West Side, Manhattan, New York—Designed and managed multiple investigations to address New York State Spills and Brownfield Cleanup programs. Prepared scopes of work to address requirements of both state regulations and those agreed to by the former owner. Coordinated with

NYSDEC to modify scopes based on field observations and limitations, which resulted in not having to mobilize for additional investigations. Coordinated with multiple entities for access to perform investigations, including Javits Convention Center, Amtrak, New York City Department of Transportation, Metropolitan Transit Authority, and their contractors. Developed a three-phase analysis plan with the laboratory to determine the minimum required extent of excavation next to an Amtrak line while limiting analytical costs, decreasing in the extent of excavation, and lowering disposal and structural support requirement costs.

New York State Brownfield Cleanup Program 388 Bridge Street, Downtown Brooklyn, New York—Designed and managed all on- and off-site investigations of soil, soil gas, groundwater, and indoor air, including coordination of staff and subcontractors. Prepared investigation reports for submittal to client, project team, NYSDEC and the New York State Department of Health (NYSDOH). Involved in project team decision making with clients, lawyers, construction manager, and other consultants. Managed New York City Transit approvals for subsurface investigations near subway lines. Coordinated off-site access in residences, commercial spaces, and a private school. Participated in soil vapor extraction pilot test implementation and reporting. Assisted in the implementation of an off-site sub-slab depressurization system in an existing building; activities included system design/layout, installation oversight, testing, and long-term operation and maintenance. Responsible for NYSDEC/NYSDOH coordination and reporting for all investigations. Tracked project activities for inclusion in NYSDEC/NYSDOH programmatic submittals, including monthly reports and remedial schedules.

New York State Spills Program, Gotham Center, Queens, New York—Responsible for proposal and budget development, subcontractor selection and coordination, negotiation, and preparation of subcontractor terms and agreements, budget, and invoice review for a comprehensive subsurface investigation. Prepared and implemented scope of work for delineation of soil contamination and calculation of contaminant mass estimates. Subsequent to interpretation of site data and subgrade characteristics, developed and presented remedial alternatives and associated costs for internal and client project teams. Prepared remedial investigation report in coordination with the New York City Economic Development Corporation and the client for submittal to state regulators.

New York Department of Environmental Remediation, Class 2 State Superfund, Laurel Hill Site, Queens, New York—Managed multi-phase, multi-parcel project involving design, installation, and ongoing operation, maintenance, and monitoring of six remedial caps. Site challenges included the division of the site into individual parcels that were independent of one another; subsequently, each parcel had a stormwater management design individual to the surrounding parcels. Other site challenges included the site position in a wetlands area fronting Newtown Creek and working with the New York City Department of Transportation to facilitate its schedule for the adjacent Kosciusko Bridge restoration.

New York State Brownfield Cleanup Program, Uniforms for Industry, Queens, New York—Designed and managed an alternative approach to the off-site soil vapor intrusion

investigation. Utilized soil vapor modeling to evaluate potential human health risks and migration probabilities. Provided support for the design of a retrofitted passive venting system.

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Keith P. Brodock, P.E., LEED AP
Managing Engineer

PROFESSIONAL PROFILE

Mr. Keith Brodock is a professional engineer with nearly 10 years of experience in environmental risk analysis, real estate portfolio liability estimation, transactional risk evaluation, remediation design, and decision management science. One of his primary responsibilities is managing and quantifying transactional risks for brownfield properties. Mr. Brodock routinely consults purchasers and sellers on the regulatory climate, technical interpretations, and risk mitigation measures. He frequently supports fate and transport modeling of vapor intrusion cases and engineering designs for remediation systems. Mr. Brodock utilizes data management software, including GIS and EQuIS, to conceptualize and simply explain the spatial distribution and meaning of environmental data.

CREDENTIALS AND PROFESSIONAL HONORS

B.S., Chemical Engineering, Clarkson University, Potsdam, New York, 2003

Professional Engineer, New York (License No. 089004)

CONTINUING EDUCATION AND TRAINING

Leadership in Energy and Environmental Design Accredited Professional (2009)
Hazardous Waste Operations and Emergency Response 40-Hour Certification (2003-Present)
Hazardous Waste Operations Management and Supervisor 8-Hour Certification (2004)
OSHA 10-Hour Construction Safety Training (2005)

PROFESSIONAL AFFILIATIONS

Urban Land Institute, Redevelopment and Reuse Product Council (2012–Present)
Urban Land Institute, NY Mentor Program Chair (2011–Present)
National Society of Professional Engineers (2011–Present)

RELEVANT EXPERIENCE

Real Estate Transactions

Superfund Property Disposition and Liability Transfer, Wall, New Jersey—Advised on the sale of 650-acre encompassing a federal Superfund site and more than 600 historical tenants.

Assisted with development of the selected remediation proposal for a $1.5 million shooting range cleanup. Provided review of liability transfer offer, including cost/benefit analysis, insurance funding, and remediation cost-overrun risk using Monte Carlo modeling. Supported negotiations with EPA and the U.S. Department of Justice (USDOJ) to allow private takeover of remediation activities. Performed New Jersey Industrial Site Recovery Act investigation of more than 600 historical tenants as a requirement of the transaction.

Real Estate Portfolio Acquisition Support, Staten Island, New York—As part of client's acquisition of real estate investment trust, advised on environmental risks of the Staten Island property. With a state Superfund manufactured gas plant (MGP) site adjacent to the property, communicated potential liabilities to client. Worked in conjunction with seller's environmental consultant to conduct a soil gas / indoor air evaluation. Performed critical review of seller's soil vapor report.

Cypress Equities Land Acquisition, King of Prussia, Pennsylvania—Advised on pending land acquisition deal after conducting an in-depth environmental review and limited subsurface investigation. Developed a probabilistic cost estimate spanning the identifiable areas of concern for all of the multiple investigation/remediation scenarios applicable under the Act 2 regulations in Pennsylvania.

Not-for-Profit Land Acquisition and Development, New York, New York—Supported a not-for-profit organization in the acquisition and development of various tracts of land to build a charter school. Assisted with the Phase I evaluations. Prepared scopes of work for Phase II investigations. Managed the development of the regulatory interaction strategy with the New York City School Construction Authority. Provided sound engineering support for the development of subsurface remediation/mitigation measures for the protection of schoolchildren's health.

Phase I Investigations, Various Properties, New Jersey, Arkansas, New York, Connecticut—Conducted Phase I and Phase I/II hybrid investigations according to ASTM standards, both pre- and post-EPA All Appropriate Inquiries. Integrated state requirements into the analyses. Included radon, drinking water, and indoor air analysis, as required.

Brownfields

Former Woodhaven Bowl Site, Forest Hills, Queens, New York—Managed the team to concurrently satisfy five regulatory agencies, a then current landowner inexperienced at brownfield redevelopment, and a demanding future tenant with an extremely tight construction schedule to facilitate redevelopment. Utilized careful, advanced planning to facilitate the evaluation of each stakeholder's objectives. Used direct-sensing equipment (membrane interface probe) to quickly evaluate the potential release areas. Designed and oversaw the construction of a sub-slab depressurization system (SSDS) serving 40,000 square feet of retail space. Achieved the project objectives by delivering a building ready for development by the tenant.

Residual Light Nonaqueous Phase Liquid (LNAPL) Investigation/Remediation, Long Island City, New York—Designed and managed the investigation/remedial actions at a former fueling

depot. Identified data gaps in the previous consultant's work and designed a characterization plan to reduce the uncertainties in the conceptual site model. The characterization plan was integrated with the remedial action plan so only one field mobilization was necessary. Design an *in situ* chemical oxidant injection as the remedial action. The remedial action has not yet been completed.

Subsurface Investigation and Tank Removal, Jersey City, New Jersey—Managed a subsurface investigation at a warehousing property that contained railroad sidings, improperly closed underground storage tanks (USTs) and an aboveground fueling operation. Coordinated the removal/closure of the fueling operation and building demolition. Provided consultation on the investigation results to assist the client in securing financing for the property.

Former Oil Terminal Investigation and Remediation, Brooklyn, New York—Supported the property owner through negotiations with the New York State Department of Environmental Conservation (NYSDEC), as part of a groundbreaking deal where NYSDEC agreed to clean up a state Superfund site that was owned by a private entity. Assisted the inter-governmental team with triad planning and design to achieve a rapid subsurface investigation/characterization. Developed a work plan that included demolition and disposal of PCB-containing equipment.

Dual-Phase Extraction and Discharge Compliance Engineering, Northern New Jersey—Led a team to deploy a packaged solution to lower the concentrations of non-compliant water being discharged to a river, in which 60 percent of the chemicals causing the exceedance could not be identified by conventional laboratory techniques. Implemented enhancements to a high-vacuum, dual-phase extraction (DPE) remediation system, resulting in increased mass removal rates and system uptime. Achieved long-term cost savings in the form of decreased time onsite and automated task development. Developing a comprehensive systems management tool that uses engineering statistics to prescribe proactive solutions to maintenance and system exceedance issues. Created a U.S. Securities and Exchange Commission (SEC)-compliant cost estimate model that encompasses various remediation strategies through end-of-project lifecycle.

Surfactant Soil Remediation, Margate City, New Jersey—Project engineer and subcontractor manager for the remediation of a #2 fuel oil release beneath a residence. Applied an innovative surfactant flushing program to mobilize and extract adsorbed fuel oil from the soils. Careful planning and immediate reaction to changing site conditions were necessary to prevent further oil migration or the settling of a $3 million mansion. Successful management of multiple subcontractors led to a soils closure within the project deadline.

Subsurface MGP Investigation, Manhattan, New York—Evaluated and interpreted the results of more than 700 samples collected during a subsurface investigation at a former MGP site. Composed the data analysis portion of the site characterization report for submittal to NYSDEC. Also supported subsurface field activities while acting as client liaison to the public.

Dual-Phase Remediation System Improvements, Newark, New Jersey—Analyzed performance issues of a catalytic oxidizer, part of a DPE remediation system. Determined that the control system was failing and causing false alarms. Led the team to implement a redesigned alarm system to better diagnose system trouble conditions.

Heavy Metal Statistical Source Separation, Virginia—Supported team in separating heavy metal contamination sources through electron microscopy and elemental analysis. Based on the differing elemental properties of various sources of lead, employed the use of statistical analysis to parse the portion of contamination that was likely attributable to the client from the entire mass, thereby saving money in remediation costs.

Biennial Certification Reporting, Various Locations, New Jersey—Oversaw biannual monitoring activities and biennial certification filings as part of New Jersey Department of Environmental Protection (NJDEP) agreements. Coordinated scheduling with clients and tenants for biannual property inspections. Completed biennial certification reporting process to NJDEP and various local entities.

Vapor Intrusion

Farrand Controls State Superfund Site, Valhalla, New York—Identified source and fate and transport of vapor-phase chlorinated solvents within a commercial/industrial operation to support the construction of a mitigation action. Traced the airflows from four distinct heating/cooling zones throughout the building to understand mixing and transport of the chlorinated solvents, as the highest readings of vapors did not match the site conditions. Identified the entry point of the vapors from contaminated groundwater beneath the site. Recommended a cost-effective solution for venting the vapors prior to entry into the building.

Vapor Intrusion Investigation, Cranford, New Jersey—Managed vapor intrusion investigation on adjoining properties to a chlorinated solvent spill. Negotiated access agreements with abutting property owners and tenants. Organized subcontractors' work to minimize business interruption while still maintaining the integrity of the investigation. Educated the neighboring property owners on the significance of the results and communicated continuing action plans to them.

Mayflower Cleaners State Superfund Site, Great Neck, New York—Evaluated the fate and transport of multiple sources of tetrachloroethylene (PCE; dry cleaning fluid) to support the preparation of a remedial action. The fate and transport evaluation included a known source beneath the slab of the building and a potential source from the adjacent dry cleaning operation. Developed a conceptual airflow model. Created the communication strategy with the regulatory agencies. Designed and managed the implementation of an interim remedial measure to mitigate the flow of PCE vapors from beneath the slab to the occupied tenant space.

Vapor Intrusion Mitigation and Groundwater Investigation, Mahopac, New York—Designed and installed an SSDS after performing a sub-slab communication test for New York State Department of Health (NYSDOH) and NYSDEC. Responsible for coordination of annual

system inspection and reporting, and tenant/owner education and guidance. Also coordinated quarterly groundwater sample reporting to NYSDEC.

Chemical Release Investigation with Vapor Intrusion Testing and Mitigation, Ridgefield, New Jersey—Oversaw field investigation to delineate a diving chlorinated solvent plume in a windowed confining layer. Developed a permanent vapor intrusion mitigation plan after conducting an indoor air investigation that revealed potential impacts to human health. Assisted in designing, permitting, and installing the SSDS intended to disperse organic vapors before entering the office building. Implemented risk mitigation plan that included automatic remote notification if the SSDS failed.

Financial Analysis and Reporting

Streamlined SEC Environmental Liability Reporting, Seattle, Washington—Using Lean techniques, developed a streamlined budgeting and liability reporting process that increases value while adhering to reporting regulations. With focus on increasing stakeholder value, merged the budget process that the consultant team used with the SEC liability reporting process that the client desired. Developed software to automate the reporting and updating procedure. Worked with the corporate liability manager to conform to both SEC and internal accounting policies.

Real Estate Portfolio Valuation, Long Island, New York—Developed defensible liability estimates, which led to a $7 million savings in an IRS settlement. Working with a real estate appraiser, evaluated the assets and environmental liabilities in a 17-property portfolio at three key points in time. A remedial strategies matrix for the different time periods was merged into a decision tree with the properties' contamination characteristics using Monte Carlo simulation. An effective combination of computer estimation/ simulation tools (RACER® and Monte Carlo) was used to justifiably support the estimates to the IRS.

Environmental Remediation Estimates Using Monte Carlo Analysis, Various Locations, U.S.—Determined and communicated environmental remediation cost risk to clients. Assisted owners with their internal budgeting process to communicate to their management the likely, best, and worst case scenarios. By understanding the range of costs associated with the project, management was equipped to make better decisions on expense allocation. Certain projects incorporated the management science of decision-tree analysis to consider alternate remedial technologies. In fact, the client was able to select a remedy based on the risk profile.

Remedial Strategy Selection through Probabilistic Estimating, Central Vermont Public Service, Vermont—Provided probabilistic estimating for different remedial strategies that helped the client to decide which decision-tree path was most appropriate for its business model. Utilized decision management tools in conjunction with cost estimates and sensitivity analyses to provide a full understanding of the likely results of choosing one strategy over another.

Remedial Scenario Cost Estimating, Various Locations, U.S.—Developed large-scale remediation cost estimates using RACER® for an automobile-industry client. Based on the remedial investigation data results, created low/medium/high range cost estimates that encompassed a "no further action" option all the way to installing and operating high-end remediation systems for many years. These cost estimates were presented to the court as part of a package to support emerging from bankruptcy.

Defensible Environmental Liability Reports, Various Locations, U.S.—Performed multiple mathematical simulations for cost estimation and disclosure under Sarbanes-Oxley reporting requirements for environmental liability. Incorporated decision management structures into multiple-site and multiple-option estimates. Results provided were defensible estimates that evaluated entire liability portfolios.

Geothermal Testing and Design

First-Ever Standing Water Column (Open-Loop) Geothermal Study, New Haven, Connecticut—Designed first-ever geothermal standing water column exchange study to characterize the thermal capacity of the proposed geothermal cooling system. The study simulated system loads and observed subsurface effects to qualify wells to sustain continued operations while preventing emergency discharges (bleed-off) to the local sewer authority. Results include determining the effects of various temperature differentials, load cycling, and high-permeability zones. The study results were subsequently utilized to design the optimal geothermal well network by minimizing the cost of the wells while ensuring adequate thermal capacity during peak loading. This work was performed as part of an overall sustainable design effort under the Leadership in Energy and Environmental Design (LEED) New Construction program. The project awaits certification results from the U.S. Green Building Council.

Standing Water Column Geothermal Design, New Haven, Connecticut—Conducted a geothermal response test for a private developer constructing a 700,000 square foot residential/retail complex. The results of the geothermal response test were used to design the optimal geothermal network that would provide an efficient level of heating/cooling for the building. This project has been selected by the U.S. Green Building Council as a pilot project for the LEED Program for Neighborhood Development.

Automated Closed-Loop Geothermal Analysis, Cambridge, Massachusetts—Assisted in constructing an automated geothermal closed-loop test that conformed to American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) building specifications. Modified existing open-loop thermal response testing equipment to perform unmanned closed-loop tests of shallow geothermal wells. Automated the system to perpetually adjust to stay in conformance with ASHRAE test methods. The equipment included a remote monitoring component for instantaneous data review and troubleshooting.

Property Management

Building Environmental Management, New York, New York—Oversaw emergency response to building water intrusion events to prevent the growth and subsequent abatement of mold spores. Conducted property visits to review Phase I action item implementation.

Litigation

Litigation Support for Lead Impacts, Carteret, New Jersey—Reichhold, Inc. v. United States Metal Refining Company, et al., Civ. No. 03-453 (U.S.D.C., D.N.J.): Provided litigation support for a large, multinational mining and refining company against a plaintiff that alleged responsibility for lead impacts at a previously owned site. After review of the data, developed visual aids for court showing that the lead impacts were generally limited to areas where the plaintiff raised the grade with fill. Supported the science and legal teams during trial preparation and throughout the trial by gathering additional supporting evidence and generating opinions on new evidence submitted by plaintiff and testimony by plaintiff's consultants.

Litigation Support for an Oil Spill Investigation, Long Island City, Queens, New York—DMJ Associates, L.L.C. v. Capasso, et al., Civ. No. 07-285 (U.S.D.C., E.D.N.Y.): Provided litigation support for a New York City developer that resulted in rapid settlement of the case. Designed and executed a field investigation to locate preferential pathways for mobilized LNAPL across multiple properties and a local waterway. Examined chemical fingerprints to determine the extent of migration. Scientifically demonstrated that not only did the LNAPL contaminate the property at hand, but also contaminated adjacent properties and was discharging directly into the Newtown Creek.

Litigation Support for Federal Superfund Site, Lawrence Aviation Industries, Port Jefferson, Long Island, New York—United States of America v. Lawrence Aviation Industries, Inc., et al. Civ. No. 04-818 (U.S.D.C., E.D.N.Y.): Provided litigation support for Lawrence Aviation Industries (LAI) to defend against a USDOJ lawsuit alleging widespread trichloroethylene contamination. After reviewing the investigation reports, determined that there was no scientific link to a portion of the alleged contamination, and, in fact, there appeared to be a second source. Appeared before USDOJ and EPA to argue these new findings in favor of LAI. Additionally, discussed the potential for EPA to relinquish site control to LAI, so that LAI could implement a more modern and effective remedial strategy, rather than the antiquated, likely-unsuccessful technology mandated in the record of decision.

Underground Storage Tank Release Date Determination, Southern New Jersey—Used statistical analysis to determine when a UST began leaking. Conducted a detailed analysis of the fuel delivery receipts as compared to the local weather conditions. Using statistical methods, the initial discharge time frame was determined with 95 percent confidence.

Litigation Support for a Release Migrating toward I-95, Secaucus, New Jersey—Provided opinion on remedial investigation and action plans to negotiate a delay in litigation (with client). Worked with opposing party to incorporate additional scope of work into its investigation

plan to fully characterize the release to groundwater. By successfully working with the opposing party's consultant, was able to delay the expense of trial for the client.

Litigation Support, Various Locations, New Jersey and New York—Provided technical review and opinions on various legal matters, mostly involving allocating liability for contamination. Disputed claims of scientific certainty for age-dating analyses of various methods. Collected and analyzed samples to produce independent liability allocation opinions.

PRESENTATIONS/POSTERS

Brodock, K., J. Rhodes, and P. Tornatore. 2005. Improving experience-based engineering estimates for environmental liabilities using Decisioneering® software. National Groundwater Association Conference on Remediation: Site Closure and the Total Cost of Cleanup.

Rhodes, J., and K. Brodock. 2005. Estimating environmental liabilities using probabilistic engineering methods. Web seminar.

Brodock, K., and J. Rhodes. 2005. Engineering estimates for environmental liability à la Crystal Ball. Crystal Ball Users Conference.

Geosyntec consultants

engineers | scientists | innovators

SUZANNE V. GABRIELE

site assessment and due diligence
site investigation and remediation
regulatory compliance and permitting

EDUCATION

B.S., Industrial Engineering, Lehigh University, Bethlehem, PA, 1988
The Complete Environmental Regulations Workshop, Lion Technology
RCRA Fundamentals and Critical Generator Issues, McCoy and Associates, Inc.
Risk-based Corrective Action
The Essentials of Colorado Environmental Law for Non-lawyers
Environmental Auditing Course, Career Development Institute

REGISTRATIONS AND CERTIFICATIONS

ISO 14001: 2004 E.M.S. Lead Auditor for International Environmental Management Systems, QAI – Training for Quality
40 Hour OSHA Health and Safety Training

CAREER SUMMARY

Ms. Gabriele has over 24 years experience in environmental consulting and project management. Her project responsibilities include high level communications with clients, stakeholders and regulators; planning and supervising project implementation at a broad array of facilities under a wide variety of regulatory programs. Ms. Gabriele has experience with the chemical, plastics, ceramics, electronics, rubber, metals, precious metals, and oil and gas industries.

Ms. Gabriele regularly coordinates and implements all aspect of environmental site assessment, investigation and remediation activities including work plan preparation, permitting, sub-contractor management, interaction with business and community representatives, review and evaluation of data, and preparation of reports. Ms. Gabriele also has experience in completing Phase I Environmental Site Assessments (ESAs) in accordance with USEPA's All Appropriate Inquiry/ASTM E1527-05 requirements.

Ms. Gabriele has extensive knowledge of environmental regulations. She conducts environmental compliance audits for internal corporate management and pre-acquisition consideration and helps clients with regulatory compliance at industrial facilities throughout the United States. She has prepared chemical inventories, emissions reports, and permit applications, and developed management and pollution prevention plans for hazardous wastes and materials and storm water.

Ms. Gabriele has prepared Quality Assurance Project Plans and acted as Quality Assurance Manager for complex environmental investigation and remediation projects. She has established in house protocols for conducting and documenting data validation and oversees Data Usability Summary Report preparation.

Assessments, Investigations, and Remediation

Former DuBois Chemical Facility, *Rathon Corp., East Rutherford, NJ.* Managing multi-million dollar, multi-media environmental remediation project for wholly owned subsidiary of Molson-Coors Brewing Company. Rathon Corp. is the former owner/operator of this operating facility in the Meadowlands. Management of this project requires interaction with client, client counsel, site owner/operator, and regulators.

Former M&P Compounding Facility, *Cookson Group, plc, Asbury Park, NJ.* Managed multi-million dollar, multi-media environmental investigation and remediation project under New Jersey's Environmental Cleanup Responsibility Act. Project involved UST, sump and floor drain closures; soil remediation; evaluation of the vapor intrusion pathway, and monitored natural attenuation.

Asarco Globe Plant, *Denver, CO.* Managed operations, maintenance and monitoring tasks for a multi-million dollar, multi-media cleanup program at the Asarco Globe Plant CERCLA site.

Gates Rubber Company Complex, *Denver, CO.* Managed comprehensive Phase 1 Environmental Site Assessments, Phase 2 soil and groundwater investigations, and UST closures and soil remediation efforts at the former Gates Rubber manufacturing complex in Denver, CO as part of Brownfields development of the facility. The Phase 1 assessment included evaluations of historic operations, demolished facilities and existing buildings to define potential environmental conditions and recommendations for future site development.

Fitzsimons Army Medical Center, *New Century Energies, Denver, CO.* Managed comprehensive Phase I Environmental Site Assessment at the former Fitzsimons Army Medical Center complex in Denver, CO for the local utility who was considering purchase of the existing utility easements as well as future utility easements as part of Base Realignment and Closure process.

Bullock Station*, Public Service Company of Colorado, Montrose, CO.* Managed a UST closure project that included a site characterization and corrective action due to historic releases from the UST.

Hayden Station*, Public Service Company of Colorado, Hayden, CO.* Managed a subsurface investigation in the vicinity of two USTs and one AST prior to site redevelopment.

Leyden Station, *New Century Energies, Leyden, CO.* Managed comprehensive Phase I Environmental Site Assessment at an underground natural gas storage facility in Leyden, CO for the local utility.

Cummins Rocky Mountain facilities, *Cummins Inc., Columbus, IN* Conducted Phase I ESAs of three Cummins Rocky Mountain facilities in Colorado. Cummins is a corporation of complementary

business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems.

Former Lozier Facility, *GAF, Cedar City, UT.* Managed Phase I Environmental Site Assessment at a 78 acre property where furniture and commercial shelving was historically manufactured.

Regulatory Compliance and Regulator Negotiations

Former DuBois Chemical Facility, *Rathon Corp., East Rutherford, NJ.* Managing environmental remediation project. Operation of the groundwater treatment system includes maintaining and complying with a New Jersey Pollutant Discharge Elimination System permit. Design and implementation of the soil and sediment remediation plan involves multiple jurisdictions and numerous regulations.

Alpha Natural Resources, *Bristol, VA* Managing the development of a compliance-focused Environmental Management System (EMS) for effective environmental management and to satisfy requirements of a Consent Decree between Alpha and the United States Environmental Protection Agency. Alpha is a leading global coal company and the world's third largest metallurgical coal supplier with the production capacity of nearly 126 million tons of steam and metallurgical coal. Alpha produces, processes and sells steam and metallurgical coal from approximately 150 active mines and 40 coal preparation plants located throughout Virginia, West Virginia, Kentucky, Pennsylvania and Wyoming.

Asarco Globe Plant, *Denver, CO.* Assisted client with negotiation of a Consent Decree and Statement of Work for site characterization and $38 million cleanup program at the Asarco Globe Plant CERCLA site.

Cummins Rocky Mountain facilities, *Cummins Inc., Columbus, IN* Prepared Operations and Compliance Memoranda for three Cummins Rocky Mountain facilities in Colorado. Cummins is a corporation of complementary business units that design, manufacture, distribute and service engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems.

Former Redfield Riflescope Site*, Brown Retail, Inc., Denver, CO.* Prepared RCRA Contingency Plans, training programs, and Biennial Reports for this multi-million dollar, multi-phase project. Project involves extensive groundwater, soil, and indoor air investigations as part of RCRA site characterization activities including over 8000 indoor air tests, installation and sampling of over 100 monitoring wells, and collection of scores of soil and soil vapor samples.

West Elk Mine*, Mountain Coal Company, Somerset, CO.* Developed a storm water management plan for an underground coal mining operation.

Storm Water Best Management Practices, *Colorado Springs Utilities, Denver, CO.* Prepared a storm water BMP manual for field crews.

Corporate Storm Water Compliance Program*, Cookson America, Inc., approximately 50 facilities throughout the U.S.* Developed and implemented program to assist Cookson's subsidiary with storm water permitting compliance.

Anzon, Inc., *Laredo, TX*. For seven years, managed the preparation of SARA Title III Form R reports for an antimony refining facility.

Quality Assurance

Asarco Globe Plant, *Denver, CO.* Developed Quality Assurance Project Plan and acted as Quality Assurance Manager for the Asarco Globe Plant CERCLA site. Project included investigation of soil, groundwater, surface water, sediment, and ambient air impacts due to releases of arsenic, cadmium, lead, and zinc and remedial design and implementation of over 600 residential and commercial properties, using excavation and replacement, capping, and deep tilling remedies as appropriate. Other remedial actions included design of a slurry wall and RCRA cap around a tailings pile; cleanup of a 1000 foot long drainage ditch and restoration of wetlands; and controls for wet operations and point source emissions.

Former Redfield Riflescope Site*, Brown Retail, Inc., Denver, CO.* Developed and maintains Quality Assurance Project Plan and acts as Quality Assurance Manager for this multi-million dollar, multi-phase project. Developed data management procedures for unprecedented indoor air testing program with rush analytical and reporting requirements.

PROFESSIONAL EXPERIENCE

EnviroGroup Limited (a Geosyntec company), Centennial, CO, 2012 - present
EnviroGroup Limited, Centennial, CO, 1992 – 2012
Clayton Environmental Consultants, Inc., Edison, NJ, 1989-1992
Phoenix Safety Associates, Ltd, New York, NY, 1988-1989

PUBLICATIONS AND PAPERS

S. Gabriele and L. A. Sigler, 2000. *Community Realtions Issues related to Residential Site Investigations and Cleanups*, presented Hazardous Waste Research Conference, Denver, May 2000.

AFFILIATIONS

Colorado Environmental Management Society

APPENDIX J
Site Health and Safety Plan and Community Air Monitoring Plan
Former Nu Brite Cleaners
Remedial Investigation Work Plan

For the Property Located at 1299 1st Avenue
New York, NY 10021
Block 1444, Lot 30
NYSDEC BCP No. C231072

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Hunters Point Plaza
47-40 21stStreet
Long Island City, NY 11101

Prepared for:
3SK Corporation
27-15 27th Street
Astoria, NY 11102

Prepared by:

61 Broadway
Suite 1601
New York, NY 10006

November 19, 2013

CONTENTS

LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CHSM	Corporate Health and Safety Manager
CPR	cardiopulmonary resuscitation
FBSG	feet below site grade
HAZWOPER	hazardous waste operations and emergency response
HDPE	high density polyethylene
HEPA	high-efficiency particulate air
IDLH	immediately dangerous to life and health
Integral	Integral Consulting Inc.
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
RIWP	Remedial Investigation Work Plan
SHSP	site health and safety plan
SSO	site safety officer
STEL	short-term exposure limit
SVOCs	semi-volatile organic compounds
VOCs	volatile organic compounds

SITE HEALTH AND SAFETY PLAN APPROVAL

This site health and safety plan (SHSP) has been reviewed and approved for the Remedial Investigation of the property located at 1299 1st Ave, New York, New York.

	November 19, 2013
Project Manager	Date
	February 11, 2013
Corporate Health and Safety Manager	Date

SITE HEALTH AND SAFETY PLAN ACKNOWLEDGMENT

In the absence of an appropriate subcontractor or consultant health and safety plan, and with the written approval of Integral Consulting Inc. (Integral) corporate health and safety manager (CHSM), the subcontractor or consultant may utilize the Integral site health and safety plan (SHSP), provided there is written concurrence from the subcontractor or consultant that they will directly administer the plan for its employees. The Integral SHSP is a minimum standard for the site and will be strictly enforced for all Integral personnel, or its subcontractors or consultants where applicable.

I have reviewed the SHSP prepared by Integral, dated November 19, 2013 for the fieldwork at the 1299 1st Ave, New York, New York, property. I understand the purpose of the plan, and I consent to adhere to its policies, procedures, and guidelines while an employee of Integral, or its subcontractors or consultants. I have had an opportunity to ask questions regarding this plan, which have been answered satisfactorily by Integral.

Employee signature	Company	Date
Employee signature	Company	Date
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1 INTRODUCTION

It is the policy of Integral Consulting Inc. (Integral) to provide a safe and healthful work environment that is compliant with applicable regulations. No aspect of the work is more important than protecting the health and safety of all workers.

This site health and safety plan (SHSP) provides general health and safety provisions to protect workers from potential hazards during field activities performed under the Remedial Investigation Work Plan (RIWP) for the property located at 1299 1st Ave, New York, New York (hereafter referred to as the "site"). This SHSP has been prepared in accordance with local, State, and federal Occupational Safety and Health Administration (OSHA) safety regulations (29 CFR [Code of Federal Regulations] 1910 and 29 CFR 1926).

Work performed under the RIWP will be in full compliance with applicable health and safety laws and regulations, including site-specific and OSHA worker safety requirements and Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) requirements. This SHSP follows both OSHA hazardous waste operations and emergency response and applicable regulations in 29 CFR 1910 and 29 CFR 1926.

Attachments to the SHSP provide a site-specific map and specific routes to the hospital from the site (Attachment 1), regulatory notices (Attachment 2), safety procedures (Attachment 3), material safety data sheets (Attachment 4), and a near-miss incident report form (Attachment 5).

This SHSP has been prepared to identify potential site hazards to the extent possible based on information available to Integral. Integral cannot guarantee the health or safety of any person entering this site. Because of the potentially hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at this site. The health and safety guidelines in this plan were prepared specifically for this site and should not be used on any other site without prior evaluation by trained health and safety personnel.

A copy of this SHSP must be in the custody of the field crew during field activities. All individuals performing fieldwork must read, understand, and comply with this plan before undertaking field activities. Once the information has been read and understood, the individual must sign the Site Health and Safety Plan Acknowledgment form provided as part of this plan. The signed form will become part of the project file.

This plan may be modified at any time based on the judgment of the Integral site safety officer (SSO) in consultation with the project manager and Integral corporate health and safety manager (CHSM) or designee. Any modification will be presented to the onsite team during a safety briefing and will be recorded in the field logbook.

1.1 OBJECTIVES AND METHODS

The purpose of this remedial investigation is to evaluate soil, groundwater, bedrock, and soil vapor conditions beneath the site.

To meet these objectives, field activities will include:

1. Advance a maximum fourteen (14) soil borings at the Site to bedrock refusal and the collection of 14 soil samples;
2. Installation of 3 groundwater monitoring wells and collection of 9 groundwater samples from new and existing wells;
3. Installation of 2 bedrock wells and collection of 2 groundwater samples from bedrock fractures; and
4. Installation of 3 permanent soil vapor sampling points and collection of 4 soil vapor samples and 1 ambient air sample.

Due to access limitations, soil borings located in the basement will be advanced using a manual slide hammer hand Geoprobe unit. Sidewalk soil borings will be advanced using a track mounted hollow stem auger (HAS) drill rig capable of spinning casings and collecting a discrete degraded bedrock sample. Soil borings will be advanced to refusal, approximately 4 to 11 feet below basement grade and 10 to 17 feet below sidewalk grade. Continuous soil samples will be collected in the basement using two (2) or four (4) foot macrocore samplers fitted with dedicated acetate liners. Continuous soil samples will be collected beneath the sidewalk utilizing two (2) foot split spoon samplers. Proper decontamination procedures will be followed after each sampler is recovered.

Overburden monitoring well construction will be determined in the field and will be based on refusal depth and estimated depth to groundwater. Overburden monitoring wells will be installed atop bedrock, approximately 4 to 11 ft-bbg and 10 to 17 ft-bsg. Monitoring well construction will generally follow the protocol described below.

Overburden monitoring wells to be installed in the basement will be installed concurrent with soil borings utilizing a limited access drilling unit capable of direct push technology. Basement wells will be constructed of 1" diameter PVC riser and screen and will follow the same general construction as the 2" sidewalk wells described below.

Sidewalk overburden monitoring wells will be installed concurrent with soil boring/degraded bedrock sample locations using a track mounted HSA rig outfitted with 4¼" hollow-stem auger attachments. Augers will be spun to the top of bedrock allowing for the collection of a discreet bedrock sample. The holes created from the sampling of degraded bedrock will be sealed using bentonite prior to the construction of the monitoring wells.

Sidewalk overburden wells will be constructed of 2″ diameter PVC riser with .020″ slotted PVC screen set atop bedrock. The length of the well screen will be determined in the field and will depend on the groundwater table depth relative to the total depth of the well. The annular space around the well will be filled with No. 2 Morie quartz sand to a depth of 2′ above the top of the well screen, followed by 2′ of bentonite, then backfilled with screened (un-impacted) soil cuttings to approximately 6″ below grade. The wells will be finished with 6″ of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron. Monitoring wells will be developed after a competent bentonite seal has been established.

Bedrock wells will be installed using a track mounted HSA rig utilizing mud rotary drilling. The mud rotary drilling method consists of a drill bit attached to the drill rod that rotates and advances into the borehole using a drill mud of bentonite or polymer slurry. Steel casing will be spun continuously and to approximately 2 feet into competent bedrock. Steel riser will be installed and sealed to the borehole walls using pressure pumped grout containing no more than 5% bentonite. This riser will seal the well from potential contaminant infiltration from overlying sediments. The cement will be left to cure overnight, after which a roller bit will be used to remove the grout from inside the riser and a 2″core barrel will be used to core approximately 15 feet into bedrock. Bedrock cores will be evaluated for fractures and staining and a rock quality designation will be calculated. No soil samples will be collected during the installation of the bedrock wells.

Permanent soil vapor points will be installed to the depth of the Site basement (approximately 6.5 ft-bsg) using a track mounted HSA drill rig. Each permanent soil vapor point will be constructed of a 6″stainless steel soil vapor implant with a double woven stainless steel wire .15mm pore screen size. The soil vapor implant will be attached to dedicated 1/8″ Teflon tubing to grade. The annular space around the implant will be filled with No. 00 Morie quartz sand to a depth of 2′ above the top of the screen, followed by a bentonite/grout mixture to approximately 6″ below grade to prevent ambient air from entering the area around the probe. The points will be finished with 6″ of bentonite pellets placed below a locking flush-mounted road box, set in a cement apron.

Additional details on the objectives and methods are presented in the Field Sampling Plan, Appendix H to the RIWP.

1.2 ORGANIZATION

This SHSP covers four field activities: (1) advancement of soil borings and collection of soil samples, (2) installation of groundwater monitoring wells and collection of groundwater samples, (3) installation of soil vapor sampling points and collection of soil vapor samples, and (4) the installation of bedrock wells and sampling of bedrock. Chemical and physical hazard evaluations are presented in Sections 2 and 3, respectively. Specific health and safety guidelines

associated with each task, including a brief description of the work, are discussed in Section 11 (Task-Specific Safety Procedures).

1.3 ROLES AND RESPONSIBILITIES

All Integral personnel on this site must comply with the requirements of this SHSP. The Integral SHSP is a minimum standard for the site and will be strictly enforced for all Integral personnel, or subcontractors or consultants, where applicable. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

1.3.1 Site Safety Officer

The SSO has full responsibility and authority to implement this SHSP and to verify compliance. He or she reports to the project manager and is onsite or readily accessible to the site during all work operations. The SSO is responsible for assessing site conditions and directing and controlling emergency response activities. The specific responsibilities of the SSO include the following:

- Managing the safety and health functions on this site
- Serving as the onsite point of contact for safety and health concerns
- Assessing site conditions for unsafe acts and conditions and ensuring corrective action
- Ensuring that all Integral employees and subcontractors understand and follow the SHSP
- Ensuring that daily work schedules and tasks are reasonable for the required levels of effort and weather conditions
- Confirming local emergency response phone numbers and locations
- Conducting and documenting the initial and daily or periodic health and safety briefings
- Evaluating and modifying the level of protective apparel and safety equipment, based on site conditions
- Ensuring that the field team observes all necessary decontamination procedures.

If the SSO determines that site conditions are unsafe, he or she has the authority to suspend field operations until the problem is corrected. The SSO can modify SHSP procedures in the field. Any changes must be documented in the field logbook, and field staff must be immediately informed of the change. The project manager and Integral's CHSM must be notified by phone or e-mail within 24 hours of any major changes to the SHSP.

1.3.2 Project Manager

The project manager has overall responsibility to ensure that personnel working onsite are safe. The specific responsibilities of the project manager include:

- Ensuring that the SHSP is developed prior to the field work or site visit
- Reviewing and approving the SHSP prior to the field work or site visit
- Ensuring employee understanding of and compliance with the SHSP.

1.3.3 Corporate Health and Safety Manager

The CHSM provides guidance to the project manager and SSO on SHSP preparation and reviews and approves the SHSP. The CHSM also serves as an arbitrator if there is a conflict between the project manager, SSO, and field personnel. In addition, the CHSM[1] conducts periodic unannounced audits of Integral field operations to ensure compliance with the site-specific health and safety plan.

1.3.4 Field Personnel

All Integral personnel and subcontractors, where applicable, on this site are responsible for reading and complying with this SHSP, using the proper personal protective equipment (PPE), reporting unsafe acts and conditions, and following the work and safety and health instructions of the project manager and SSO. All Integral personnel, subcontractors, or consultants can and are encouraged to suspend field operations if they feel conditions have become unsafe.

1.4 SITE DESCRIPTION

The site is located in a commercial and residential area of the Lenox Hill neighborhood of the Borough of Manhattan. The site is approximately 1,957 square feet and comprises of a commercial/residential building located on the southwest corner of 1st Avenue and 70th Street. Primary access to the building is on 1st Avenue. The legal description of the site is Block 1444, Lot 30. A site location map is provided as Figure 1. Groundwater at the site was encountered at depths ranging from approximately 15 to 20 ft bgs. The local groundwater flow is assumed to be east/northeast towards the East River. The topography of the site is relatively flat.

The building on the site is a four story tall structure with the first floor occupied by a convenience store. The second, third, and fourth stories are residential. The building also includes a basement which has two separate sections; both sections are used for storage. The basement ceiling height is approximately six feet.

[1] The audit task may be delegated to an office health and safety representative by the CHSM.

A previous Phase II investigation was conducted by Hydro Tech. on the site in 2007. This report found chlorinated solvents, particularly Tetrachloroethene (PERC), present in the soil beneath the basement. The levels of PERC exceeded regulatory standards in the northeast portion of the basement but were less than standards in the southern portion of the property.

- **Owners/tenants:** *1299 First LLC*
- **Site history:** *Historically utilized for dry cleaning operations*
- **Current site use:** *Currently used as a convenience store (floor one) and residential (floors two through four)*
- **Hazardous waste site:** *No*
- **Industrial waste site:** *No*
- **Topography (if applicable):** *50 feet above sea level, flat*
- **Site access:** *1st Avenue access*
- **Nearest drinking water/sanitary facilities:** *On-site or in vicinity*
- **Nearest telephone:** *Field crew will have a cell phone*
- **Size of site:** *1,957 square feet*
- **Pathways for hazardous substance dispersion:** *Volatilization, dust*

A detailed site map is provided in Attachment 1 to this SHSP.

An initial groundwater investigation was conducted by Hydro Tech. in 2008. The scope of work called for installing four monitoring wells and seven soil probes. Samples from these wells were sent to a NY state certified laboratory and tested for petroleum range Volatile Organic Compounds (VOCs). The report found migration of PERC to the groundwater beneath the sidewalks at the site. Breakdown products from the PERC were also found in the northeast segment of the basement. Gasoline compounds below regulatory standards were also found beneath the western portion of the East 70th Street sidewalk. The report also found two concrete patches of unknown status within the northwest portion of the basement.

A follow up groundwater study was conducted by Hydro Tech. in May of 2010. Seven groundwater monitoring wells were drilled both on and off of the site. Samples from these wells were sent to a NY state certified laboratory and tested for petroleum range VOCs. The study found total chlorinated solvents exceeding 3,500 ug/L in the central portion of the basement; these levels decreased downgradient to the northeast of the site.

1.5 PROJECT MANAGER AND OTHER KEY CONTACTS

	Name (Affiliation)	Work Telephone	Cell Phone
Project manager	Alana Carroll (Integral)	(212) 440-6706	(646) 895-1430
SSO	Sam McTavey (Integral)	(212) 440-6715	(914) 643-1057
CHSM	Eron Dodak (Integral)	(503) 943-3614	(503) 407-2933
Client contact	James Periconi (Periconi, LLC)	(212) 213-5500	

2 CHEMICAL HAZARD EVALUATION

Potentially hazardous chemicals known to exist at the site are primarily VOCs, SVOCs, heavy metals, PCBs, and pesticides associated with historic site use and fill material. The chemicals of concern, applicable chemical properties, and potential exposure routes are presented in the following sections.

The following table lists the historical site maximum constituent concentrations for constituents at the Site. The table also lists the chemical properties and OSHA permissible exposure limit (PEL), short-term exposure limit (STEL), and immediately dangerous to life and health (IDLH) level. Breathing zone air can be monitored to ensure that the chemicals do not exceed the PEL. If any of the chemicals exceed the PEL, immediate action is required (e.g., don respirators, leave site) as designated in Section 5 (Air Monitoring) in this SHSP.

Chemical Properties

Chemical of Concern	Concentration (site maximum or range expected)	Medium	OSHA PEL	OSHA STEL	OSHA IDLH	IP(eV)	Carcinogen or Other Hazard
1,1-dichloroethane	8.4µg/l to 9.9µg/l	Groundwater	100 ppm (NIOSH REL 100 ppm)	--	3000 ppm	11.06	Flammable Liquid
cis-1,2-dichloroethene (1,2-dichloroethene)	220 µg/l and 260 µg/l	Groundwater and Soil Vapor	200 PPM (NIOSH REL 200 ppm)	--	1000 ppm	9.65	Flammable liquid
Chrysene (under "Coal tar pitch volatiles")	Less than 0.002µg/l	Groundwater and Soil Vapor	0.2 mg/m^3 (NIOSH REL 0.1 mg/m^3)	--	80 mg/m^3	--	Carcinogen
bis(2-ethylhexyl) phthalate	6.10µg/l	Groundwater	5 mg/m^3 NIOSH REL 5 mg/m^3)	(NIOSH ST 10 mg/m^3)	5000 mg/m^3	--	Carcinogen, Combustible Liquid: Fl.P. at or above 200°F
benzo(b) fluoranthene	Less than 1 mg/kg in soil and 0.4 µg/l in groundwater	Soil and Groundwater	--	--	--	--	--
benzo(a)pyrene (under "Coal tar pitch volatiles")	Less than 1 mg/kg in soil	Soil	0.2 mg/m^3 (NIOSH REL 0.1 mg/m^3)	--	80 mg/m^3	--	Carcinogen
indeno(1,2,3-cd)pyrene	Less than 0.5 mg/kg in soil	Soil	--	--	--	--	--
barium	Up to 1000 mg/kg	Soil	--	--	--	--	--
Mercury	Up to 0.74 mg/kg	Soil	0.1 mg/m^3 (NIOSH REL 0.1 mg/m^3) (as Hg)	--	10 mg/m^3 (as Hg)	--	Poison

Chemical of Concern	Concentration (site maximum or range expected)	Medium	OSHA PEL	OSHA STEL	OSHA IDLH	IP(eV)	Carcinogen or Other Hazard
iron	Up to 49,000 µg/l	Groundwater	--	--	--	--	--
lead	Up to 580 mg/kg	Soil	0.050 mg/m^3 (NIOSH REL 0.050 mg/m^3) (as Pb)	--	100 mg/m^3 (as Pb)	NA	--
magnesium	Up to 61,000 µg/l	Groundwater	--	--	--	--	--
manganese	Up to 4,123 µg/l	Groundwater	5 mg/m^3 (NIOSH REL 1 mg/m^3) (as Manganese compunds)	NIOSH ST 3 mg/m^3	500 mg/m^3 (as Mn)	NA	Combustible Solid
nickel	Up to 294.4 µg/l	Groundwater	1 mg/m^3 (NIOSH REL 0.015 mg/m^3)	--	10 mg/m^3 (as Ni)	NA	Carcinogen
zinc	Up to 760 mg/kg	Soil	--	--	--	--	--
4,4'-DDT	Up to 0.0244 mg/kg	Soil	1 mg/m^3 (NIOSH REL 0.5 mg/m^3)	--	500 mg/m^3	--	Carcinogen
4,4' -DDD	Estimated up to 0.0063 mg/kg	Soil	--	--	--	--	--
Dieldrin	Up to .0074 mg/kg	Soil	0.25 mg/m^3 (NIOSH REL 0.25 mg/m^3)	--	50 mg/m^3	--	Carcinogen
Nitric Acid	Concentrated	Preservative	2 ppm (NIOSH REL 2 ppm)	2 ppm (NIOSH)	25 ppm	11.95	Corrosive
Hydrochloric Acid	Concentrated	Preservative	5 ppm (ceiling);	--	50 ppm	12.74	Corrosive

Chemical of Concern	Concentration (site maximum or range expected)	Medium	OSHA PEL	OSHA STEL	OSHA IDLH	IP(eV)	Carcinogen or Other Hazard
			NIOSH REL 5 ppm (ceiling)				

Notes:
-- = none established
Ca = carcinogen
IDLH = immediately dangerous to life and health
IP(eV) = ionization potential (electron volts)
mg/kg = milligrams per kilogram
mg/m^3 = milligrams per cubic meter
NA = not available
PEL = permissible exposure limit
ppm = parts per million
STEL = short-term exposure limit

The table below summarizes the chemical characteristics and potential chemical exposure routes at the site.

	Likely	Possible	Unlikely
Potential Chemical Exposure Routes at the Site:			
Inhalation		X	
Ingestion			X
Skin absorption		X	
Skin contact		X	
Eye contact		X	
Chemical Characteristics:			
Corrosive	X (nitric and hydrochloric acid)		X (site chemicals)
Flammable			X
Ignitable			X
Reactive	X (nitric and hydrochloric acid)		X (site chemicals
Volatile	X (1,1-DCA, cis-1,2-DCE)		X (metals, SVOCs)
Radioactive			X
Explosive			X
Biological agent			X
Particulates or fibers		X (metals)	

If likely, describe:

Nitric and hydrochloric acid are corrosive. Always wear nitrile gloves and safety glasses or goggles when handling bottles with acid preservatives.

1,1-DCA and cis-1,2-DCE are volatile. Stand upwind of soil if possible. Monitoring breathing zone with a PID in accordance with Section 5.

3 PHYSICAL HAZARD EVALUATION AND GUIDELINES

The following sections present general physical hazards and guidelines.

3.1 GENERAL PHYSICAL HAZARDS

The following table presents possible physical hazards that are expected to be present during field activities.

Possible Hazard	Yes	No	Proposed Safety Procedure
Heavy equipment	X		Stay back from operating equipment; wear safety vests and hard hats; coordinate and maintain eye contact with equipment operator.
Material handling	X		Lift properly; seek assistance if necessary; do not overfill coolers or boxes. Seek assistance if drums must be moved.
Adverse weather	X		Seek shelter during electrical storms; work in adverse weather conditions only with proper training and equipment.
Plant/animal hazards	X		Know local hazards and take appropriate precautions. Use insect repellent if mosquitoes are persistent.
Uneven terrain/tripping	X		Use caution, wear properly fitting shoes or boots, and keep work area orderly.
Noise	X		Wear ear protection when working around heavy equipment and other noise sources.
Cold/hypothermia	X		Keep warm and dry; bring changes of clothes; do not work in extreme conditions without proper equipment and training. Follow cold stress information (Attachment 3). *Note:* potential for cold/hypothermia will depend on season and location of the site.
Falling objects	X		Wear hard hats near overhead hazards (i.e., winch).
Drill rigs	X		Avoid all pinch points; do not operate or stand near rig during electrical storms; stay a safe distance (25 ft) from power lines; level drill rig.

Summary of potential physical hazards posed by proposed site activities:

Activity	Potential Hazard
Soil borings, monitoring well installation, soil vapor point installation	Heavy equipment, slips/trips/falls, falling objects, drill rigs, noise, plant/animal hazards, material handling, adverse weather, cold/hypothermia
Sample handling/mobilization	Material handling, slips/trips/falls

4 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT

The following sections address PPE and safety equipment required for completing the field activities.

4.1 PERSONAL PROTECTIVE EQUIPMENT

Based on the hazards identified above in Sections 2 and 3, the following table identifies the PPE required for site activities.

	Level of Protection	
Site Activity	**Initial**	**Contingency** [a]
Soil sampling	D	Leave Exclusion Zone and assess situation
Groundwater sampling	D	Leave Exclusion Zone and assess situation
Soil vapor sampling	D	Leave Exclusion Zone and assess situation
Sample handling	D	Leave Exclusion Zone and assess situation

[a] Based on unexpected change in site conditions

Each level of protection will incorporate the following PPE:

Level D	X	Long pants and shirt or work coveralls, hard hat, latex or nitrile gloves under work gloves, eye protection, and steel-toed boots, and traffic safety vests are required. Hearing protection is required as needed.

4.2 SAFETY EQUIPMENT

The following safety equipment will be onsite during the proposed field activities.

Air Monitoring (check the items required for this project)

- [X] PID
- [ ] LEL/O_2 meter
- [ ] Air sampling pumps
- [X] MINIRAM (particle monitors)

- [ ] H_2S meter
- [ ] Detector pump and tubes (e.g., benzene)
- [ ] Radiation meter
- [ ] Other: _____

First Aid Kit (mandatory, including absorbent compress, adhesive bandages, adhesive tape, antiseptic, burn treatment, medical exam gloves, sterile pad, CPR shield, triangle bandage, scissors [for cutting off the PPE from an injured person])
(check additional items required for the site)

- [X] Emergency blanket
- [X] Insect repellent
- [X] Sunscreen
- [ ] Other: _____

Other (check the items required for this project)

- [X] Eyewash
- [X] Drinking water
- [ ] Fit test supplies
- [X] Fire extinguisher (drill rigs)
- [ ] Stopwatch for monitoring heart rate for heat stress monitoring[2]
- [ ] Thermoscan® thermometer for heat stress monitoring
- [ ] Survival kit[3]
- [ ] Personal flotation device
- [ ] Cool vests
- [ ] Windsock
- [X] Cellular phone
- [ ] Radio sets
- [X] Global positioning system
- [ ] Other: Hand sanitizer

[2] Heart rate monitoring requires special training.
[3] Consult the CHSM for guidance for site-specific survival kits.

5 AIR MONITORING

Air monitoring will be conducted when entering previously uncharacterized sites, when working in the vicinity of uncontained chemicals or spills, when opening containers and well casings, and prior to opening confined spaces. (Note: Integral personnel are not trained or authorized to enter confined spaces under any circumstances.) Air monitoring must be conducted to identify potentially hazardous environments and determine reference or background concentrations. Air monitoring can sometimes be used to augment judgment in defining exclusion zones.

Air monitoring may be discontinued at sites where there have been multiple sampling events in the same area/media during similar activities with no action level exceedances. In such instances, the air monitoring results must be well documented and there must be approval from the CHSM prior to discontinuing the air monitoring. Air monitoring must be reinstated for fieldwork in different areas of the site or when sampling new media.

5.1 INTRODUCTION

Personal air monitoring involves collection of samples within the breathing zone of the field personnel to better understand exposures, ensure appropriate levels of PPE, and document compliance with regulation. Such samples may be full shift for comparison to PELs (or other applicable occupational exposure limits) or short term, for comparison to STELs. Some chemicals in soil or aqueous media may volatilize or become aerosolized and be inhaled by field personnel.

Breathing zone air can be monitored to ensure that the chemicals do not exceed a regulatory or project-specific action level (generally 50 percent of the PEL). Integral commonly uses photoionization detectors (PIDs) and dust meters (e.g., MINIRAM [Miniature Real-time Aerosol Monitor]) for monitoring volatile organic compounds and particle constituents, respectively. In practice, the air directly in the field personnel's breathing zone is monitored with the PID or dust meter for 10-15 seconds. The highest reading is recorded in the project logbook and checked against the site-specific action level in the table below. If any of the constituents exceed the action level presented in Section 5.4, immediate action is required (e.g., don respirators, leave site, etc.) as designated[4].

Real time monitoring for airborne dust should be performed during invasive activities. Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities

[4] Note that neither the PID nor the MINIRAM can identify chemicals. The PID detects total ionizable volatile organic compounds and the MINIRAM detects total particles of sufficient diameter to be detected.

include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

The following sections provide general guidance on the selection and calibration of PIDs and dust meters, which are typically rented for Integral field projects.

5.2 PHOTOIONIZATION DETECTORS

It is critical to order a PID with a detector lamp with the appropriate ionization energy to detect chemicals of interest at the site. The ionization energy of the lamp must be greater than the ionization potential of the chemicals of interest. (Ionization potentials are listed in the National Institute of Occupational Safety and Health [NIOSH] pocket guide to chemicals and are presented in Section 2). Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with operation of the PID prior to use in the field. Note that moisture may damage the detector lamp and/or provide erroneous readings, so a moisture filter is used on the probe. Also note that the PID will only accurately quantitate the material used in the calibration process. A response factor is used to measure the sensitivity of the PID to a particular chemical present at the site. Response factors are normally presented in the operation manual for the PID.

The PID must be calibrated daily in accordance with the manufacturer's specifications, which are provided in the operation manual. The calibration typically requires the use of a span gas (generally 100 ppm isobutylene) and zero gas (generally fresh air). Be sure that all the required calibration equipment/supplies are provided with the PID (e.g., span gas cylinder, regulator, tubing, and Tedlar™ bag). Record calibration data in the field logbook.

5.3 DUST METERS

It is critical that the dust meter is capable of measuring the concentrations of airborne dust that are at or below the site-specific action levels presented below. Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with its operation prior to use in the field.

The dust meter must be field checked (i.e., zeroed) daily in accordance with the manufacture's specifications, which are provided in the operation manual. A dust meter field check typically involves zeroing the meter with ambient or filtered air. Be sure that all the required zeroing and operational equipment/supplies are provided with the dust meter. Record field check data in the field logbook.

The instrument to be used is the MIE Inc. DataRAM or equivalent with a latching alarm. The instrument will be fitted with an omnidirectional sampling inlet to get representative samples under a variety of wind speeds and directions. A RAM-TCH inlet heater may also be used in humid conditions to remove water vapor from the sampling stream.

The dust monitor should be set up downwind of the excavation activities to verify that dust control methods are adequate. The latching alarm will be set at 1.0 mg/m3 to alert site personnel that the action level has been exceeded. When the alarm is activated, the work area will be wetted to control dust.

5.4 ACTION LEVELS

5.4.1 VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings will be recorded and presented to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) in daily and weekly reports. Instantaneous readings, if any, used for decision purposes will also be documented and recorded in the daily reports.

5.4.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations.
The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All 15-minute readings will be recorded and presented to the NYSDEC and the NYSDOH in daily and weekly reports. Instantaneous readings, if any, used for decision purposes will also be documented and recorded in the daily reports.

6 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

The following sections present requirements for health and safety training and medical monitoring.

6.1 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

State and federal laws establish training requirements for workers at uncontrolled hazardous waste sites (including areas where accumulations of hazardous waste create a threat to the health and safety of an individual, the environment, or both). Integral and subcontractor personnel are required to complete the following training requirements prior to working at the site.

6.2 TRAINING REQUIREMENTS

Task	No Training	24-hour	40-hour[a]	Supervisor[b]	First Aid/CPR[c]	Medical Monitoring
Integral Field Personnel						
James L'Esperance			X		X	X
Alana Brannon			X		X	

Notes:

[a] Must have current OSHA 8-hour refresher if it has been more than a year since the OSHA 40-hour training.
[b] At least one person onsite must be OSHA HAZWOPER supervisor trained if this is a hazardous waste site.
[c] At least one member of each team of two or more people onsite must be first aid/CPR trained.
[d] Integral subcontractors and consultants may have requirements that are more stringent than those listed above. These are minimum training and monitoring requirements required to work on this site.

6.2.1 Site Safety Meetings

Site safety meetings must be held before beginning new tasks or when new staff enter the site. Site safety meetings should be held at a minimum of once a week and should be held daily on complex or high hazard projects. Tailgate safety meetings should occur every morning during review of the day's work plan, covering specific hazards that may be encountered. Additional meetings will be held at any time health and safety concerns are raised by any of the personnel. Attendance and topics covered, including tailgate meetings, are to be documented in the field logbook.

6.3 MEDICAL MONITORING

OSHA requires medical monitoring for personnel potentially exposed to chemical hazards in concentrations in excess of the PEL for more than 30 days per year and for personnel who must use respiratory protection for more than 30 days per year. Integral requires medical monitoring for all employees potentially exposed to chemical hazards.

Will personnel working at this site be enrolled in a medical monitoring program?	Yes X	No _____

7 EMERGENCY RESPONSE PLAN

The following sections discuss emergency recognition and prevention, emergency response and notification, emergency decontamination, and site communications.

7.1 EMERGENCY RECOGNITION AND PREVENTION

It is the responsibility of all personnel to monitor work at the site for potential safety hazards. All personnel are required to immediately report any unsafe conditions to the SSO. The SSO is responsible to immediately take steps to remedy any unsafe conditions observed at the work site.

The following are examples of some emergency situations that could occur during the 1299 1st Avenue field activities:

- Slips, trips and falls (on sloped areas, steel stairs, etc.)
- Lacerations from scrap metal (in soil, waste piles, etc.)
- The air monitoring action level is exceeded
- Entrainment of clothes or objects in moving equipment or parts
- Serious injury or illness (e.g., physical injury, heart attack)
- Severe thunderstorm with lightning.

Immediate actions will be taken by the field team under the leadership of the SSO in response to these emergencies.

7.2 EMERGENCY RESPONSE AND NOTIFICATION

If an emergency at the site warrants it, all personnel must immediately evacuate the affected work area and report to the SSO at the predetermined emergency assembly location:

Field vehicle

In case of injury, field personnel should take precautions to protect the victim from further harm and notify local or facility emergency services. In remote areas, it will be necessary to have first aid-trained personnel on the field team. The victim may require decontamination prior to treatment if practicable—requirements will vary based on site conditions.

Emergency medical care will be provided by:

- [X] Local emergency medical provider (NYPD/FDNY)
- [ ] Facility emergency medical provider
- [ ] First aid-trained field staff (for remote areas only)

Local Resources	Name	Telephone	Notified Prior to Work (Yes/No)?
Fire	FDNY	911	No
Police	NYPD	911	No
Ambulance	FDNY	911	No
Hospital	NYC Presbyterian	(212) 305-2500	No
Site phone	N/A		
Directions to the hospital:	See attached maps.		

The SSO must confirm that the hospital listed is still in operation and that it has an emergency room. **It is required that the SSO drive to the hospital so that the directions are practiced and understood prior to initiating fieldwork.**

Corporate Resources	Name	Work Telephone	Cell Phone
Integral CHSM [a]	Eron Dodak	Office: (503) 943-3614	(503) 407-2933
Integral President	Lucinda Jacobs	Office: (206) 957-0328	(206) 999-3061
Integral Human Resources Manager	Amy Logan	Office: (303) 404-2944 ext. 12	NA
Medical Consultant	Dr. Calvin Jones (HealthForce Partners)	Office: (425) 806-5700	NA

Notes:

[a] If the CHSM cannot be reached, call Ian Stupakoff–Office: (360)705-3534, ext. 20; Cell: (360)259-2518. If Ian Stupakoff cannot be reached, call David Livermore–Office: (503)943-3613; Cell: (503)806-4665. If David Livermore cannot be reached, call Barbara Trenary–Office: (206) 248-9645; Cell: (206) 849-0882.

In case of serious injuries, death, or other emergency, the Integral CHSM must be notified immediately at the phone numbers listed above. The Integral CHSM will notify the project manager and Integral's president. The project manager will notify the client.

7.3 EMERGENCY DECONTAMINATION PROCEDURES

In case of an emergency, if possible, gross decontamination procedures will be promptly implemented. If a life-threatening injury occurs and the injured person cannot undergo decontamination procedures onsite, then the medical facility will be informed that the injured person has not been decontaminated and given information regarding the most probable chemicals of concern. Decontamination procedures should not be implemented if there is not a reasonable possibility that the injured party requires such intervention.

Decontamination procedures will only be used if practical and if they will not further injure the person or delay treatment. Decontamination procedures should not be implemented if there is not a reasonable possibility that the injured party requires such intervention. The SSO will make the determination on whether or not to decontaminate the injured person. The following steps will be followed for decontaminating injured personnel while onsite:

- If it will not injure the person further, cut off PPE using scissors or scrub the gross contamination from the injured person's PPE (e.g., Tyvek® coveralls, work boots) with a Liquinox® or Alconox® solution followed by a rinse with tap or deionized/distilled water
- Remove PPE if feasible without further injuring the person.

7.4 SITE COMMUNICATIONS

Each field team will carry a cell phone or satellite phone that is in good working order. If there is any type of emergency that requires the site to be evacuated (e.g., severe thunderstorm with lightening, chemical release), the field team leader will blow the air horn three times. When the horn sounds, all personnel will meet at the predetermined emergency assembly location (West 27th Street site entrance). All other emergency notifications that do not require evacuation (e.g., a person falling overboard) will be conducted using a cell or satellite phone. Emergency phone numbers are listed above in Section 7.2.

7.5 BUDDY SYSTEM

The buddy system will be used at the site at all times. The buddy system is a system of organizing employees into field teams in such a manner that each employee of the field team is designated to be observed by at least one other employee in the field team. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

8 WORK ZONES

Work zones are defined as follows:

Contamination reduction zone	Area between the exclusion and support zones that provides a transition between contaminated and clean zones
Exclusion zone	Any area of the site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel
Support zone	Any area of the site, so designated, that is outside the exclusion and contamination reduction zones

Site control measures in work zones are described below for each type of field activities.

8.1 SOIL BORINGS AND MONITORING WELL INSTALLATION AND SOIL AND GROUNDWATER SAMPLING

Exclusion zone: An approximate 12-ft radius around the drill rig or sample location will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained (i.e., wearing Level D protective clothing) personnel will be allowed in this area.

Contamination reduction zone: All decontamination activities will occur inside the exclusion zone.

Support zone: All areas outside the exclusion and contaminant reduction zones.

Controls to be used to prevent entry by unauthorized persons: No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

8.2 SOIL VAPOR POINT INSTALLATION AND SOIL VAPOR SAMPLING

Exclusion zone: An approximate 12-ft radius around the point will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained (i.e., wearing Level D protective clothing) personnel will be allowed in this area.

Contamination reduction zone: All decontamination activities will occur inside the exclusion zone.

Support zone: All areas outside the exclusion and contaminant reduction zones.

Controls to be used to prevent entry by unauthorized persons: No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

9 EQUIPMENT DECONTAMINATION AND PERSONAL HYGIENE

9.1 EQUIPMENT DECONTAMINATION PROCEDURES

After sampling is completed, the exclusion zone will be used as the contaminant reduction zone for decontamination activities, provided there is no contamination remaining after the sampling is completed. To minimize or prevent personal exposure to hazardous materials, all personnel working in the exclusion zone and contaminant reduction zone will comply with the following decontamination procedures:

- All gloves, rain gear, and boots will be removed prior to entering the field vehicle.

Decontamination equipment required at the site includes the following:

- Buckets or tubs
- Laboratory grade distilled/deionized water
- Site water
- Scrub brushes (long-handled)
- Liquinox or Alconox detergent
- Pressure washer
- Plastic bags
- Foil
- Paper towels
- Garbage bags
- Clean garden sprayer

All non-disposable components of the sampling equipment (e.g., stainless steel spoons and bowls used for sample composting) that contact the sediment will be decontaminated using the following steps:

1. Rinse with site water/tap water
2. Wash with Alconox or Liquinox detergent
3. Rinse with site water/tap water
4. Allow to air dry
5. Wrap up compositing equipment in aluminum foil.

9.2 PERSONAL HYGIENE

The following personal hygiene practices will be used at the site to reduce exposure to chemicals.

- Long hair will be secured away from the face so it does not interfere with any activities.

- All personnel leaving potentially contaminated areas will wash their hands, forearms, and faces in the contaminant reduction zone prior to entering any clean areas or eating areas.
- Personnel leaving potentially contaminated areas will shower (including washing hair) and change to clean clothing as soon as possible after leaving the site.
- No person will eat, drink, or chew gum or tobacco in potentially contaminated areas. Single portion drink containers and drinking of replacement fluids for heat stress control will be permitted only in support areas.
- Smoking is prohibited by Integral personnel and subcontractors in all areas of the site because of the potential for contaminating samples and for the health of the field team.

10 VEHICLE SAFETY, SPILL CONTAINMENT, AND SHIPPING INSTRUCTIONS

10.1 VEHICLE SAFETY

Integral's vehicle safety program requires the following:

- Cell phone usage while driving is not allowed, including the use of hands-free devices. If it not feasible to wait to use the cell phone until arriving at your destination, pull off the road and park in a safe location to use the cell phone. Do not pull to the side of the road to use a cell phone because this significantly increases the risk of a rear-end collision.
- All vehicles are to be operated in a safe manner and in compliance with local traffic regulations and ordinances.
- Drivers are to practice defensive driving and drive in a courteous manner.
- Drivers are required to have a valid driver's license and liability insurance (per local state laws).
- Seat belts are to be worn by the driver and all passengers.
- No persons are allowed to ride in the back of any trucks or vans, unless equipped with seatbelts.
- Vehicles are to be driven in conformance with local speed limits.
- Personnel who are impaired by fatigue, illness, alcohol, illegal or prescription drugs, or who are otherwise physically unfit, are not allowed to drive or work on Integral field sites.
- Personnel are to avoid engaging in other distractions such as changing radio stations while driving.
- Motor vehicle accidents are to be reported to the responsible law enforcement agency, the Integral human resources manager, and the Integral CHSM on the same day of occurrence. Documentation of damage should be photographed.
- Personnel who have experienced work-related vehicle accidents or citations may be required to complete a defensive driving program.

10.2 SPILL CONTAINMENT

No bulk chemicals will be used at the site.

10.3 SHIPPING INFORMATION

Federal laws and international guidelines place restrictions on what materials may be shipped by passenger and cargo aircraft. In addition, 49 CFR regulates labeling, manifesting, and shipment of all packages containing potentially hazardous materials. In the course of this field investigation, the following items will be shipped to and from the site as shown below:

Item	Hazardous Constituent	Quantity	Packaging	How Shipped
Samples	None	(various quantities) solid and liquid matrix samples	Coolers	Laboratory courier
Preservatives (groundwater VOCs)	HCL $HN0_3$	2-3 mL per bottle/vial	Pre-packaged laboratory sample jars	Laboratory courier

A 24-hour emergency response number (on any shipping documents such as a Uniform Hazardous Waste Manifest, Shipper's Declaration of Dangerous Goods, etc.) is required for shipments of all dangerous or hazardous goods. Integral does not have a 24-hour emergency contact number for dangerous or hazardous goods shipment. No dangerous or hazardous goods may be shipped by Integral until an account is set up with a 24-hour emergency response service, such as CHEM-TEL (1-813-248-0573). If any hazardous or dangerous goods need to be shipped for a project, they must be shipped directly to the site by the supplier. Any hazardous or dangerous goods that are not used in the course of the field effort must remain at the site.

The samples will be prepared and labeled for shipment in accordance with the sampling and analysis plan developed for the site.

Air shipment of equipment with lithium batteries is required to note the presence of these batteries. Warning labels are available from the equipment rental agency and can be copied.

11 TASK-SPECIFIC SAFETY PROCEDURE SUMMARY

11.1 SOIL BORINGS AND MONITORING WELL INSTALLATION

Drilling subcontractor to contact New York one-call utility locating service 48 hours prior to initiating field work (1-800-332-2344) and obtain a utility locating ticket. Drilling subcontractor to confirm the absence of underground and overhead utilities before starting drilling activities.

Be sure that all utilities are marked or have a designation that they are not present in the area. The utility locating service should have marked all utilities present in the area. Take a few minutes to examine the locations of fire hydrants, gas meters, etc. to make sure that the utility locating marks make sense. If there is any doubt as to the location of underground utilities, call the public or a private utility locator. Finally, check for overhead utilities and obstructions such as trees.

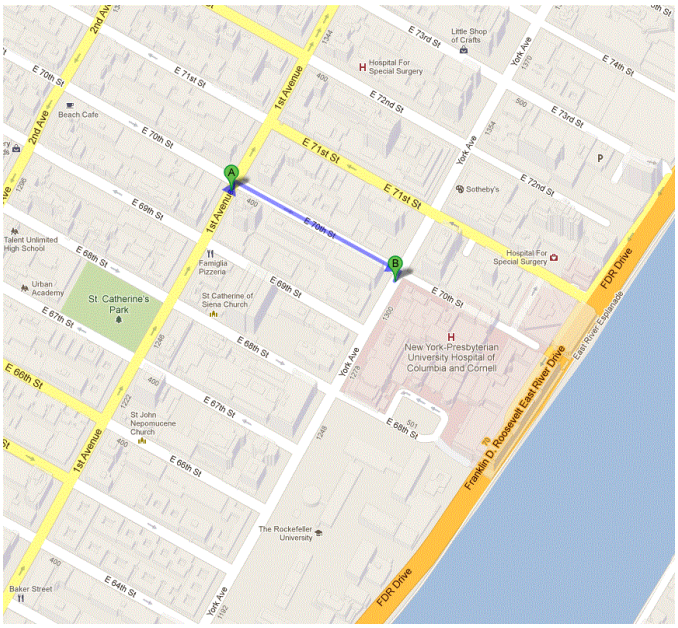
Integral personnel will wear hard hats, safety glasses, traffic safety vests, and steel-toed boots at all times. The exclusion zone around the drill rig will be marked with orange traffic cones or caution tape and personnel will police the area to make sure no unauthorized personnel enter the exclusion zone. Avoid getting soil and sample preservatives (nitric and hydrochloric acid) on your clothes or skin. Exercise care when lifting, assembling, and decontaminating equipment. Always stay clear of the drill rig and be aware of its location. Keep in eye contact with the driller. Stay away from pinch points. Know the location of the "kill switch" on the rig. Keep equipment organized.

11.2 GROUNDWATER AND SOIL VAPOR SAMPLING

Conduct air monitoring while in the exclusion zone. Always wear nitrile gloves when touching anything in the exclusion zone. Wash hands or use hand sanitizer when hand washing facilities are not available prior to eating or drinking. Always get help when moving heavy sampling equipment or coolers. Avoid contacting the floor with your knees or any other body part during sampling activities.

ATTACHMENT 1

SITE MAP AND HOSPITAL ROUTE



1299 1st Ave, New York, NY 10021

1. Head northeast on 1st Avenue toward E 70th St go 36 ft

2. Take the 1st right onto E 70th St go 0.1 mi

3. Take the 1st right onto York Ave

4. Destination will be on the left go 43 ft

New York Presbyterian Hospital CRS
1315 York Ave, New York, NY

ATTACHMENT 2

REGULATORY NOTICES

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.

The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at **www.osha.gov**. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA
www.osha.gov

U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3165

ATTACHMENT 3

SAFETY PROCEDURES

FROSTBITE

What happens to the body:

Freezing in deep layers of skin and tissue; pale, waxy-white skin color; skin becomes hard and numb; usually affects fingers, hands, toes, feet, ears, and nose.

What to do: (land temperatures)

- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet or tight clothing that may cut off blood flow to the affected area.
- **Do not** rub the affected area because rubbing damaged the skin and tissue.
- Gently place the affected area in a warm water bath (105°) and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast, causing tissue damage. Warming takes 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **Note:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train workers about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene.)
- Take frequent short breaks in warm, dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs.)
- Drink warm, sweet beverages (sugar water, sports-type drinks.) **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) **or alcohol**.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers are at increased risk when…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medications. Check with your doctor, nurse, or pharmacy and ask if medicines you take affect you while working in cold environments.
- They are in poor physical condition, have a poor diet, or are older.

HYPOTHERMIA - (Medical Emergency)

What happens to the body:

Normal body temperature (98.6°F/37°C) drops to or below 95°F/35°C; fatigue or drowsiness; uncontrolled shivering; cool, bluish skin; slurred speech; clumsy movements; irritable, irrational, or confused behavior.

What to do: (land temperatures)

- Call for emergency help (i.e., ambulance or 911).
- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if he is alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) **or alcohol**.
- Have the person move his arms and legs to create muscle heat. If he is unable to do this, place warm bottles or hot packs in the armpits, groin, neck, and head areas. **Do not** rub the person's body or place him in a warm water bath. This may stop his heart.

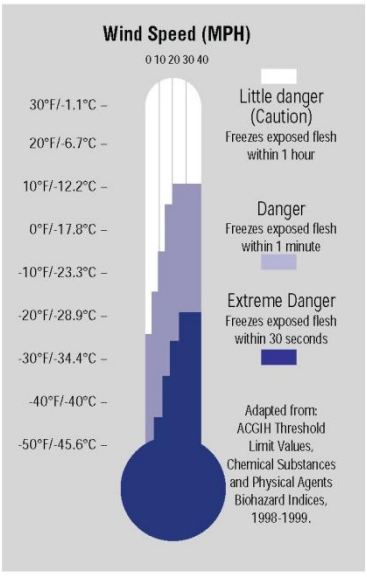
What to do: (water temperatures)

- Call for emergency help (i.e., ambulance or 911). Body heat is lost up to 25 times faster in water.
- **Do not** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **Do not** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses body heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



Oregon Occupational Safety & Health Division
440-3336E-S (9/03)

HEAT EXHAUSTION

What happens to the body:

Headaches, dizziness, or light-headedness, weakness, mood changes, irritability or confusion, feeling sick to your stomach, vomiting, fainting, decreased and dark-colored urine, and pale, clammy skin.

What should be done:

- Move the person to a cool shaded area. Don't leave the person alone. If the person is dizzy or light-headed, lay him on his back and raise his legs about 6-8 inches. If the person is sick to his stomach, lay him on his side.
- Loosen and remove heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is not feeling sick to his stomach.
- Try to cool the person by fanning him. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (ambulance or call 911.)

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE - A Medical Emergency

What happens to the body:

Dry, pale skin (no sweating); hot red skin (looks like a sunburn); mood changes; irritability, confusion, and not making any sense; seizures or fits, and collapse (will not respond).

What should be done:

- Call for emergency help (i.e., ambulance or 911.)
- Move the person to a cool, shaded area. Don't leave the person alone. Lay him on his back and if the person is having seizures, remove objects close to him so he won't hit them. If the person is sick to his stomach, lay him on his side.
- Remove heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is alert enough to drink anything and not feeling sick to his stomach.
- Try to cool the person by fanning him or her. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs in armpits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train workers about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks.)
- Use the buddy system (work in pairs.)
- Drink plenty of cool water (one small cup every 15-20 minutes.)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool, shaded areas (allow your body to cool down.)
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk of heat illnesses.)

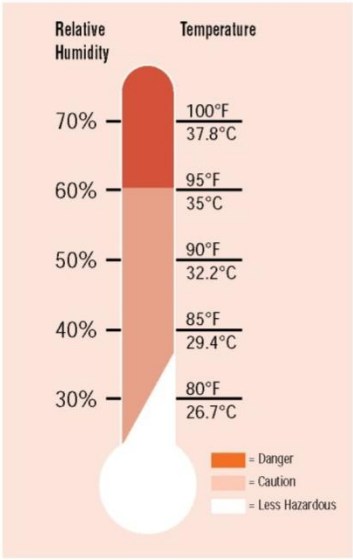
Workers are at increased risk when...

- They take certain medications. Check with your doctor, nurse, or pharmacy to see if medicines you take affect you when working in hot environments.
- They have had a heat-induced illness in the past.
- They wear personal protective equipment.

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and **death**.



Oregon Occupational Safety & Health Division
440-3333E-S(9/03)

ATTACHMENT 4

MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheet

Nitric Acid

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Nitric Acid**

Synonyms/Generic Names: Aqua Fortis, Azotic acid, Hydrogen nitrate.

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd. Columbus, WI. 53925

For More Information Call: 920-623-2140
(Monday – Friday 8:00-4:30)

IN CASE OF EMERGENCY CALL: CHEMTREC
(24 Hours/Day, 7 Days/Week) 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight %	Component	CAS #	EINECS# / ELINCS#	Classification*
68 - 70%	Nitric Acid	7697-37-2	231-714-2	O; R8 -C; R35, **

*Symbol and R phrase according to EC Annex1
** Subject to the reporting requirements of SARA Title III Section 313

3. HAZARDS IDENTIFICATION

Clear, colorless to yellow solution with caustic odor.

R35 – Causes severe burns.
R8 – Contact with combustible material may cause fire.

S1/2, S23, S26, S36, S45

Routes of Entry: Skin, eyes, inhalation and ingestion.

Ingredients found on carcinogen lists:

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST	ACGIH
Nitric Acid	Not Listed	Not Listed	Not Listed	Not Listed

4. FIRST AID INFORMATION

Inhalation: Inhalation of mists can cause corrosive action on mucous membranes. Symptoms include burning, choking, coughing, wheezing, laryngitis, shortness of breath, headache or nausea. Move casualty to fresh air and keep at rest. May be fatal if inhaled, may cause delayed pulmonary edema. Get medical attention.

Eyes: Contact rapidly causes severe damage. Symptoms include eye burns, watering eyes. Permanent damage to cornea may result. In case of eye contact, rinse with plenty of water and seek medical attention immediately.

Skin: Severe and rapid corrosion from contact. Extent of damage depends on duration of contact. Symptoms include burning, itching, redness, inflammation and/or swelling of exposed tissues. harmful if absorbed through skin. Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately.

Ingestion: **Do Not Induce Vomiting!** Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Wash out mouth with water and give a glass of water or milk. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES:

Flash Point:	Not Flammable
Flash Point method:	Not Applicable
Autoignition Temperature:	Not Applicable
Upper Flame Limit (volume % in air):	Not Applicable
Lower Flame Limit (volume % in air):	Not Applicable

Extinguishing Media: Product is not flammable. Use appropriate media for adjacent fire. Use flooding quantities of water to cool containers, keep away from common metals.

Special fire-fighting procedures: Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots. Material can react violently with water (spattering and misting) and react with metals to produce flammable hydrogen gas.

Hazardous combustion products: Emits toxic fumes under fire conditions. (See also Stability and Reactivity section).

Unusual fire and explosion hazards: Strong Oxidizer! Contact with organic material may cause fire. Material will react with metals to produce flammable hydrogen gas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: See section 8 for recommendations on the use of personal protective equipment.

Environmental precautions: Cleanup personnel need personal protection from inhalation and skin/eye contact. Evacuate and ventilate the area. Prevent spillage from entering drains. Cautiously add water to spill, taking care to avoid splashing and spattering. Neutralize diluted spill with soda ash or lime. Absorb neutralized spill with vermiculite or other inert absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Any release to the environment may be subject to federal/national or local reporting requirements. Dispose of all waste or cleanup materials in accordance with local regulations. Containers, even when empty, will retain residue and vapors.

7. HANDLING AND STORAGE

Normal handling: See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use.

Storage: Store in cool, dry well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities). Drains for storage or use areas for this material should have retention basins for pH adjustment and dilution of spills.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls: (consult local authorities for acceptable exposure limits)

Chemical name	Regulatory List	Value and type
Nitric Acid	UK OES	5 mg/m^3 TWA
	STEL	10 mg/m^3 (10 minutes)
	USA OSHA PEL	5 mg/m^3 TWA
	STEL	10 mg/m^3 (15 minutes)
	USA ACGIH	5 mg/m^3 TLV
	USA NIOSH	5 mg/m^3 REL
	STEL	10 mg/m^3 (15 minutes)
	USA OSHA - IDLH	25 ppm
	VME France	5 mg/m^3 TWA 8 hr
	VLE France (STEL)	10 mg/m^3 (15 minutes)

TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit during x number of minutes.
IDLH: Immediately Dangerous to Life or Health

Ventilation: Provide local exhaust, preferably mechanical.

Respiratory protection: If necessary use an approved respirator with acid vapor cartridges.

Eye protection: Wear chemical safety glasses with a face shield for splash protection.

Skin and body protection: Wear neoprene or rubber gloves, apron and other protective clothing appropriate to the risk of exposure.

Other Recommendations: Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Have supplies and equipment for neutralization and running water available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless to slight brown liquid
Physical state:	Liquid
Odor:	Acrid, suffocating odor
Odor Threshold:	Unknown
Specific Gravity:	1.4200
pH:	1
Melting Point/Freezing Point:	-42°C (-44°F)
Boiling Point/Range:	122°C (252°F)
Flammability:	Not Flammable (See section 5)
Flash point:	Not Flammable (See section 5)
Evaporation Rate (Butyl Acetate =1):	Not Available
Explosive Limits:	Not Explosive (See section 5)
Vapor Pressure (at 25ºC):	10 mmHg
Vapor Density (air =1):	2.5
Solubility:	Completely soluble in water
Partition coefficient/n-octanol/water:	-2.3 @ 25 ºC
% Volatile:	Not Available
Autoignition Temperature:	See section 5

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions to avoid: Uncontrolled addition of water, contact with combustible materials.

Incompatibility: Moisture, bases, organic material, metals, hydrogen sulfide, carbides, alcohols, organic solvents, carbides, cyanides, sulfides.

Hazardous decomposition products: Oxides of nitrogen.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects: See section 4 for symptoms of exposure and effects. Likely routes of exposure are skin, eyes and inhalation.
Target organs: Teeth, eyes, skin, respiratory system.

Acute Toxicity Data:

Nitric acid	LC_{50} (rat): 0.8 mg/L

Chronic Effects: Not Available

Teratogenicity: None found
Mutagenicity: None found
Embryotoxicity: None found
Synergistic Products/Effects: Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial): Aquatic fish; LC50 (96 hrs): 72 mg/l (Gambusia affinis)

Persistence and Degradability: Not Available

Bioaccumulative Potential: Not Available

Mobility in Soil: Not Available

Other Adverse Effects: Not Available

13. DISPOSAL CONSIDERATIONS

RCRA:

Hazardous waste? Yes RCRA ID number: DOO2

Waste Residues: Carefully dilute with water, neutralize per spill procedures in section 6. Neutralized material may be flushed to sewer (REGULATIONS PERMITTING!) or disposed of through a licensed contractor. Users should review their operations in terms of the applicable federal/nation or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

Product containers: Containers, if thoroughly cleaned, preferably by rinsing three times and handling the rinse water as waste residues, may be disposed of or recycled as non-hazardous waste. Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

DOT: UN2031, Nitric Acid, 8, pg II

TDG: UN2031, Nitric Acid, 8, pg II

PIN: Not Available

IDMG: UN2031, Nitric Acid, 8, pg II
Marine Pollutant: No

IATA/ICAO: UN2031, Nitric Acid, 8, pg II

RID/ADR: Class 8, Item 2(b), corrosive

15. REGULATORY INFORMATION

TSCA Inventory Status: All ingredients are listed on the TSCA inventory.

Federal and State Regulations:
Pennsylvania RTK: Nitric Acid
Massachusetts RTK: Nitric Acid

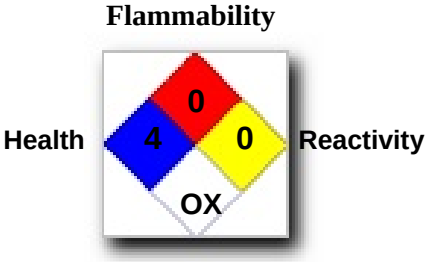
SARA 302/304/311/312 extremely hazardous substances: Nitric Acid
SARA 313 toxic chemical notification and release reporting: Nitric Acid
CERCLA: Hazardous Substances: Nitric Acid 1000 lbs

California Proposition 65: No.
WHMIS Canada: Class E - corrosive liquid.
DSCL (EEC): R35 – Causes severe burns, R8 - Contact with combustible material may cause fire.

HMIS (U.S.A.)

Health Hazard	3
Fire Hazard	0
Reactivity	2

National Fire Protection Association (U.S.A.)



Protective Equipment:

ADR (Europe):

TDG (Canada):

DSCL (Europe):

1. OTHER INFORMATION

Current Issue Date: November 30, 2005
Previous Issue Date: N/A
Prepared by: Sherry Brock (920) 623-2140

ALDRICH CHEMICAL CO INC. -- LIQUI-NOX PHOSPHATE-FREE DETERGENT, 24302-7 -- 6810-00N016648

========== Product Identification ==========

Product ID:LIQUI-NOX PHOSPHATE-FREE DETERGENT, 24302-7
MSDS Date:01/09/1990
FSC:6810
NIIN:00N016648
MSDS Number: BQTFQ
=== Responsible Party ===
Company Name:ALDRICH CHEMICAL CO INC.
Address:1001 W. ST. PAUL AVE
Box:355
City:MILWAUKEE
State:WI
ZIP:53201
Country:US
Info Phone Num:414-273-3850/FAX -4979
Emergency Phone Num:414-273-3850
CAGE:60928
=== Contractor Identification ===
Company Name:ALDRICH CHEMICAL CO INC
Address:1001 WEST ST PAUL AVE
Box:355
City:MILWAUKEE
State:WI
ZIP:53233
Country:US
Phone:414-273-3850
CAGE:60928

========== Composition/Information on Ingredients ==========

Ingred Name:LIQUI-NOX, PHOSPHATE-FREE DETERGENT

========== Hazards Identification ==========

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERT IES HAVE NOT BEEN THOROUGHLY INVESTIGATED.
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:SEE HEALTH HAZARDS.
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

========== First Aid Measures ==========

First Aid:EYE: IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MIN. SKIN: IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS AMOUNTS OF WATER. INHAL: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ART F RESP. IF BREATHING IS DIFFICULT, GIVEOXYGEN. CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE. INGEST: GET MD IMMEDIATELY .

========== Fire Fighting Measures ==========

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER, ALCOHOL OR POLYMER FOAM.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT TO PREVENT CONTACT WITH SKIN AND EYES.
Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

========== Accidental Release Measures ==========

Spill Release Procedures:WEAR NIOSH/MSHA APPROVED RESP, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL. VENTILATE AREA AND WASH SPILL S ITE AFTER MATERIAL PICKUP IS COMPLETE.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

========== Handling and Storage ==========

Handling and Storage Precautions:KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE. AVOID INHALATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID PROLONGED OR REPEATED EXPOSURE.
Other Precautions:NONE SPECIFIED BY MANUFACTURER.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation:MECHANICAL EXHAUST REQUIRED.
Protective Gloves:COMPATIBLE CHEMICAL-RESISTANT GLOVES.
Eye Protection:CHEMICAL SAFETY GOGGLES.
Other Protective Equipment:SAFETY SHOWER AND EYE BATH.
Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health
WASTE DISP: AND NEUTRALIZATION REACTIONS MAY GENRATE HEAT & FUMES WHICH CAN BE CONTROLLED BY THE RATE OF ADDITION. OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

========== Physical/Chemical Properties ==========

HCC:N1
Spec Gravity:1.051
Appearance and Odor:NONE SPECIFIED BY MANUFACTURER.

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:NATURE OF DECOMPOSITION PRODUCTS NOT KNOWN.

========== Disposal Considerations ==========

Waste Disposal Methods:SML QTYS: CAUTIOUSLY ADD TO A LRG STIRRED EXCESS OF WATER. ADJUST THE PH TO NEUTRAL, SEPARATE ANY INSOLUBLE SOLIDS OR LIQUIDS & PACKAGE THEM FOR HAZARDOUS-WASTE DISP. FLUSH THE AQUEOUS SOLN DOWN THE D RAIN W/PLENTY OF WATER. THE HYDROLYSIS (SUPP DATA)

Disclaimer (provided with this information by the compiling agencies):
This information is formulated for use by elements of the Department

of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

Material Safety Data Sheet

Hydrochloric Acid, 1:1 Aqueous Solution

ACC# 95574

Section 1 - Chemical Product and Company Identification

MSDS Name: Hydrochloric Acid, 1:1 Aqueous Solution
Catalog Numbers: M-043, M043, MCC-030298
Synonyms: Muriatic acid; Chlorohydric acid; Hydrogen chloride; Spirits of salt
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7647-01-0	Hydrochloric acid	< 20	231-595-7
7732-18-5	Water	Balance	231-791-2

Hazard Symbols: T C
Risk Phrases: 23 35

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless to slight yellow clear liquid. **Danger!** Corrosive. Causes eye and skin burns. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. May cause fetal effects based upon animal studies. Possible sensitizer.
Target Organs: Respiratory system, teeth, eyes, skin, circulatory system.

Potential Health Effects

Eye: May cause irreversible eye injury. Vapor or mist may cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns. May cause painful sensitization to light.
Skin: May be absorbed through the skin in harmful amounts. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Contact with liquid is corrosive and causes severe burns and ulceration.
Ingestion: May cause circulatory system failure. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract.

Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract. Exposure to the mist and vapor may erode exposed teeth. Causes corrosive action on the mucous membranes.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. May cause fetal effects. Laboratory experiments have resulted in mutagenic effects. Prolonged exposure may cause conjunctivitis, photosensitization, and possible blindness.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes). SPEEDY ACTION IS CRITICAL!
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.
Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately. Give milk of magnesia.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Do NOT use sodium bicarbonate in an attempt to neutralize the acid.
Antidote: Do NOT use oils or ointments in eye.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Containers may explode when heated.
Extinguishing Media: For large fires, use water spray, fog, or alcohol-resistant foam. Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. Do NOT get water inside containers. Do NOT use straight streams of water. Most foams will react with the material and release corrosive/toxic gases. Cool containers with flooding quantities of water until well after fire is out. For small fires, use carbon dioxide (except for cyanides), dry chemical, dry sand, and alcohol-resistant foam.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Large spills may be neutralized with dilute alkaline solutions of soda ash (sodium carbonate, Na2CO3), or lime (calcium oxide, CaO). Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation. Do not get water inside containers. A vapor suppressing foam may be used to reduce vapors. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Contents may develop pressure upon prolonged storage. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Discard contaminated shoes. Use caution when opening. Keep from contact with moist air and steam.
Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Do not store in metal containers. Do not store near flammable or oxidizing substances (especially nitric acid or chlorates).

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hydrochloric acid	2 ppm Ceiling	50 ppm IDLH	5 ppm Ceiling; 7 mg/m3 Ceiling
Water	none listed	none listed	none listed

OSHA Vacated PELs: Hydrochloric acid: No OSHA Vacated PELs are listed for this chemical.
Water: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear neoprene or polyvinyl chloride gloves to prevent exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid

Appearance: colorless to slight yellow
Odor: strong, pungent
pH: 0.01
Vapor Pressure: 5.7 mm Hg @ 0 deg C
Vapor Density: 1.26
Evaporation Rate:> 1.00 (N-butyl acetate)
Viscosity: Not available.
Boiling Point: 81.5-110 deg C @ 760 mmHg
Freezing/Melting Point: -74 deg C
Decomposition Temperature: Not available.
Solubility: Miscible.
Specific Gravity/Density:1.0-1.2
Molecular Formula:HCl.H2O
Molecular Weight:36.46

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Mechanical shock, incompatible materials, metals, excess heat, exposure to moist air or water, bases.
Incompatibilities with Other Materials: Bases, acetic anhydride, alkali metals, aluminum, amines, copper, copper alloys, fluorine, iron, sodium hydroxide, steel, sulfuric acid, vinyl acetate, zinc, potassium permanganate, cesium acetylene carbide, rubidium acetylene carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum, carbonates, perchloric acid, calcium phosphide, metal oxides, acetates, cesium carbide, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, alcohols + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1-difluoroethylene, ethylene diamine, magnesium boride, mercuric sulfate, silver perchlorate + carbon tetrachloride, uranium phosphide.
Hazardous Decomposition Products: Hydrogen chloride, chlorine, carbon monoxide, carbon dioxide, hydrogen gas.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 7647-01-0: MW4025000; MW4031000
CAS# 7732-18-5: ZC0110000
LD50/LC50:
CAS# 7647-01-0:
Inhalation, mouse: LC50 = 1108 ppm/1H;
Inhalation, mouse: LC50 = 8300 mg/m3/30M;
Inhalation, rat: LC50 = 3124 ppm/1H;
Inhalation, rat: LC50 = 45000 mg/m3/5M;
Inhalation, rat: LC50 = 8300 mg/m3/30M;
Oral, rabbit: LD50 = 900 mg/kg;
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;
Carcinogenicity:
CAS# 7647-01-0:
ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: IARC Group 3 - not classifiable CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: Experimental reproductive effects have been reported.
Teratogenicity: Embryo or Fetus: Stunted fetus, Inhalation, rat TCL0=450 mg/m3/1H Specific Developmental Abnormalities: homeostatis, Inhalation, rat TCL0=450 mg/m3/1H (female 1 days pre-mating).
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: Cytogenetic analysis: Hamster, lung = 30 mmol/L.; Cytogenetic analysis: Hamster, ovary = 8 mmol/L.
Other Studies: No data available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Bluegill/Sunfish: 3.6 mg/L; 48Hr; Lethal (unspecified) Bluegill/Sunfish: LC50; 96 Hr; pH 3.0-3.5 No data available.
Environmental: Rapidly hydrolyzes when exposed to water. Will exhibit extensive evaporation from soil surfaces. Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

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

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	No information available.				No information available.
Hazard Class:					
UN Number:					
Packing Group:					

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7647-01-0 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances
CAS# 7647-01-0: 500 lb TPQ

SARA Codes
CAS # 7647-01-0: acute.

Section 313
This material contains Hydrochloric acid (CAS# 7647-01-0, 20%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:
CAS# 7647-01-0 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act:
CAS# 7647-01-0 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
CAS# 7647-01-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level: None of the chemicals in this product are listed.

European / International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:
T C

Risk Phrases:
R 23 Toxic by inhalation.
R 35 Causes severe burns.

Safety Phrases:
S 1/2 Keep locked up and out of reach of children.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)
CAS# 7647-01-0: 1
CAS# 7732-18-5: No information available.
Canada - DSL/NDSL
CAS# 7647-01-0 is listed on Canada's DSL List.
CAS# 7732-18-5 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of D2A, E.
Canadian Ingredient Disclosure List
CAS# 7647-01-0 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 7647-01-0: OEL-AUSTRALIA:TWA 5 ppm (7 mg/m3) OEL-AUSTRIA:TWA 5 ppm (7 mg/m3) OEL-BELGIUM:STEL 5 ppm (7.7 mg/m3) OEL-DENMARK:STEL 5 ppm (7 mg/m3) OEL-FINLAND:STEL 5 ppm (7 mg/m3);Skin OEL-FRANCE:STEL 5 ppm (7.5 mg/m3) OEL-GERMANY:TWA 5 ppm (7 mg/m3) OEL-HUNGARY:STEL 5 mg/m3 OEL-JAPAN:STEL 5 ppm (7.5 mg/m3) OEL-THE NETHERLANDS:TWA 5 p pm (7 mg/m3) OEL-THE PHILIPPINES:TWA 5 ppm (7 mg/m3) OEL-POLAND:TWA 5 mg/m3 OEL-RUSSIA:STEL 5 ppm (5 mg/m3) OEL-SWEDEN:STEL 5 ppm (8 mg/m3) OEL-SWITZERLAND:TWA 5 ppm (7.5 mg/m3);STEL 10 ppm (15 mg/m3) OEL -THAILAND:TWA 5 ppm (7 mg/m3) OEL-TURKEY:TWA 5 ppm (7 mg/m3) OEL-UNI TED KINGDOM:TWA 5 ppm (7 mg/m3);STEL 5 ppm (7 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPOR E, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 7/06/1999
Revision #3 Date: 3/18/2003

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability: Stable under normal conditions.

Conditions of instability: None known.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizers.

Hazardous decomposition products: See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of Acute Exposure

Eye contact: May cause irritation.

Skin contact: Prolonged contact may cause irritation.

Inhalation: Airborne particles may cause irritation.

Ingestion: May cause vomiting and diarrhea.
May cause abdominal pain.
May cause gastric distress.

Effects of chronic exposure: Contains an ingredient which may be corrosive.

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available for mixture, see the ingredients section.

Exposure limit of material: Not available for mixture, see the ingredients section.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

First Aid

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
Seek medical attention if symptoms persist.

Ingestion: Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.
Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak/Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves/Type:

Neoprene or rubber gloves.

Respiratory/Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye/Type:

Safety glasses with side-shields.

Footwear/Type: Safety shoes per local regulations.

Clothing/Type: As required to prevent skin contact.

Other/Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

ATTACHMENT 5

NEAR-MISS INCIDENT REPORT

Near-Miss Incident Report

(completed by field staff)

Employee: _____

Office or site location: _____

Near-Miss Incident (check one or more): Exposure ( ) Physical injury ( ) Property damage ( )

Location (city and state):_____ Project and Contract No. _____

Date of incident: _____ Time of incident: _____

Fully describe the incident, including how it happened, persons involved, if chemicals were involved in the incident, etc.:

_____

_____

_____

_____

_____

_____

Was the operation being conducted under an established safety plan? (Yes / No)

If yes, attach a copy. If no, explain: _____

_____

_____ _____

Employee's signature Date

_____ _____

Project manager's signature Date

_____ _____

Site safety officer's signature Date

Corporate Health and Safety Manager Review and Comments

Corrective action/procedure changes carried out at the site:

_____

_____

_____

Corrective actions to be taken to prevent similar incidents at other sites:

_____

_____

_____

_____ _____

Corporate health and safety manager's signature Date

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

Former Nu Brite Cleaners

1299 1st Avenue
New York, NY 10021
Block 1444, Lot 30
NYSDEC BCP No. C231072

November 2013

Contents

*** * * * ***

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **3SK Corp.**
Site Name: **Former Nu Brite Cleaners ("Site")**
Site Address: **1299 1st Avenue, New York, NY 10021**
Site County: **New York**
Site Number: **C231072**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process;

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision-making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested parties are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC website. If this occurs, NYSDEC will inform the public in fact sheets distributed about the Site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the

project. These will include notifications of upcoming activities at the Site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the Site is located;
- Residents, owners, and occupants of the Site and properties adjacent to the Site;
- The public water supplier which services the area in which the Site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repositories	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

The potential exists for the intrusion of soil vapor into the on-site building. A soil vapor investigation performed in 2013 within the on-site building identified concentrations of tetrachloroethene (PCE) – dry cleaning fluid – and trichloroethylene (TCE) – a commonly used solvent – in soil vapor requiring mitigation. The action under the BCP will address the concentrations of soil vapor that require mitigation through approved actions.

In order to evaluate the potential for off-site migration of soil vapor, as part of this investigation, soil vapor and indoor air was also sampled from the western adjacent building. Comparison of the soil vapor and indoor results to NYSDOH matrices indicate no further action is necessary in the western adjacent building.

Based on Census Data, the area near the Site is overwhelmingly Caucasian, therefore no need to translate fact sheets into other languages. The Site is not located within an Environmental Justice Area. However, when the cleanup activities commence, there may be impacts due to noise, odor or truck traffic.

Upon conclusion of the BCP Application 30-day public comment period, if issues of public concern are identified, this CP Plan will be amended to address any additional CP activities that may need to be implemented.

4. Site Information

Site Description

The Site is located in a commercial and residential area of the Upper East Side section of Manhattan. The Site is comprised of an approximately 1,957 square foot rectangular parcel located on the corner of the block and is bounded to the north by 70th Street; to the east by 1st Avenue; to the south by 69th Street; and to the west by additional commercial/residential building. Adjacent properties include mixed-use commercial and residential buildings to the south, west and east; and a senior center to the north. The Site is identified on New York City tax maps as Block 1444, Lot 30. Appendix C contains a map identifying the location of the Site.

The Site is currently developed with a 4-story commercial/residential building (measuring approximately (25'x 65'). The first floor of the building is utilized as a convenience store and pharmacy. The basement depth is approximately six (6) feet (ft) below sidewalk grade (bsg) and is divided into two sections, both of which are used for storage. Two (2) 275-gallon above

ground storage tanks (ASTs) containing number two fuel oil are located in the western section of the basement. Residential units occupy floors two through four, with two units per floor.

Within the footprint of the Site is a separate one-story building (measuring approximately (12'x25') located west of the main Site building. This building is presently utilized as a dry-cleaning drop-off and pick-up facility and shares a wall with the main building. There is a small (10'x20') space located beneath the one-story building that contains a boiler. Integral understands that this boiler services both on-site buildings.

History of Site Use, Investigation, and Cleanup

According to the Record Review Report prepared by Hydro Tech Environmental (Hydro Tech), historic Sanborn Maps indicated that a dry-cleaner was present on-site between 1976 and approximately 1996. City Directory search records list a dry-cleaner (Nu Brite Cleaners) in operation at the Site between 1950 and 1988 and identified it as a Resource Conservation Recovery Act (RCRA) Non-Generator of hazardous wastes between 1999 and 2007.

Additionally, Hydro Tech reported that between 2000 and 2005, the rear portion of the commercial space was leased to Global Entrepreneurship Inc., which provided drycleaning services with off-site dry-cleaning operations. It is unclear if the "rear portion" of the commercial space refers to the small one-story building located west of the main building or to another section of the main commercial space. The Site was utilized as an auto body repair shop from 1927 to 1942.

Due diligence subsurface investigations were conducted at the Site by Hydro Tech in 2007, 2008 and 2010. A soil vapor investigation was performed by Integral Engineering P.C. in 2013. The investigations included the completion of a total of ten (10) soil borings, seven (7) groundwater monitoring wells, and five (5) soil vapor probes. We base the following conclusions on the results of above-referenced investigations:

- Chlorinated solvent impacts are present in soils beneath the Site. The impacts have not been completely delineated due to access issues. Previous investigations indicate that impacts are generally limited to the central and southwestern portions of the Site. Vertical delineation indicates impacts exist between 2 to 8 feet below basement grade (bbg).

- Chlorinated solvents present in Site soils could be the result of historic usage of the Site as a dry-cleaner.

- No chlorinated solvent impacts were identified in soils observed during the installation of the off-site monitoring wells. Soil samples were not collected as part of the off-site scope of work.

- In 2008, analysis of groundwater collected beneath Site adjacent sidewalks to the north and east, indicated concentrations of Tetrachloroethylene or Perchloroethylene (PCE)

and/or those chemicals into which PCE deteriorates over time, known as PCE's "breakdown products," exceeding Class GA Standards present in wells MW-2, MW-3 and MW-4. At this time, no Volatile Organic Compounds (VOCs) were detected above the standards of acceptable or unacceptable contamination applicable to the groundwater collected from the on-site basement well, MW-1, known as "Class GA Standards." Class GA Standards and guidance values are ambient water quality values that are set to protect the state's waters. VOCs are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects.

- In May 2010, analysis of groundwater collected from MW-1 indicated concentrations of PCE, Trichloroethylene (TCE) and Dichloroethene (DCE) exceeding Class GA Standards; PCE and TCE were detected below Class GA Standards in groundwater collected from MW-2; Vinyl chloride was detected above Class GA Standards and PCE was detected below Class GA Standards in groundwater collected from MW-4; no VOCs were detected above Class GA Standard in groundwater collected from off-site well MW-7; and wells MW-3, MW-5 and MW-6 were not sampled due to lack of sample volume.
- In July 2010, off-site wells MW-5 (hydraulically downgradient) and MW-6 (hydraulically cross-gradient) were reinstalled and renamed MW-5A and MW-6A. No VOCs were detected above Class GA Standards in groundwater collected from MW-5A. Analysis of groundwater collected from MW-6A indicated chloroform exceeded its Class GA Standard of 7 µg/L. DCE was detected below its Class GA Standard in MW-6A.
- Comparison of the soil vapor and indoor results to NYSDOH matrices indicate that mitigation will be required to address PCE, TCE and cis-1,2-dichloroethene (DCE) elevated concentrations in soil vapor under the site building. Indoor air concentrations do not exceed NYSDOH Alternative Guidance Values and therefore, do not appear to represent an immediate threat to human health. Air guidelines are generally set by the NYSDOH and USEPA using a combination of risk assessment and risk management considerations for the protection of human health.
- Comparison of the soil vapor and indoor results to NYSDOH matrices indicate no further action is necessary in the western adjacent building.
- Additional on-site investigation is needed to delineate chlorinated solvent impacts to soil and groundwater.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Participant. This means that the Applicant was either the owner of the Site at the time of the

disposal or discharge of contaminants; or is otherwise a person responsible according to applicable principles of statutory or common law liability, unless such person's liability arises solely as a result of such person's ownership or operation of or involvement with the Site subsequent to the disposal or discharge of contaminants. The Participant must fully characterize the nature and extent of contamination on-site and off-site, and must conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the Site.

The Site is currently zoned C2-8 for commercial districts that are predominantly residential. Remediation of the Site is not being performed in association with any redevelopment of the Site.

To achieve the remediation goal, the Applicant will conduct investigation and cleanup activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

The Applicant will conduct an investigation of the Site officially called a “remedial investigation” (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation workplan, which is subject to public comment.

The site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the Site poses a significant threat to public health or the environment. If the Site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the Site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

When the investigation of the Site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the Site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a Certificate of Completion, described below, (COC) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a Remedial Work Plan. The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a proposed Remedial Work Plan for approval, NYSDEC would announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the Final Engineering Report (FER). NYSDEC then will issue a COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the Site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the Site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Bryan Wong
Project Manager
NYSDEC
Division of Environmental Remediation
Region 2 Long Island City Office
1 Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101
Tel: (718) 482-4905
Email: yywong@gw.dec.state.ny.us

Thomas V. Panzone
Regional Citizen Participation Specialist
NYSDEC, Region 2
47-40 21st Street
Long Island City, NY 11101
Tel: (718) 482-4953

New York State Department of Health (NYSDOH):
Stephanie Selmer
Project Manager
NYSDOH
Corning Tower
Empire State Plaza,
Albany, NY 12237
Tel: (518) 402-7870
Email: beei@health.state.ny.us

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

New York Public Library
67th Street Branch
328 East 67th Street
New York, NY 10065
Attn: Ms. Rothstein
(212) 734-1717

Monday	11:00 am – 6:00 pm
Tuesday	12:00–7:00 pm
Wednesday	11:00 am – 6:00 pm

Thursday	12:00–7:00 pm
Friday	10:00 am – 5:00 pm
Saturday	10:00 am – 5:00 pm
Sunday	Closed

NYSDEC
Bryan Wong
Project Manager
Division of Environmental Remediation
Region 2 Long Island City Office
1 Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101
(718) 482-4905

Appendix B Site Contact List

Site Contact List

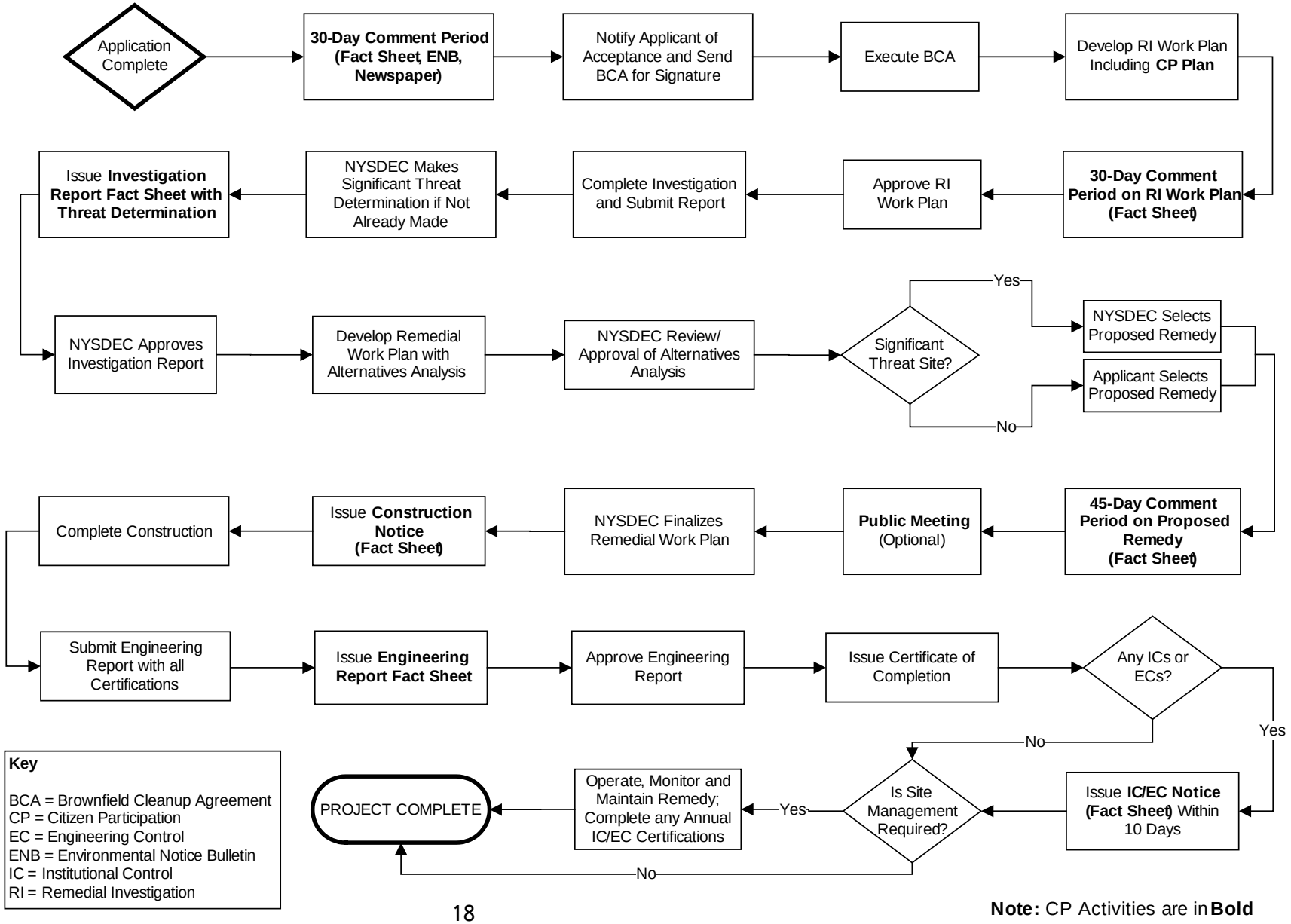
Site #: C231072

Site Name: Former Nu Brite Cleaners (**1299 First Avenue)**

List Last Updated: 10/16/13

Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Site Name (County)
	Hon. Michael Bloomberg, Mayor				City Hall	New York	NY	10007	1299 First Avenue (New York)
	Hon. John Liu	NYC Comptroller			1 Centre Street	New York	NY	10007	1299 First Avenue (New York)
	Hon. Bill de Blasio	Public Advocate			1 Centre Street, 15th Floor	New York	NY	10007	1299 First Avenue (New York)
	Hon. Jessica Lappin	NYC Councilmember			330 East 63rd Street (Suite 1K)	New York	NY	10065	1299 First Avenue (New York)
	Hon. Liz Krueger	NYS Senator			211 East 43rd Street Suite 401	New York	NY	10017	1299 First Avenue (New York)
	Hon. Micah Kellner	NYS Assemblymember			1365 First Avenue	New York	NY	10021	1299 First Avenue (New York)
	Dr. Robert Kulikowski, Director	NYC Office of Environmental Coordination			100 Gold Street - 2nd Floor	New York	NY	10038	1299 First Avenue (New York)
	Hon. Charles Schumer	U.S. Senator			780 Third Avenue, Suite 2301	New York	NY	10017	1299 First Avenue (New York)
	Hon. Kirsten Gillibrand	U.S. Senator			780 Third Avenue, Suite 2601	New York	NY	10017	1299 First Avenue (New York)
	Hon. Carolyn Maloney	U.S. House of Representatives			1651 3rd Avenue, Suite 311	New York	NY	10128	1299 First Avenue (New York)
	Hon. Amanda M. Burden, Chair	City Planning Commission			22 Reade Street	New York	NY	10007	1299 First Avenue (New York)
	Hon. Scott Stringer	Manhattan Borough President		19th Floor	1 Centre Street	New York	NY	10007	1299 First Avenue (New York)
	Hon. Christine C. Quinn, Speaker	City Council		Suite 1206	224 West 39th Street	New York	NY	10007	1299 First Avenue (New York)
	Nicholas D. Viest, Chair	Manhattan Community Board 8		Suite 620	505 Park Avenue	New York	NY	10022	1299 First Avenue (New York)
	Jane O'Connell	Region 2 Chief of Superfund, NYSDEC			jhoconne@gw.dec.state.ny.us				1299 First Avenue (New York)
	Bryan Wong	Project Manager, Region 2			yywong@gw.dec.state.ny.us				1299 First Avenue (New York)
	Thomas V. Panzone	Regional Citizen Participation Specialist			tvpanzon@gw.dec.state.ny.us				1299 First Avenue (New York)
	Larry Ennist	NYSDEC			625 Broadway	Albany	NY	12233	1299 First Avenue (New York)
	Stephanie Selmer	NYSDOH, Public Health Specialist			beei@health.state.ny.us				
	Latha Thompson, District Manager	Manhattan Community Board 8		Suite 620	505 Park Avenue	New York	NY	10022	1299 First Avenue (New York)
	David Kleckner	Co-chair, Environmental & Sanitation Committee Manhattan CB 8		Suite 620	505 Park Avenue	New York	NY	10022	1299 First Avenue (New York)
	Debra Teitelbaum	Co-chair, Environmental & Sanitation Committee Manhattan CB 8		Suite 620	505 Park Avenue	New York	NY	10022	1299 First Avenue (New York)
	Hon. Carter Strickland, Commissioner	NYC Department of Environmental Protection			59-17 Junction Boulevard	Flushing	NY	11373	1299 First Avenue (New York)
	John Wuthenow	Office of Environmental Assessment & Planning			96-05 Horace Harding Expressway	Flushing	NY	11373	1299 First Avenue (New York)
	Norman Goodman, County Clerk	Manhattan County Clerk's Office			60 Centre Street, Room 161	New York	NY	10007	1299 First Avenue (New York)
	Seri Worden, Executive Director	Friends of the Upper East Side	Historic Districts		20 East 69th Street	New York	NY	10021	1299 First Avenue (New York)
	Friends of St. Catherine Park	Attn: Elizabeth Freund			P.O. Box 1835	New York	NY	10021	1299 First Avenue (New York)
	New York Times				229 West 43rd Street	New York	NY	10036	1299 First Avenue (New York)
	New York Daily News				4 New York Plaza	New York	NY	10004	1299 First Avenue (New York)
	New York Post				1211 Avenue of the Americas	New York	NY	10036	1299 First Avenue (New York)
	NY 1 News				75 Ninth Avenue	New York	NY	10011	1299 First Avenue (New York)
	Our Town (East Side)				79 Madison Avenue, 16th Floor	New York	NY	10016	1299 First Avenue (New York)
	New York Press				79 Madison Avenue, 16th Floor	New York	NY	10016	1299 First Avenue (New York)
	Jill Rothstein, Library Manager	New York Public Library	67th Street Branch		328 67th Street	New York	NY	10065	1299 First Avenue (New York)
	Linda Hamil, Site Administrator	Talent Unlimited High School			317 East 67th Street	New York	NY	10065	1299 First Avenue (New York)
	Laura Garcia, Site Administrator	Ella Baker School			317 East 67th Street	New York	NY	10065	1299 First Avenue (New York)
	Herb Mack, Site Administrator	Urban Academy			317 East 67th Street	New York	NY	10065	1299 First Avenue (New York)
	Gladys Rodriguez, Site Administrator	Manhattan International High School			317 East 67th Street	New York	NY	10065	1299 First Avenue (New York)
	William Klann, Site Administrator	Vanguard High School			317 East 67th Street	New York	NY	10065	1299 First Avenue (New York)
	Laurie H. Glimcher, Site Administrator	Weill Cornell Graduate School of Medical S	Box 65		1300 York Avenue	New York	NY	10065	1299 First Avenue (New York)
	Tara Napoleoni, Site Administrator	PS 183	Robert Louis Stevenson		419 East 66th Street	New York	NY	10065	1299 First Avenue (New York)
	Hon. Dennis Walcott, Chancellor	Board of Education	Tweed Courthouse		52 Chambers Street	New York	NY	10007	1299 First Avenue (New York)
	NYC Board of Education	The Division of School Facilities			44-36 Vernon Boulevard	Long Island City	NY	11101	1299 First Avenue (New York)
	Marian Detelj, Site Administrator	Lenox Hill Day Care			331 East 70th Street	New York	NY	10021	1299 First Avenue (New York)
	Allison Wilmot, Site Administrator	Bright Horizons at NY Presbyterian Hospital			435 East 70th Street	New York	NY	10021	1299 First Avenue (New York)
Current Occupant					102 Fulton Street	New York	NY	10038	1299 First Avenue (New York)
Current Occupant				10th Floor	460 Park Avenue	New York	NY	10022	1299 First Avenue (New York)
	Ron Obadiah	Homestate Properties			102 Fulton Street	New York	NY	10038	1299 First Avenue (New York)
Current Occupant					1299 1st Avenue	New York	NY	10021	1299 First Avenue (New York)
Current Occupant					340 East 70th Street	New York	NY	10021	1299 First Avenue (New York)
Current Occupant					338 East 70th Street	New York	NY	10012	1299 First Avenue (New York)
Current Occupant		Sumagli Realty Company, LLC		Suite: 2A	872 Madison Avenue	New York	NY	10021	1299 First Avenue (New York)
Current Occupant					1297 1st Avenue	New York	NY	10021	1299 First Avenue (New York)
	Elaine Krtil				1297 1st Avenue	New York	NY	10021	1299 First Avenue (New York)
	First Hungarian Reformed Church	Attn: Pastor			344 East 69th Street	New York	NY	10021	1299 First Avenue (New York)
	Saint Catherine of Siena RC Church	Attn: Pastor			411 East 68th Street	New York	NY	10065	1299 First Avenue (New York)
	Lenox Hill Senior Center	Executive Director			343 East 70th Street	New York	NY	10021	1299 First Avenue (New York)
	William Woodward Jr. Nursery	Sarah Fine English, Director			435 East 70th Street, 2nd Floor	New York	NY	10021	1299 First Avenue (New York)
	Manhattan Chamber of Commerce				1375 Broadway, Third Floor	New York	NY	10018	1299 First Avenue (New York)

Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**