Horizontal Soil Vapor Extraction Well Installation Workplan

Stanton Cleaners
NYSDEC Site No: 130072
110 Cuttermill Road, Great Neck, New York

NYSDEC Standby Engineering Contract
Work Assignment No: D007625-06

August 28, 2019

Prepared for:

New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

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1.0 INTRODUCTION

Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR), on behalf of the New York State Department of Environmental Conservation (NYSDEC), has prepared this Horizontal Soil Vapor Extraction (hSVE) Well Installation Workplan (Workplan) to complete additional remediation well installation at the Stanton Cleaners groundwater contamination site located at 110 Cuttermill Road, Great Neck, New York (the site). Dependent on the approval of this Workplan and off-site access, the proposed activities are anticipated to be completed by October 2019. All work pursuant to this Workplan will be completed under Task 6: Remedial System Optimization (RSO).

This Workplan provides a description of the anticipated tasks to be completed in conformance with HDR's Field Activities Plan (FAP), Health and Safety Plan (HASP), and Quality Assurance Project Plan (QAPP). A site specific HASP has been prepared for the proposed work and is provided as Appendix A. A community air monitoring program (CAMP) has been developed for the proposed subsurface intrusive work and can be found in Appendix B.

2.0 BACKGROUND

2.1 Site Location and Current Use

The physical site address is 110 Cutter Mill Road in Great Neck, New York (Figure 1). The property is approximately ¼ acre in size and includes a vacant two-story building (formerly the Stanton Cleaners building), a one-story boiler/storage building, and the two-story groundwater extraction and treatment (GWE&T)/SVE system building. The site is bordered to the north and east by empty lots (former indoor tennis facility), to the south by a Sunoco gasoline fueling station and the LIHA, and to the west by Cutter Mill Road. The surrounding area is largely urbanized and consists of various mixed uses with residential areas on side streets and commercial buildings along the main roadways. The entire area is serviced by public water and sewer with the Water Authority of Great Neck North (WAGNN) being the primary water supplier.

In 2001, the United States Environmental Protection Agency (USEPA) completed the installation of the GWE&T/SVE system on the site assumed operation and maintenance (O&M) responsibilities. In late 2012, the NYSDEC assumed remedial system operations and continues to do so to date. The current GWE&T system operates one off-site groundwater extraction well (EXT-02) at an approximate flow rate of 60 gallons per minute. The current SVE system operates up to seven SVE wells, largely located off-site to the southeast.

Additionally, it should be noted that the Stanton Cleaners site and adjacent northern and eastern lots differ in elevation. Based on a review of elevation data for the remediation system wells and historical borings, the approximate on-site ground surface elevation is 83 feet above mean sea level (amsl) and at the south eastern property is 74 feet amsl, resulting in an approximate 9-foot elevation difference. Separating the two properties is a slope encased in concrete.

2.2 Rationale for hSVE Well Installation

As reported in the *May 2017 RSO Technical Memorandum,* in November 2016, HDR installed two sub-slab vapor points (ST-SS1 and ST-SS2) within the Stanton Cleaners building while it was an active drycleaner. Subsequent soil vapor intrusion (SVI) sampling at that time and in September 2017, when the facility was vacant, showed elevated concentrations of site contaminants of concern (COCs) including tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (c12-DCE) in both sub-slab vapor points.

More recently, as reported in the *April 2019 Expanded SVI Sampling Report*, in March 2019, an additional sub-slab vapor point (ST-SS3) was installed within the boiler room building. As a result of the SVI sampling completed that month, laboratory analytical results from samples collected from the three sub-slab vapor points continued to show elevated concentrations of PCE, TCE, and c12-DCE. Most notably, detected PCE concentrations in the sub-slab vapor points ranged from 1,559 micrograms per cubic meter (µg/m^3) (ST-SS1) to 27,802 µg/m^3 (ST-SS2).

The high concentrations of site COCs in sub-slab vapor samples obtained in 2016, 2017, and 2019, supports the conclusion that source zone soils, of an unknown thickness and depth, underlie both the Stanton Cleaners and adjacent boiler room building concrete slabs. To remediate and remove volatile vapor from these soils, HDR proposes to install two hSVE wells underneath the both buildings on a northwest-southeast orientation at an approximate depth of 5 to 7 feet below ground surface (bgs).

3.0 SCOPE OF WORK

The scope of work (SOW) for this RSO task includes utility clearance, hSVE well installation, and SVE system hookup activities. Field activities described in this section will be documented in a field logbook and maintained for all site activities. Photographs will also be collected to document field activities, where appropriate.

3.1 Ground Penetrating Radar/Utility Clearance

Prior to hSVE well installation, HDR's contract private utility clearance firm, Radar Solutions International of Waltham, Massachusetts (RSI) will complete a geophysical survey, utilizing ground penetrating radar (GPR) and other precision locating tools, to identify any and all public/private utilities present within the proposed area of subsurface disturbance. Located utilities will be painted and/or flagged on ground surface in conformance with the American Public Works Association (APWA) Uniform Color Codes. At this time, the HDR will markout the planned hSVE well on the floor of each building with paint. Additionally, prior to mobilization, the hSVE well installation contractor will notify Dig-Safe NY to identify public utilities around the site. It is anticipated that most utility work will be completed within the Stanton Cleaners and adjacent boiler room buildings.

If identified utilities are found to cross the proposed hSVE well installation pathway, HDR will mobilize Associated Environmental Services of Shoreham, New York (AES) to perform pre-clearing activities via soft dig methods at the intersection point. Once the utility is uncovered, its depth will be recorded and a sono-tube, of appropriate size, will be inserted into the excavation to prevent collapse. Any/all utility excavations will remain open throughout this SOW and will be used to visually confirm that the hSVE well, once drilled and installed, has safely passed underneath the utility.

All concrete and construction debris removed during the pre-clearing activities will be disposed in a roll-off provided by HDR's investigation derived waste (IDW) contractor, AARCO Environmental Services of Lindenhurst, New York (AARCO). All subsurface soil generated during the pre-clearing activities will be stockpiled on and covered with poly-ethylene sheeting. Upon the conclusion of hSVE well installation activities, soils will be returned to each pre-cleared hole and the surface will be restored to match existing conditions. It is anticipated that any encountered contaminated soil, removed during pre-clearing, and returned to the excavation, will be remediated in-situ during subsequent SVE system operations.

3.2 Horizontal Soil Vapor Extraction Well Installation

As stated above, HDR proposes to install two hSVE wells (hSVE-01 and hSVE-02) underneath the Stanton Cleaners and adjacent boiler room buildings to remediate sub-slab soil impacts. All contractor activities are proposed to occur on the southwestern off-site property and will be referred to the Staging area, for purposes of this Workplan. A map showing approximate locations of both hSVE wells can be found on Figure 2.

HDR has subcontracted to Directed Technologies Drilling, Inc. (DTD) of Bellfonte, PA to perform the horizontal hSVE well installation activities. DTD will setup on ground surface on the southeastern off-site property, advance each boring through the concrete slope, and bore horizontally to the anticipated depth and length under each building. Bore depth and length will be monitored in the field by DTD using traditional walk over locating. Target screen depths will be set on a 2% slope downward in the northwestern direction so that moisture and condensate, generated during SVE operations, can drain back to the subsurface formation rather than at the well head. Note that final well screen/riser lengths may change due to field conditions. The NYSDEC will be notified of all well construction changes as they occur. As a visual representation of the proposed hSVE wells, a preliminary and proposed cross sectional view of hSVE-01 with respect to length and depth can be found as Figure 3. A construction detail summary for each hSVE well can be found below.

Stanton Cleaners Building – hSVE-01

- Target well screen depth of 5-feet bgs underneath the building (approx. 78 feet amsl) with a 2% slope downward from the south eastern building edge to the north western termination point (lowest elevation to be approximately 6-feet bgs).
- Alternatively, if the elevation rise over the first 25 feet (within the slope and prior to the building) is too sharp to allow the the installation of the hSVE, the target well depth will be 7-feet bgs underneath the building (approx. 76 feet amsl) with a 2% slope downward from the south eastern building edge to the north western termination point (lowest elevation to be approximately 8-feet bgs). This will allow a borehole entry at 0° and maintain that elevation until underneath the target building.
- Approximately 50-feet of 3-inch inner diameter (ID), 0.10-slot screen – Schedule 80 poly vinyl chloride (PVC).
- Approximately 30-feet of 3-inch ID riser – Schedule 80 PVC.
- Well riser to be sealed in place with a neat non-shrink grout.
- Final three-feet near the concrete slope to be supported in-hole by steel casing or plastic corrugated sono-tube.
- A two-foot well stub-out will be left exiting the slope and finished with a locking j-plug.

Boiler Room Building – hSVE-02

- Target well depth of 5-feet bgs underneath the building (approx. 78 feet amsl) with a 2% slope downward from the south eastern building edge to the north western termination point (lowest elevation to be approximately 5.5 feet bgs).
- Alternatively, if the elevation rise over the first 25 feet (within the slope and prior to the building) is too sharp to allow the the installation of the hSVE, the target well depth will be 7-feet bgs underneath the building (approx. 76 feet amsl) with a 2% slope downward from the south eastern building edge to the north western termination point (lowest elevation to be approximately 7.5-feet

bgs). This will allow a borehole entry at 0° and maintain that elevation until underneath the target building.

- Approximately 30-feet of 3-inch ID, 0.10-slot screen – Schedule 80 PVC
- Approximately 30-feet of 3-inch ID riser – Schedule 80 PVC
- Well riser to be sealed in place with a neat non-shrink grout
- Final 3-feet near the concrete slope to be supported in-hole by steel casing or plastic corrugated sono-tube.
- A 2-foot well stub-out exiting the slope will be left and finished with a locking j-plug.

Oversight of DTD will be provided by an HDR geologist. To characterize potentially impacted soil, HDR will periodically characterize/log drilling mud, note the drilling head location at the time of collection, and screen for the visual, olfactory, and photo-ionic presence of contamination. It is HDR's understanding that discreet soil samples within the borehole can be collected however, due to their difficulty in collection and time consuming nature, are not included in this SOW. If soil samples are requested, DTD can do so but at significant additional cost.

HDR will locate the northing/easting of each hSVE well every 25 feet, from its entry to termination point, utilizing a handheld Trimble GeoXH GPS. Well depth information, at the same intervals, will be provided to HDR by DTD during walkover locating. All locations will be incorporated into a electronic data deliverable (EDD) files and reporting figures. A locations sheet will be created to include all relevant information for the well locations (coordinates) and name codes (ie., sys_loc_code). The coordinates will also be used to generate a figure depicting the final hSVE locations and orientation, and will be included in the final report.

Drilling equipment will be decontaminated between boring locations using soap and potable rinse water. Cuttings, including drilling mud, well development water, and decontamination liquids will be pumped to a lined roll-off and/or 55-gallon steel drums and staged in the staging area for future offsite disposal by AARCO. At the completion of the hSVE well installation, AARCO will characterize the waste and dispose of the liquids/solids at an approved facility. Additionally, AARCO will provide one un-lined roll off for all construction and demolition (C&D) related waste generated during the hSVE install and subsequent system hookup. Waste manifests will be signed by HDR, as an agent of the NYSDEC, and all final manifests will be submitted with the final report for permanent record.

3.3 hSVE Well Connection to Remediation System

As stated above, each hSVE well will be completed by DTD with a two-foot capped stub out. Further modifications and connections are necessary to reduce the wellhead size and convey vapors to the top of the embankment, where available SVE lines are. The final details to connect the new wells to the system are still pending. If existing unused SVE lines are used the HDR technicians can make the necessary connections. If a new set of lines are needed this activity could be completed by one of HDRs

subcontractors on this work assignment or at the NYSDEC option a Standby Investigation and Remediation contractor could be called out to make the system upgrades. A general construction diagram of the hSVE well head connections can be found on Figure 4. At the time this Workplan was drafted the SVE blower is inoperable and in need of replacement, prior to placing the new hSVE wells in service the operating status of the SVE blower will require resolution. A suitable surplus NYSDEC owned blower was not located. The appropriate cost justification for a new blower will be compiled and the additional cost subject to a future amendment.

3.3 hSVE Well Vapor Sampling

Following the connection of the two hSVE wells to the existing remediation system, uninterrupted operation of the new wells will occur for a period between 24 to 48 hours. Following this timeframe and to understand the process vapor adsorbing to the vapor phase granular activated carbon (VGAC), vapor samples will be collected from each hSVE well's respective vacuum line utilizing 2.7-liter Summa® canisters equipped with 200 milliliter per minute (ml/min) flow controllers. The collected vapor samples will be submitted to Chemtech of Mountainside, New Jersey (Chemtech) for the analysis of VOCs by USEPA Method TO-15.

3.4 Reporting

Upon completion of the hSVE well installation and vapor sampling activities, HDR will prepare a letter report documents the completed task. The report will include hSVE construction details, preliminary hSVE well system data, vapor sampling results, photo-documentation, waste documentation, and if appropriate, additional recommendations pertaining to remediation system performance. The draft letter report will be forwarded electronically to the NYSDEC for review and comment prior to finalization.

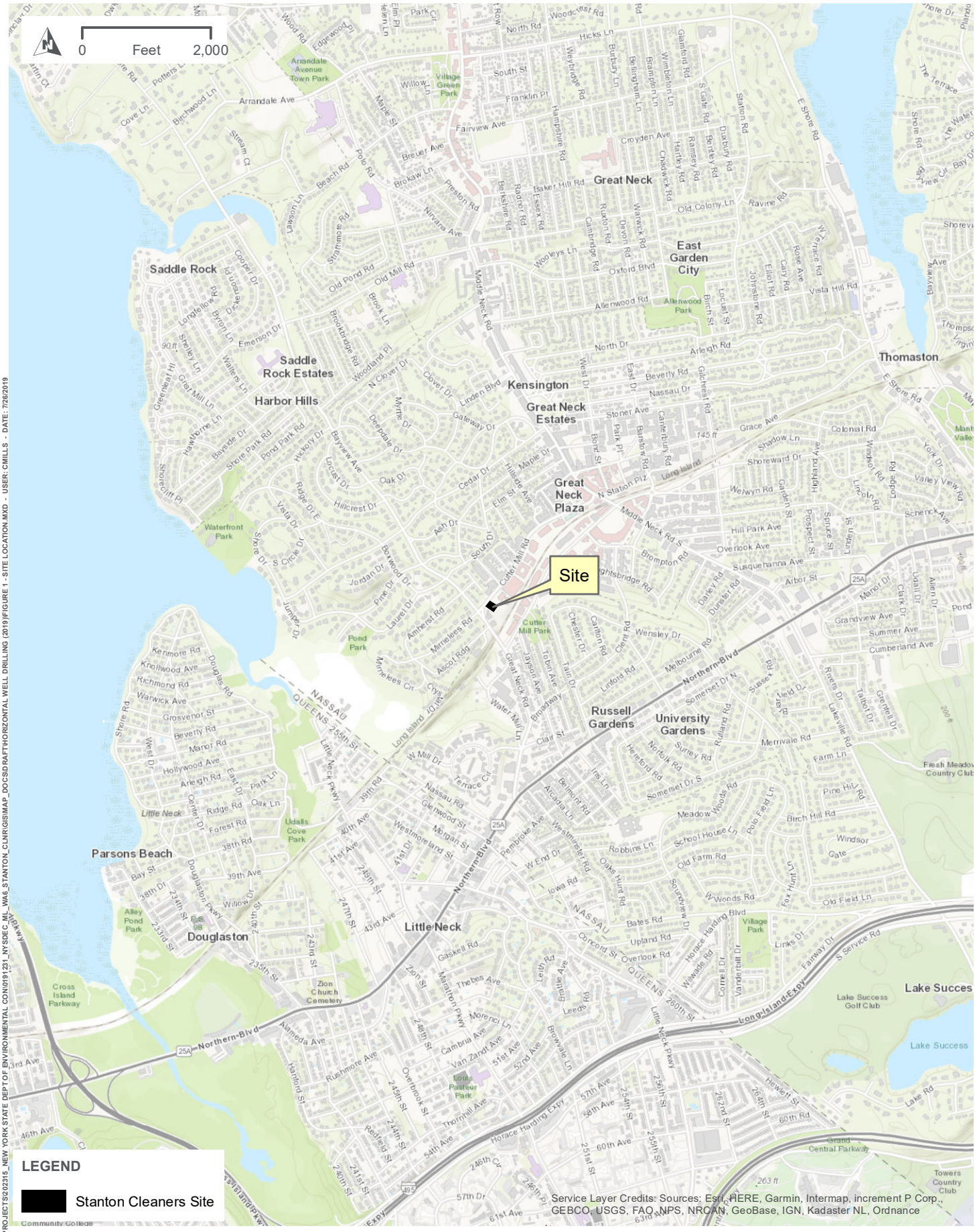
4.0 SCHEDULE

Pending NYSDEC approval and off-site access, the hSVE well installation activities, as described in Section 3.0 of this Workplan, are anticipated to be completed in September 2019. HDR's estimate to complete the drilling and remediation system hookup are five and three days, respectively. Once the hSVE wells are operational, HDR's subconsultant, Preferred Environmental Services of North Merrick, New York, (PES) will complete daily periodic O&M events to assess their functionality and collect the proposed vapor samples. A preliminary milestone schedule is provided below on Table 1. Key milestones are identified in order to monitor work progress throughout the project's duration.

Table 1
Project Schedule

Milestone	Completion Date	Comments
Draft Workplan	Week of June 24, 2019	
Final Workplan & Amendment #2 Approval	Week of July 8, 2019	Amendment #2 approved August 8, 2019
Utility Locating and Clearance	Week of August 19, 2019	Completed August 23, 2019
Utility Softdig	Week of September 2, 2019	
hSVE Well Installation	Week of September 9, 2019	Pending access to staging area
hSVE Well Development	Week of September 16, 2019	
Installation Report	Week of September 16, 2019	
hSVE Well Piping	Week of September 23, 2019	
Blower Replacement	Week of September 23, 2019	

FIGURES



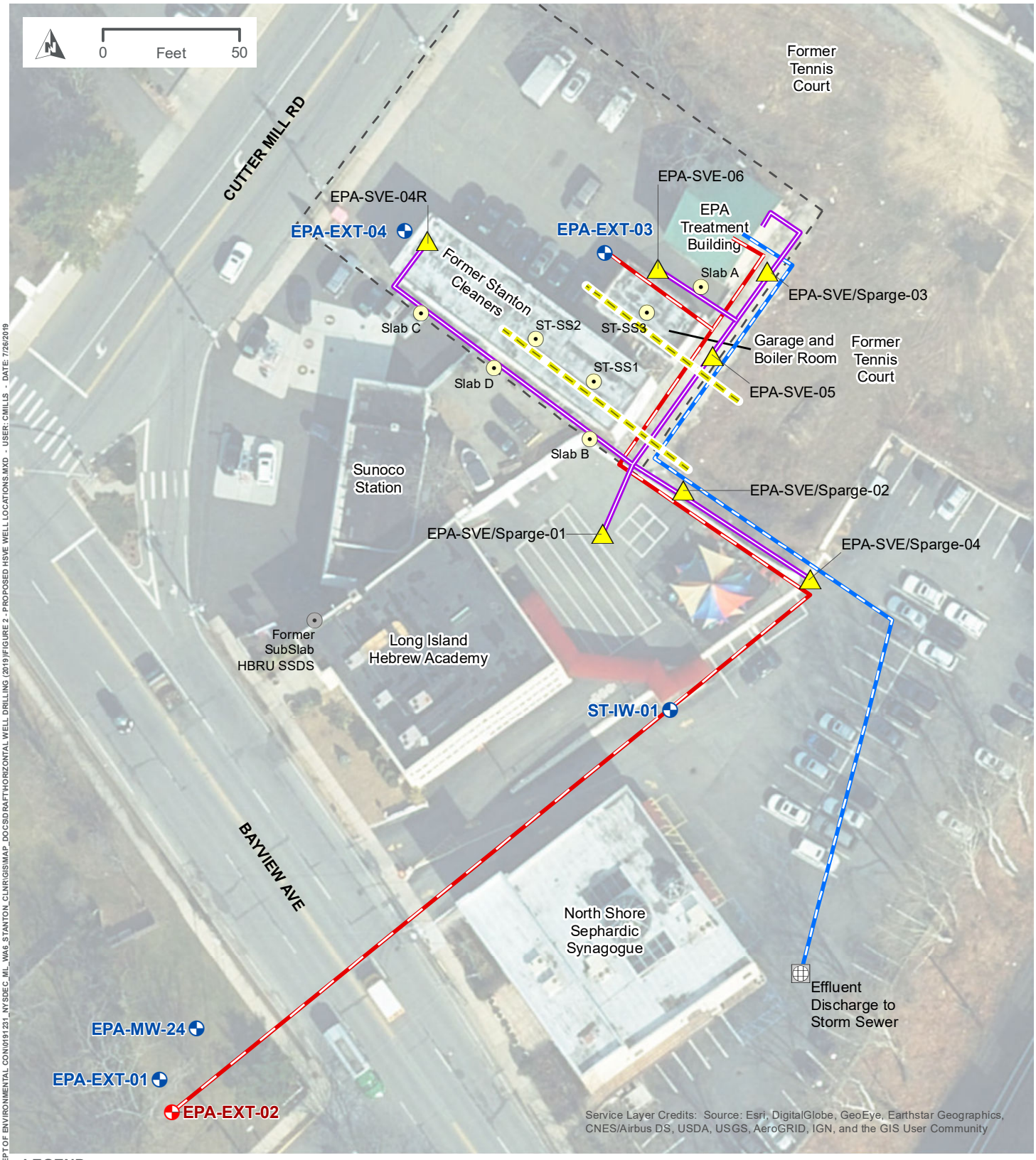
PATH: \\MAHPI-FILE01\GIS_PROJECTS\202315_NEW YORK STATE DEPT OF ENVIRONMENTAL CON\0191231_NYSDEC_NL_WA6_STANTON_CLN\GIS\MAP_DOCS\DRAFT\HORIZONTAL WELL DRILLING (2019)\FIGURE 1 - SITE LOCATION.MXD - USER: CMILLS - DATE: 7/26/2019

SITE LOCATION

FORMER STANTON CLEANERS NYSDEC SITE #130072

FIGURE 1

STANTON CLEANERS HORIZONTAL DRILLING PLAN



LEGEND

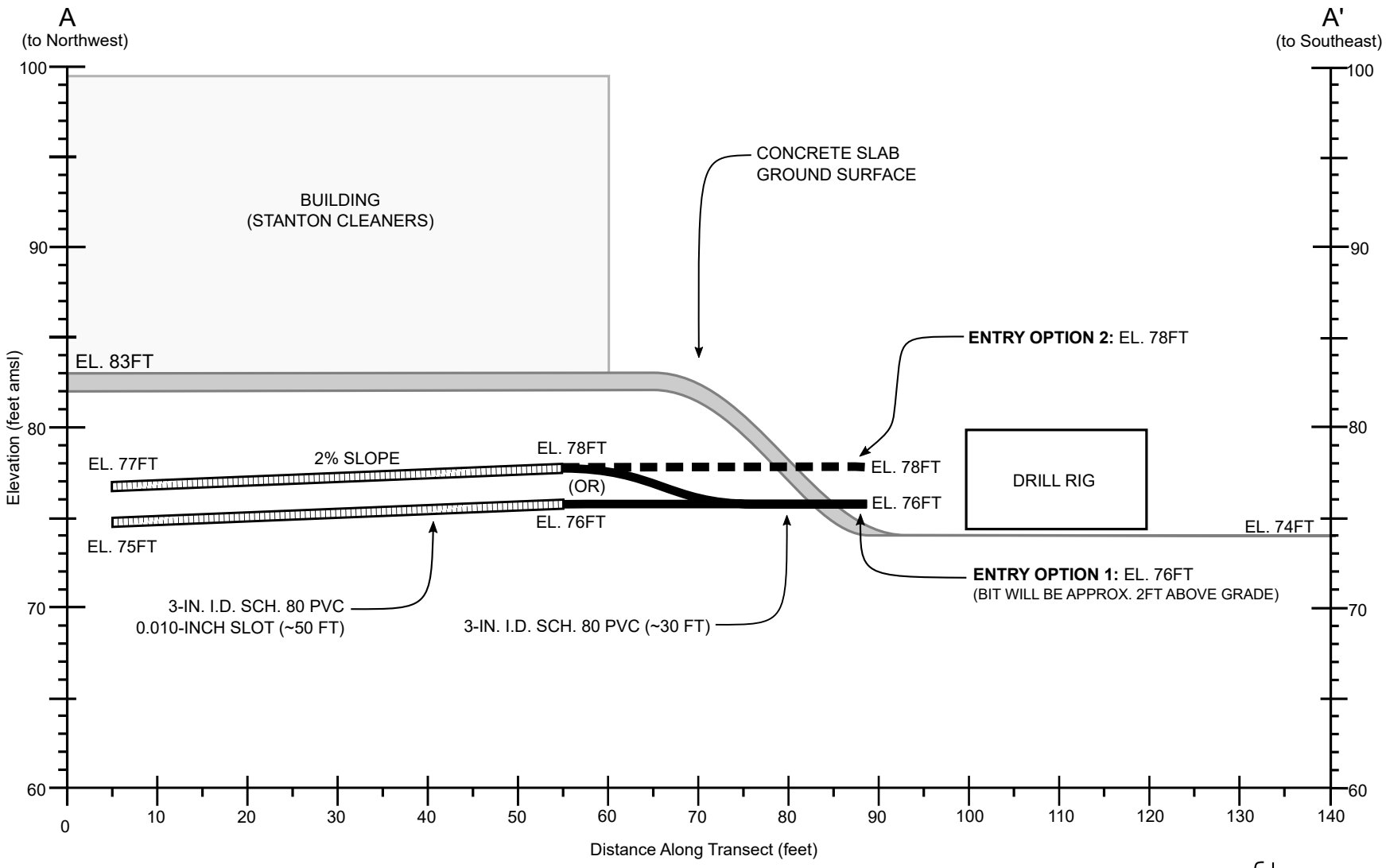
- Stanton Cleaners Property (Approximate)
- Ground Water Extraction Well
- Non-Operational Extraction Well
- SVE Well
- Proposed Horizontal SVE Well
- Existing SVE System Suction Line
- Groundwater Treatment Influent Line
- Groundwater Treatment Effluent Line
- Effluent Discharge

PROPOSED HSVE WELL LOCATIONS

FORMER STANTON CLEANERS NYSDEC SITE #130072

FIGURE 2

STANTON CLEANERS HORIZONTAL DRILLING PLAN



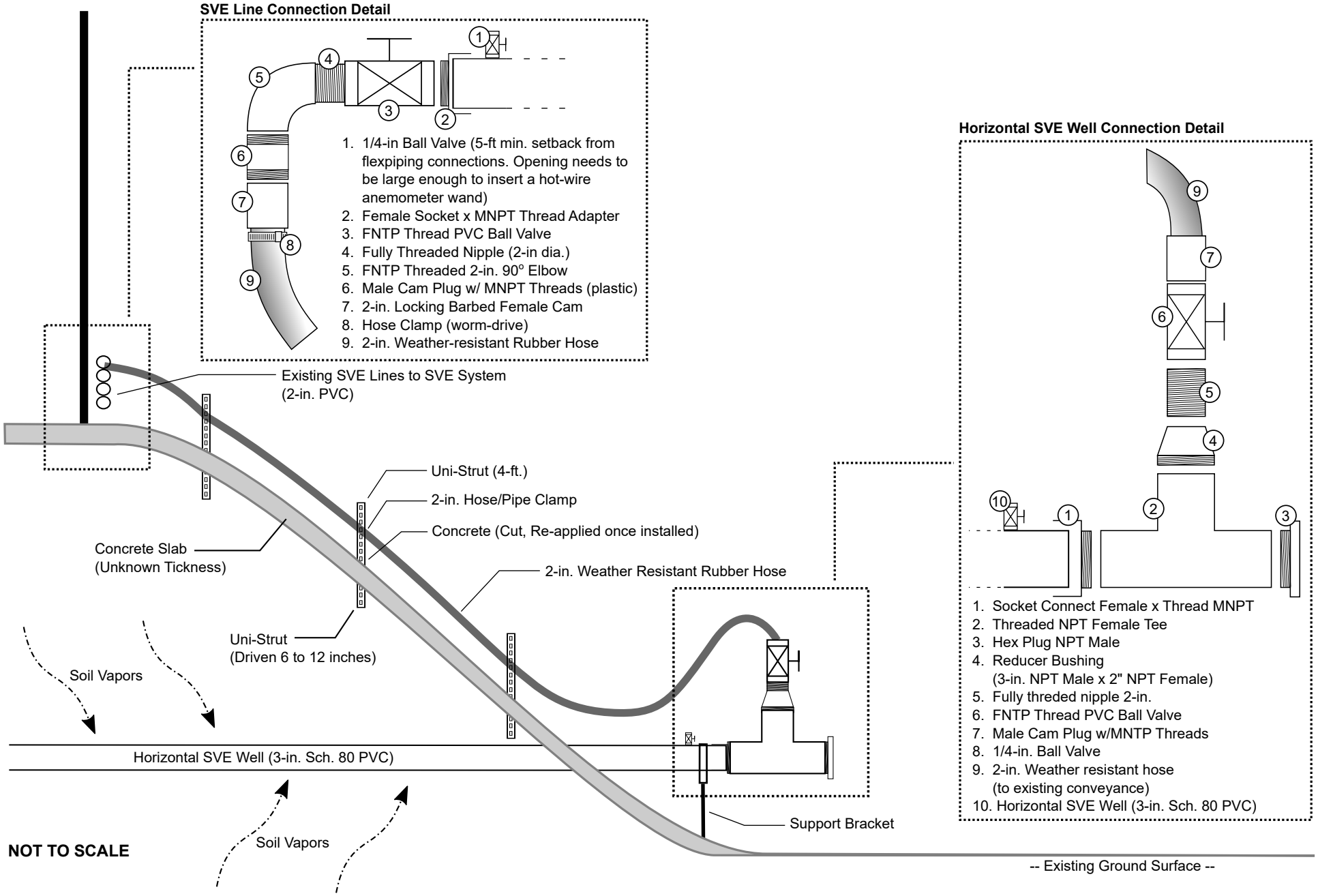
NOTES
Figure not to scale.
Elevations are approximate.
Concrete thickness is estimated.
Field conditions may vary from schematic.

ENTRY OPTIONS
Option 1
- or -
Option 2

5 FT
Approximate Scale
10 FT

hSVE-01 CROSS SECTIONAL VIEW

STANTON CLEANERS - NYSDEC SITE # 130003



DRAFT

General Wellhead Connection Diagram

STANTON CLEANERS - NYSDEC SITE # 130003

FIGURE 4

STANTON CLEANERS HORIZONTAL DRILLING PLAN

APPENDICIES

Appendix A - Site-specific Health and Safety Plan

PROJECT SPECIFIC HEALTH AND SAFETY PLAN

For

Stanton Cleaners
110 Cuttermill Road
Great Neck, NY

New York State Department of Environmental Conservation's
Division of Environmental Remediation

Dates in Effect
August 1, 2019 through January 1, 2020

HDR ENGINEERING, INC.
16 CORPORATE WOODS BLVD. First Floor
ALBANY, NY 12211

147-10018218

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SITE SPECIFIC HEALTH & SAFETY PLAN:
TITLE PAGE
HDR Engineering, Inc.

PROJECT NAME**:** Stanton Cleaners	PROJECT COMPANY: Henningson, Dunham, & Richardson Architecture & Engineering, PC
JOB SITE ADDRESS: 110 Cuttermill Road, Great Neck Plaza, Nassau Co. NY	JOB NUMBER: 147-10018218
PROJECT MANAGER: NYSDEC: Payson Long; HDR: Michael Lehtinen	PHONE NO. : (518) 402-9813; (518) 937-9502
SITE CONTACT: Justin King (HDR)	PHONE NO. : (518) 526-4592

(X) AMENDMENT NO. __1___ TO EXISTING APPROVED HASP - DATE EXISTING APPROVED HASP ___July 2016_____

OBJECTIVES OF FIELD WORK:
Horizontal soil vapor extraction well installation (commercial)

Field Activities Include:
1. Horizontal soil vapor extraction well installation

SITE TYPE: *Check as many as applicable*

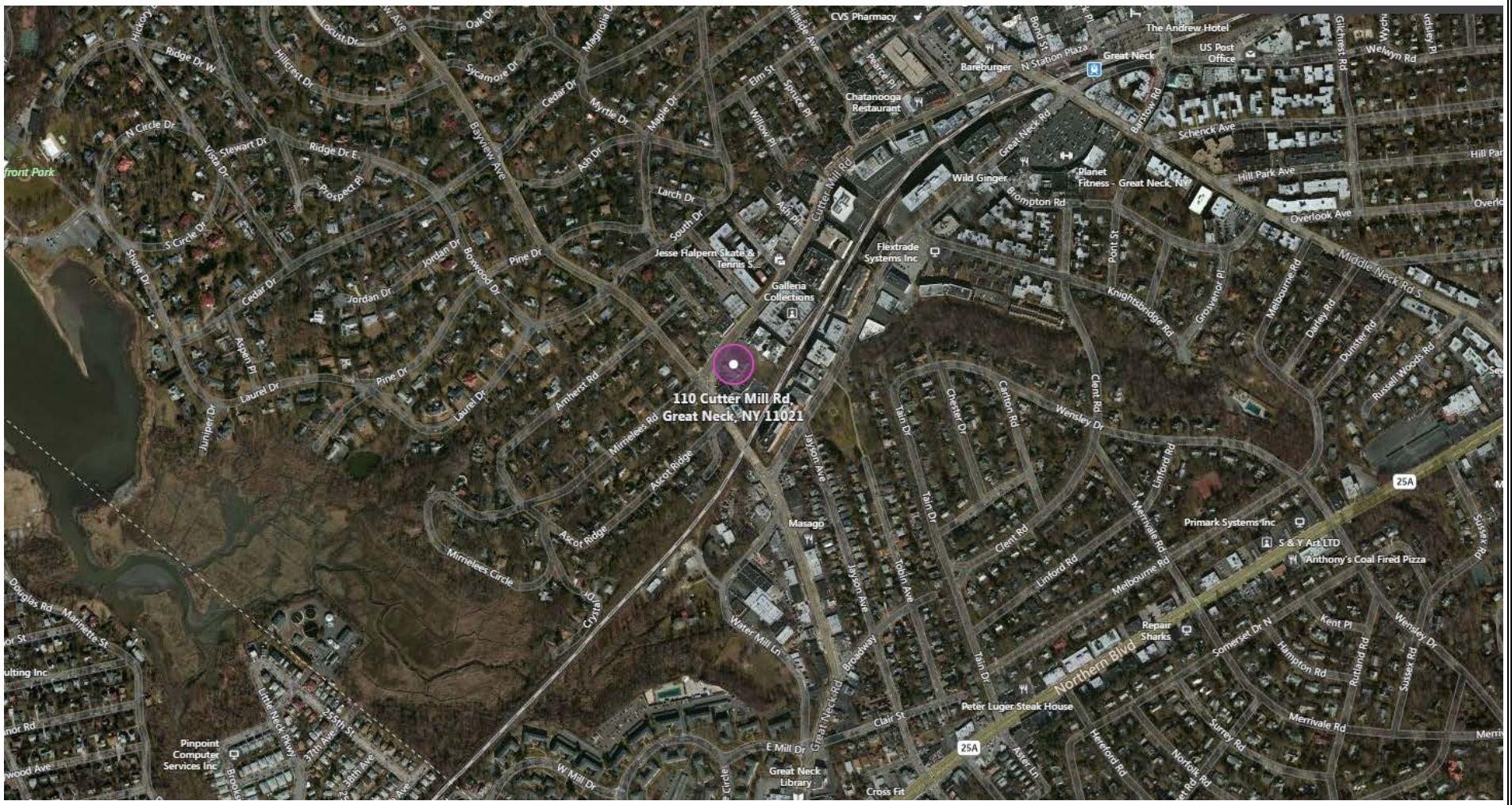
( ) Active	( ) Landfill	( ) Natural
(X) Inactive	( ) Uncontrolled	( ) Military
( ) Secure	(**X**) Industrial	( ) Other specify**:**
(X) Unsecured	( ) Residential	
( ) Enclosed space	( ) Well Field	

DESCRIPTION AND FEATURES: *Summarize below. Include principal operations and unusual features (containers, buildings, dikes, power lines, hills, slopes, rivers)*

The 0.25-acre parcel contains a vacant one-story dry- cleaning business, an vacant adjacent one-story boiler/storage building, and an active two-story treatment system building. Most of the site has been paved with asphalt for parking, except for a narrow strip at the rear of the property. Two vacant lots border the site to the NE and SE.

SURROUNDING POPULATION: ( ) Residential ( ) Industrial ( ) Rural (**X**) Urban (**X**) Commercial: ( ) Other:

SITE SPECIFIC HEALTH & SAFETY PLAN
SITE LOCATION PLAN / SITE SKETCH
HDR Engineering, Inc.



SITE SPECIFIC HEALTH & SAFETY PLAN
EMERGENCY CONTACTS & APPROVAL PAGE
HDR Engineering, Inc.

EMERGENCY CONTACTS			**EMERGENCY CONTACTS**	**NAME**	**PHONE**
Project Manager (NYSDEC)	Payson Long	(518) 402-9813	Poison Control Center		(800) 222-1222
Project Manager (HDR)	Michael Lehtinen	(518)937-9502	NYSDEC Spill Hotline.		(800) 457-7362
HDR Office Safety Coordinator	John Guzewich	(845) 548-5493	National Response Center		(800) 424-8802
HDR On-Site Health & Safety Officer	Justin King	(518) 526-4592	Police Department		911
IndustrySafe		(800) 696-9110	Fire Department		911

1. Evacuation Routes will be specified by the HSO and communicated to all personnel on site.
2. Personnel will evacuate under conditions specified by air monitoring or as directed by the HSO.
3. An INCIDENT REPORT form will be completed for all accidents (see Appendix A).

QA REVIEW: _____ Date:
HDR Office Safety Coordinator

Nearest Hospital Emergency Room Number:	North Shore University Hospital	(516) 562-0100
Number of 24-Hour Ambulance:		**911**

HEALTH AND SAFETY PLAN APPROVALS

Project Manager: _____ Date

Site Health and Safety Officer _____ Date:

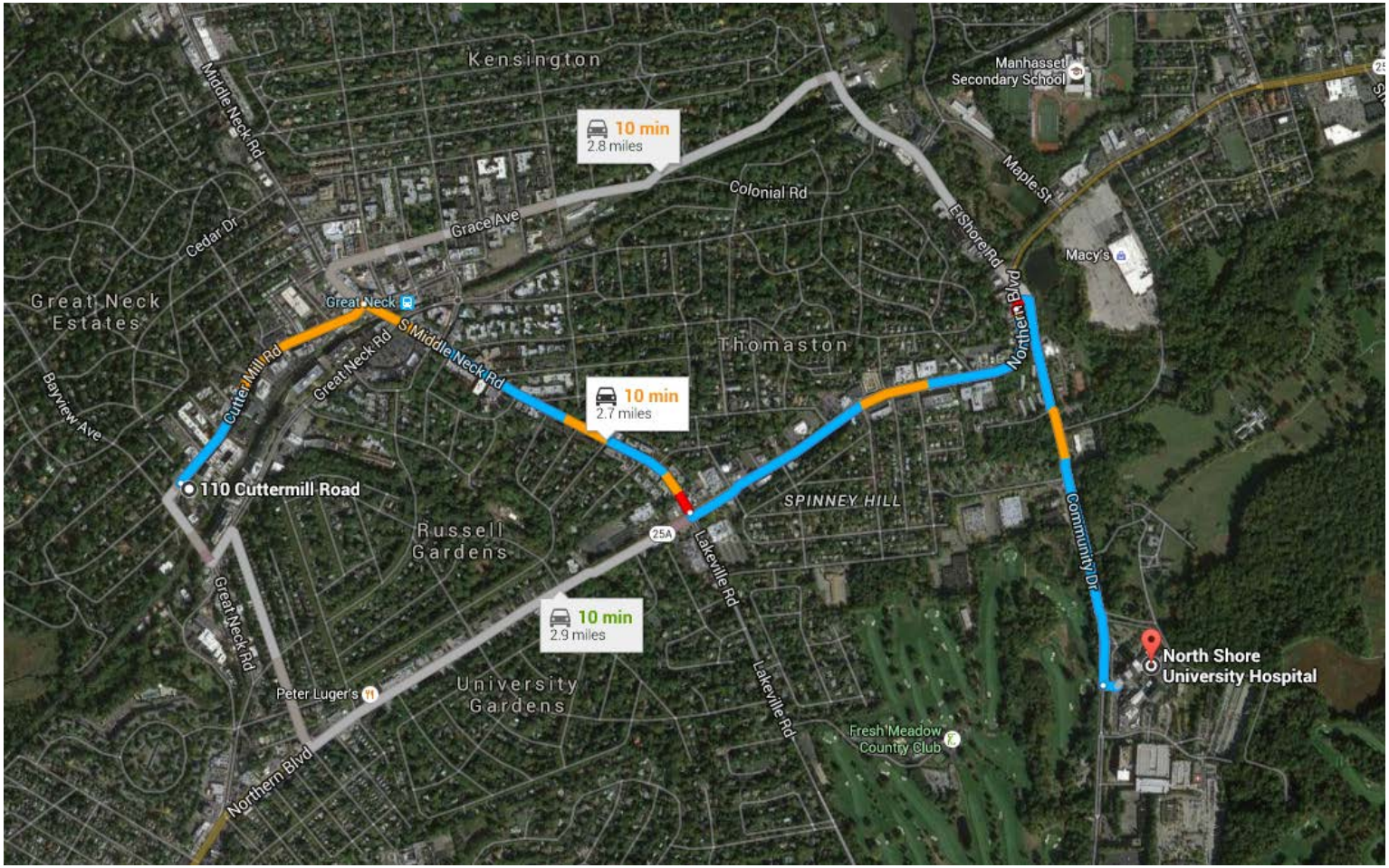
Route to Hospital is described on the following page with a map to the hospital.

SITE SPECIFIC HEALTH & SAFETY PLAN
HOSPITAL MAP ROUTE
HDR Engineering, Inc.

THIS PAGE RESERVED FOR HOSPITAL ROUTE MAP

Directions to North Shore University Hospital from the site:

Leave the site and turn right (northeast) on Cutter Mill Rd towards Ipswich Ave. Turn right onto Middle Neck Rd. Turn left onto Northern Blvd. Sharp right onto Community Dr. Turn left into the hospital parking lot.



SITE SPECIFIC HEALTH & SAFETY PLAN
HISTORY AND WASTE CHARACTERIZATION PAGE
HDR Engineering, Inc.

HISTORY: Summarize site specific information below or attach information behind this page. The site has been, and continues to be, utilized for dry cleaning since 1958. Remedial activities have been active at the site since the 1980's although contaminants continue to be found and treated on-site.

WASTE TYPES: ( ) Liquid ( ) Solid ( ) Sludge ( ) Gas ( ) Unknown (**X**) Other **specify**: **PCE and it's breakdown components**

WASTE CHARACTERISTICS: Check as many as applicable.

(X) Corrosive ( ) Flammable ( ) Radioactive

(**X**) Toxic (**X**) Volatile ( ) Reactive

( ) Inert Gas ( ) Unknown ( ) Other **specify**:

WORK ZONES: Describe how the Exclusion, Contamination Reduction, and Support Zones will be delineated in terms that on-site personnel will recognize. Work zones will be shown on "WORK ZONE MAP PAGE."

1. Work and exclusion zones will be delineated by traffic safety cones as shown on the "Work Zone Map Page."

HAZARDS OF CONCERN: Check as many as applicable.

(**X**) Heat Stress attach guidelines See HDR H&S Pro #28

(**X**) Noise See HDR H&S Pro #26

() Cold Stress attach guidelines See HDR H&S Pro #29

( ) Inorganic Chemicals

() Explosive/Flammable

(**X**) Organic Chemicals

( ) Oxygen Deficient

(**X**) Motorized Traffic

( ) Radiological

(**X**) Heavy Machinery

( ) Biological See HDR H&S Pro #34

(**X**) Slips, Trips & Falls See HDR H&S Pro #3

( ) Other **specify**: CONFINED SPACES WILL NOT BE ENTERED.
(If confined spaces are to be entered a specific confined space entry plan will be developed)

PRINCIPAL DISPOSAL METHODS AND PRACTICES: Summarize Site Specific Conditions Procedures Below:

Drill cuttings will be placed in a roll-off and/or drums on site to be disposed of properly off-site.

SITE SPECIFIC HEALTH & SAFETY PLAN
HAZARDOUS MATERIAL SUMMARY PAGE
HDR Engineering, Inc.

HAZARDOUS MATERIAL SUMMARY: **Underline and bold waste type** and estimate amounts by category (if possible)

CHEMICALS Amounts/Units:	SOLIDS Amounts/Units:	SLUDGES Amounts/Units:	SOLVENTS Amounts/Units:	OILS Amounts/Units:	OTHER Amounts/Units:
Acids	Fly ash	Paint	**Halogenated (chloro) Solvents (primarily PCE)**	Oily Wastes	Laboratory
Pickling Liquors	Asbestos	Pigments	Hydrocarbons		Pharmaceutical
Caustics	Milling/Mine Tailings	Metal Sludges	Alcohols		Hospital
Pesticides	Ferrous Smelter	POTW Sludge	Ketones		Radiological
Dyes/Inks	Non-ferrous Smelter	Aluminum	Esters		Municipal
Cyanides	Metals	Distillation Bottoms	Ethers	Polynuclear Aromatics	Construction
Phenols	Other	Other			Munitions
Halogens	Specify:	Specify**:**			Other
Dioxins					
Other					
Specify:					

OVERALL HAZARD EVALUATION: ( ) High ( ) Medium (**X**) Low ( ) Unknown (Where tasks have different hazards, evaluate each. Attach additional sheets if necessary)
JUSTIFICATION: A remediation system has been in operation for multiple years. Remaining contaminant can be appropriately gauged by level D PPE and safe working standards

FIRE/EXPLOSION POTENTIAL: ( ) High ( ) Medium (**X**) Low ( ) Unknown

BACKGROUND REVIEW: (**X**) COMPLETE ( ) INCOMPLETE

SITE SPECIFIC HEALTH & SAFETY PLAN
CHEMICAL HAZARD TABLE PAGE
HDR Engineering, Inc.

KNOWN CONTAMINANTS	HIGHEST OBSERVED CONCENTRATION (specify units and media)	PEL/TLV ppm or mg/m^3 **(specify)**	IDLH ppm or mg/m^3 **(specify)**	SYMPTOMS/EFFECTS OF ACUTE EXPOSURE	PHOTOIONIZATION POTENTIAL
PCE	8,000 ppm in Soil	TWA 100ppm	Ca [150ppm]	Irritates eyes, skin, nose, throat, resp system; nay; flush face, neck; dizzy, inco; head, drow; skin eryt; liver damage; [carc]	9.32 eV

NA = Not Available
S = Soil
A = Air
NE = None Established
SW = Surface Water
GW = Groundwater
U = Unknown
T = Tailings
SL = Sludge
W = Waste
D = Drums
SD = Sediment
OFF = Offsite
Ca = potential occupational carcinogen. Minimize workplace exposure concentrations.

HAZARD COMMUNICATIONS STANDARD

A notebook containing this Site Specific Health and Safety Plan will be taken to the field with the crew and kept in the vehicle. A current inventory of chemicals to be brought on-site and appropriate SDSs will accompany these chemicals in the vehicle.

SITE SPECIFIC HEALTH & SAFETY PLAN
TASK DESCRIPTION PAGE
HDR Engineering, Inc.

FIELD ACTIVITIES COVERED UNDER THIS PLAN - **ATTACH ACTIVITY HAZARD ANALYSIS FOR EACH TASK**				HAZARD		
TASK DESCRIPTION/SPECIFIC TECHNIQUE-STANDARD OPERATING PROCEDURES/SITE LOCATION(Attach additional sheets as necessary)	Type	Primary	Contingency	SCHEDULE		
1. Soil gas point installation and sampling	**Intrusive**	A B C D	A B C D	Hi	Med	Low
	Non-intrusive	**D**	**Exit Area**			**X**
2. Sub-slab soil vapor point installation and sub-slab soil vapor sampling	**Intrusive**	A B C D	A B C D	Hi	Med	Low
	Non-intrusive	**D**	**Exit Area**			**X**

PERSONNEL AND RESPONSIBILITIES (Include subcontractors) Responsibilities and the reporting organizational structure are described on the following page.

NAME	PHONE	DATE OF LAST TRAINING	DATE OF HEALTH CLEARANCE	RESPONSIBILITIES	ON-SITE? List task numbers
Barbara Firebaugh	(518) 477-3442	12/29/2015	12/29/2015	Site Coordinator/field lead	1,2,3
Justin Starr	(518) 410-9005	3/1/2016	7/7/2016	Other on-site personnel	4

SITE SPECIFIC HEALTH & SAFETY PLAN
DESCRIPTION OF RESPONSIBILITIES AND ORGANIZATIONAL STRUCTURE PAGE
HDR Engineering, Inc.

1. Site Safety and Health Personnel.

The Site Health and Safety Officer (HSO), in conjunction with the Site Coordinator, ensures that the provisions of this HASP are adequate and implemented in the field. The Project Manager is to take all necessary actions to guarantee site safety. Changing field conditions may require decisions to be made concerning adequate protection programs and may require deviations or additions to this HASP. All deviations and/or additions must be documented and approved by the HSO on the DEVIATIONS AND ADDITIONS form, located in Appendix B. Personnel assigned as HSO must be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 and this HASP. The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

2. Organizational Structure and Responsibilities

Briefly describe the responsibilities of all team members and denote the reporting structure.

1. Project Manager
- **a.** Overall responsibility for project schedule;
- **b.** Develop cost estimates for work identified.
- **c.** Identify scope of work and estimate schedule for work;
- **d.** Determine the technical/field team;

2. Site Coordinator (reports to "1" when "1" is on-site, otherwise in charge)
- **a.** Enforce disciplinary action when unsafe acts or practices occur;
- **b.** Grant permission for site access (including visitors, see Appendix C);
- **c.** Designate site security;
- **d.** Enforce the buddy system.
- **e.** Attend all Site pre-entry safety briefings
- **f.** Serve as the facilitator of communications in emergencies

3. Site Health and Safety Officer (HSO) (reports to "2")
- **a.** Maintain daily field log book and a health and safety file for the project;
- **b.** Conduct safety meetings.
- **c.** Monitor on-site hazards and conditions;
- **d.** Enforce safety procedures;
- **e.** Designate facilities, and equipment for health and safety;
- **f.** Select, dispense, and ensure availability of Personal Protective Equipment (PPE);
- **g.** Maintain copies of instrument operation manuals and maintain records of usage and calibration;
- **h.** Periodically inspect PPE and ensure proper storage and maintenance;
- **i.** Monitor for heat and cold stress;
- **j.** Set up decontamination lines, control decontamination, prepare decontamination solutions, and monitor;
- **k.** Train employees on emergency procedures and evacuation routes;
- **l.** Control entry and exit at the Access Control Points;
- **m.** Confirm an employee's suitability for work based on the physician's recommendation.

4. Other On-Site Personnel (report to "2")

SITE SPECIFIC HEALTH & SAFETY PLAN
PPE BY TASK PAGE
HDR Engineering, Inc.

PROTECTIVE EQUIPMENT: Specify by task. Indicate type and/or material as necessary. Use copies of this sheet if needed.

Soil gas point installation and sampling
TASKS: **1** - 2 - 3 - 4 - 5 (**X**) Primary
LEVEL: A - B - C - **D** - Modified ( ) Contingency

Respiratory: (X) Not Needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not Needed
(X) Safety Glasses:
( ) Face Shield:
( ) Goggles:
(X) Hard Hat:
(X) Other: Ear plugs

Boots: ( ) Not Needed
(X) Boots: Safety work boots
( ) Over boots:
( ) Rubber:

Protective Clothing: ( ) Not Needed
( ) Encapsulated Suit:
( ) Splash Suit:
( ) Apron
( ) Tyvek Coverall:
( ) Saranex Coverall:
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not Needed
( ) Under gloves:
(X) Gloves: Disposable nitrile gloves when handling soils or groundwater
( ) Over gloves:

(X) Other - specify below:
Crews will wear reflective vests when working near traffic.

Sub-slab soil vapor point installation and sub-slab soil vapor sampling
TASKS: 1 - **2** - 3 - 4 - 5 (X) Primary
LEVEL: A - B - C - **D** - Modified ( ) Contingency

Respiratory: (X) Not Needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not Needed
(X) Safety Glasses:
( ) Face Shield:
( ) Goggles:
(X) Hard Hat: if overhead hazards exist
( ) Other:

Boots: ( ) Not Needed
(X) Boots: Safety work boots
( ) Over boots:
(X) Rubber:

Protective Clothing: ( ) Not Needed
( ) Encapsulated Suit:
( ) Splash Suit:
( ) Apron
( ) Tyvek Coverall: OPTIONAL
( ) Saranex Coverall:
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not Needed
( ) Under gloves: Latex
(X) Gloves: Disposable nitrile gloves when handling soils or groundwater
(X) Over gloves: Nitrile if needed

(X) Other - specify below:
Crews will wear reflective vests when working near traffic.

Notes:
1. When area samples are collected for routine project activities, the following information must be recorded in the field log book: date and time; location; air temperature; wind direction and speed; cloud cover and type of precipitation; sampler; instrumentation used; activity being sampled; result; sample duration time; applicable comments.

SITE SPECIFIC HEALTH & SAFETY PLAN
DECONTAMINATION PAGE
HDR Engineering, Inc.

DECONTAMINATION PROCEDURES

ATTACH SITE MAP INDICATING EXCLUSION, DECONTAMINATION, AND SUPPORT ZONES AS PAGE TWO

Personnel Decontamination Summarize below and/or attach diagram; discuss use of work zones. Field Scientist will wear disposable gloves when handling any materials onsite. No other portion of body should be exposed. Observers should wear disposable nitrile gloves if they handle any materials onsite. Thicker (green) gloves are recommended for Task 5. A disposable Tyvek coverall and/or Tyvek sleeves may be worn to prevent exposure to soil, groundwater, sediment, surface water or product. ( ) Not Needed	Sampling Equipment Decontamination Summarize below and/or attach diagram; discuss use of work zones. For equipment such as spoons, knives, bowls, trowels, hand augers, bailers, direct-push samplers and surface water sampling devices (dippers), the following procedures will be used: (1) Initial wash with potable water/alconox soap mixture. Scrub brushes will be used to remove all residual dirt or other debris. (2) Potable water wash to remove all soap residue. (3) Rinse with distilled/deionized water. (4) Wrap decontaminated equipment in plastic or aluminum foil to prevent recontamination. ( ) Not Needed	Heavy Equipment Decontamination Summarize below and/or attach diagram; discuss use of work zones. For equipment such as drill rigs, augers, drill rods, etc. the following procedures will be used: (1) A cold wash will be used for the DPT core tube and shoe between borings. Dedicated core liners will be used for each sample. (2) Stubborn soil or residue may be washed with a potable water/alconox soap mixture. Scrub brushes will be used to remove all residual dirt or other debris. (3) Place decontaminated equipment in a secure location, or wrap in plastic to prevent recontamination ( ) Not Needed
Containment and Disposal Method Disposable PPE will be placed in sealed plastic bags, and disposed of as municipal waste.	Containment and Disposal Method See principal disposal methods and practices.	Containment and Disposal Method See principal disposal methods and practices.

SITE SPECIFIC HEALTH & SAFETY PLAN
WORK ZONE PAGE
HDR Engineering, Inc.

THIS PAGE RESERVED FOR MAP (Show Exclusion, Contamination Reduction, and Support Zones. Indicate evacuation and reassembly points.)

To Be Completed On Site.

SITE SPECIFIC HEALTH & SAFETY PLAN
SIGNATURE PAGE
HDR Engineering, Inc.

The following personnel have read and fully understand the contents of this Site Health and Safety Plan and referenced HDR H&S procedures and further agree to all requirements contained herein. Furthermore, the individuals are fully trained and have required clearances in accordance with HDR H&S Procedure #20. Attach copies of current HTRW and first aid training, medical clearance, and respiratory fit test records.

Name	Affiliation	Date	Signature

Appendix A
Accident Reporting

All accidents, injuries and illnesses which occur from performing project activities in this HASP require that the injured person and the Site Health and Safety Officer complete an INCIDENT REPORT and forward it to the Corporate Director of Safety, Mr. Jim Woolcott, in Omaha, Nebraska.

Incident Report

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049
(402) 399-1000

Project Name:	Incident Location:
Project No.:	Date/Time of Incident:
Project Manager/ employee supervisor:	Reported to Omaha, Date/Time/to Whom:

Person(s) affected:

Name:	Phone:

Witnesses:

Name:	Phone:

Health Care Treatment Facility Used:

Name:	Address:	Phone:

Treating Physician/Health Care Provider:

Name:	Phone:

Person(s) Treated:

Name:	Extent of Injuries:

Describe the Incident, the project activity being performed, and just how the incident occured (please be descriptive, use proper names, etc.):

Continued on Reverse

Specific recommendations, to prevent this incident from reoccuring:

Comments:

Reported by | Date of Report | Phone

For Use by Health and Safety Manager:

Number of Sheets Attached:

Forwarded:

Appendix B
Deviations and Additions Form

Deviations from and additions to this HASP are permitted and sometimes required based on additional information obtained since the preparation date of the HASP. The DEVIATIONS AND ADDITIONS form will be used to authorize and record all deviations and additions that occur after any one individual has signed this document. Changes in this HASP are only permitted with the following:

1. Written documentation of what the deviation or addition is and reference to the appropriate section from this HASP;
2. Written justification for the change;
3. Verbal communication of the change to all personnel who are directly affected and answering all questions regarding the change to the satisfaction of those same individuals; and
4. Signatures from all personnel who are affected by the change prior to commencing project activities on site with an approval signature from the Site Health and Safety Officer.

Health and Safety Plan Deviations and Additions

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049
(402) 399-1000

Change 1: Section:

Description of Change:

Justification:

Safety Impact:

Signatures of Acknowledgement:

Resident Field Representative Date Date

Date Date

Date Date

Change 2: Section:

Description of Change:

Justification:

Safety Impact:

Signatures of Acknowledgement:

Resident Field Representative Date Date

Date Date

Date Date

Appendix C
Visitors Log

Visitors to the site may be permitted entrance into the exclusion and contamination reduction zones based upon approval of the Site Coordinator. Otherwise, they must remain in the support zone. The Site Coordinator will be responsible for documenting the name and identity of all visitors in the VISITORS LOG.

VISITORS LOG

Name	Company or Agency	Purpose of Visit	Area(s) to be entered	Date and Time on Site	Checked in by:

Appendix B - Community Air Monitoring Plan

COMMUNITY AIR MONITORING PROGRAM

For

Stanton Cleaners
110 Cuttermill Road
Great Neck, NY

New York State Department of Environmental Conservation's
Division of Environmental Remediation

Dates in Effect
August 1, 2019 through January 1, 2020

HDR ENGINEERING, INC.
16 CORPORATE WOODS BLVD. First Floor
ALBANY, NY 12211

147-10018218

Henningson, Durham & Richardson Architecture and Engineering P.C. (HDR) prepared this Community Air Monitoring Plan (CAMP) in response to remedial activities at Stanton Cleaners (Site) (NYSDEC Site #130072) in the Village of Great Neck Plaza, Town of North Hempstead, Nassau County, New York. HDR will be overseeing remedial activities consisting of the installation of horizontal soil vapor extraction (hSVE) wells. As part of these activities, a CAMP has been devised in accordance with the New York State Department of Health (NYSDOH) Generic CAMP (DER-10 Appendix 1A – See Attached).

The purpose of the CAMP is to provide a measure of protection to potential off-site receptors downwind of the Site from potential releases of airborne contaminants as a result of remedial activities occurring at the Site.

Prior to remedial activities, an exclusion zone will be erected. The exclusion zone will encompass the perimeter of the immediate work area as well as the staging point for any investigative-derived waste (IDW).

Particulate Air Monitoring

Particulate monitoring will be conducted during ground intrusive activities at the Site in accordance with the Fugitive Dust and Particulate Monitoring section of the DER-10 (Appendix 1B – See Attached). Dust and particulate monitoring will be conducted near the approximate upwind and downwind perimeters of the exclusion zone, when possible, or where dust-generating operations are apparent. Dust monitoring may be suspended during periods of precipitation.

Particulate air monitoring will be conducted with a Dust Monitor Dust Trak DRX TSI 8533 with enclosure (or a similar device). This instrument is equipped with an audible alarm (indicating exceedance) and is capable of measuring particulate matter ≤10 µm (PM-10). The instrument will continuously record emissions generated during remedial activities, and calculate the 15-minute running average concentration for the Short Term Exposure Limit (STEL). The dust monitoring devices will be checked and data recorded digitally throughout the day while remedial activities are occurring to assess emissions and the need for corrective action. In addition, fugitive dust migration will be visually assessed during all work activities.

Particulate monitoring response and action levels include:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the exclusion zone, then dust suppression techniques must be employed (See Appendix 1B). Work will continue with dust suppression techniques if downwind PM-10 particulate concentration levels do not exceed 150 ($\mu g/m^3$) above the upwind level and if no visible dust is migrating from the exclusion zone.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ($\mu g/m^3$) above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume if dust suppression measures and

other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ($\mu g/m^3$) of the upwind level and in preventing visible dust migration.

Volatile Organic Compound Air Monitoring

Volatile organic compound (VOC) air monitoring will be conducted in conjunction with the Particulate Air Monitoring program. VOC air monitoring will be conducted using a RAE Systems MiniRAE 3000 VOC Monitor (or a similar device) to provide real-time recordable air monitoring data. VOC monitoring will be continuous for intrusive activities and periodic for non-intrusive activities.

VOCs will be monitored and recorded along the downwind perimeter of the exclusion zone. Upwind concentrations will be measured before field activities commence and throughout the day to establish background conditions. The downwind VOC monitoring device will be checked throughout the day to assess emissions and the need for correction active. Both upwind and downwind concentrations will be recorded (along with the dust monitoring devices).

VOC monitoring response and action levels include:

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

- If total organic vapor levels at the downwind perimeter of the exclusion zone persist at levels in excess of 5 ppm over background, but less than 25 ppm, work activities must be halted, the source of vapors identified, correction actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest receptor/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 must be shutdown.

Meteorological Observations

Evaluation of weather conditions is necessary for proper particulate and VOC monitoring. In particular, wind direction will dictate where air monitoring devices are placed. To evaluate on-site wind direction, a windsock or other equivalent equipment will be established at the start of each workday, and may be reestablished during the day should a shift in wind direction be noted. Wind direction and location of air monitoring devices will be noted on daily field logs.

Documentation and Calibration

Both the VOC and dust monitoring devices shall be calibrated prior to daily field activities according to manufacturer's instructions and standard industrial hygiene practices. In addition, monitoring instruments will be checked for “drift” upon completion of daily field activities. Calibration measurements will be recorded on a field data record. Field measurements will be recorded and available for State (NYSDEC and NYSDOH) personnel to review. Upon completion of field activities, available monitored data recorded will be evaluated and summarized in a memorandum for NYSDEC review.