SUBSURFACE INVESTIGATION WORK PLAN

1199 Sutter Avenue
Site Number: C224141
Brooklyn, New York

April 8, 2021

Submitted to:

Mr. Michael MacCabe
New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233-7014

Prepared for:

AAA Sutter Realty, LLC
153-157 Seventh Street
Garden City, New York 11530

Prepared by:

EnviroTrac Engineering PE PC
5 Old Dock Rd.
Yaphank, NY 11980
631-924-3001

The following personnel have prepared, reviewed, and approved this document:

Subsurface Investigation Work Plan

1199 Sutter Avenue
Brooklyn, New York

BCA Site #244141

I, Tracy Wall, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Subsurface 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).

Tracy Wall, PG
Project Manager
Qualified Environmental Professional

April 8, 2021

Date

EnviroTrac
Environmental Services

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Appendix A Reference Limits and Evaluations Groundwater VOCs 8260c
Appendix B NYSDOH Soil Vapor Intrusion – Structure Sampling Building Questionnaire
Appendix C Health and Safety Plan

1.0 INTRODUCTION

The property at 1199 Sutter Avenue, Brooklyn, NY (the Site) is currently in the New York State Brownfield Cleanup Program (BCP), Site No. C224141, which is administered by the New York State Department of Environmental Conservation (NYSDEC). AAA Sutter Realty LLC entered into a Brownfield Cleanup Agreement (BCA) on August 2, 2012 with the NYSDEC to remediate the Site. **Figure 1** shows the site location on a topographic map.

The subsurface at the Site was impacted with tetrachloroethylene (PCE) due to the historical use of the eastern portion of the Site as a dry cleaner. Subsurface investigations and remedial activities were conducted at the Site from January 2009 through August 2018. The remedial activities included several sampling events for soil, soil vapor, ambient air, and groundwater, and two (2) non-emergency interim remedial measures (IRMs), which included in-situ chemical oxidation (ISCO) injections.

Based on the previous remedial investigations, the highest soil sample concentration for PCE was detected at 34,500 micrograms per kilogram (ug/kg) in January 2009 at boring S4, located in the rear parking area to the north of the former dry cleaner/current laundromat. The highest detected groundwater monitoring well sample concentration for PCE was 719 micrograms per liter (ug/L) in MW-10S in August 2017, located beneath the former dry cleaner/current laundromat (in the basement).

After completion of the remedial work, some contamination remains at this Site, which is hereafter referred to as “remaining contamination”. A Track 4 cleanup was implemented at the Site. Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure the protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Kings County Clerk, required compliance with the Site Management Plan (SMP) and all ECs and ICs placed on the Site.

The ECs include the installation and operation of a soil vapor extraction (SVE) and air sparge (AS) system on the eastern portion of the Site and installation and operation of a sub-slab depressurization system (SSDS) within the supermarket unit adjoining the former dry

cleaner/current laundromat to the west. The SVE/AS remediation system was installed between October 2018 and January 2019 and began operating in January 2019. The purpose of the SVE/AS system is to remediate the areas of remaining contamination in the soil and groundwater. Two (2) SSDSs were installed within the basement of the former dry cleaner/current laundromat and the adjoining supermarket unit in April 2017 and began operating in May 2017. The SSDS wells within the basement of the former dry cleaner/laundromat were disconnected from the mitigation fans and connected to the SVE system in January 2019. The purpose of the SSDSs is to mitigate vapors from entering the basements of the laundromat and supermarket and impacting the indoor air quality.

No operating issues were reported for the SSDS for the supermarket since it began operating. The SVE/AS remediation system shut down in June 2020 due to a high temperature alarm, which was addressed and began operating again the same month. The AS portion of the remediation system was shut down in July 2020 due to a carbon vane that required replacement. In September 2020, it was requested that the AS portion of the system remain off for a period of six (6) months since groundwater monitoring well concentrations had significantly decreased since operating the AS system. On October 15, 2020, the NYSDEC approved that the AS portion of the remediation system could be turned off for a period of six (6) months followed by a permanent shut down should groundwater concentrations continue to decrease or remain stable. For the February 2021 quarterly groundwater monitoring event, groundwater concentrations have shown to decrease since the startup of the remediation system. The AS system has not been turned back on since July 2020. The SVE portion of the remediation system has continued to properly operate at the Site since June 2020.

Since September 2020, no photoionization detector (PID) readings have been recorded for the SVE system at the Site. Due to no measured recoverable vapors recorded for the SVE system since September 2020 and a continued decreasing trend in groundwater concentrations for PCE, with the highest concentration of PCE at 34.2 parts per billion (ppb) at MW-10S in February 2021, the SVE system appears to have reached asymptotic levels.

Figure 2 shows the SVE/AS system, groundwater monitoring well locations, previous soil boring locations, and previous sub-slab soil vapor, indoor air, and outdoor air sample locations at the Site.

1.1 Objectives

This Subsurface Investigation Work Plan was developed to address the following objectives:

- Determine if the SVE system has remediated the previously identified soil that was shown to be contaminated with PCE above its NYSDEC Restricted Residential Use Soil Cleanup Objectives (RRUSCOs);
- Determine if mitigation of soil vapors beneath the former dry cleaner/current laundromat and adjoining supermarket are still required;
- Present the technical approach that will be used;
- Present procedures that will be employed to address health and safety, quality assurance, and potential community impacts; and
- Provide a Subsurface Investigation Work Plan implementation schedule.

2.0 SCOPE OF WORK

2.1 Overview

A total of three (3) soil samples will be collected from the previous boring locations S3 and S4, located in the rear parking lot to the north of the former dry cleaner/current laundromat, and from B7, located in the basement of the former dry cleaner/current laundromat. Soil sample S3 was collected from 10 feet below grade in 2009. Soil sample S4 was collected from 11 to 12 feet below grade in 2016. Soil sample B7 was collected from eight (8) to 13 feet below grade or from just below the basement slab to five (5) feet below the basement slab in 2009. **Figure 3** shows the proposed boring locations.

The soil samples from the rear parking lot will be collected using a Geoprobe drill rig from the above-referenced depths. The soil sample from the basement of the former dry cleaner/current laundromat will be collected using a concrete corer and a hand auger. The soil samples will be laboratory analyzed for volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260.

Soil vapor intrusion (SVI) investigations will be conducted within the basements of the former dry cleaner/current laundromat and adjoining supermarket. The SVE system and SSDS will be shut off 48 hours prior to the start of the SVI investigations. The SVI investigations will include the collection of one (1) sub-slab soil vapor sample and one (1) indoor air sample within each of the basements of the former dry cleaner/current laundromat and one (1) outdoor air sample from the rear parking lot. The samples will be collected over an eight (8) hour period and will be laboratory analyzed for VOCs by EPA Method TO-15. **Figure 3** shows the locations of the proposed sub-slab soil vapor samples, the indoor air samples, and the outdoor air sample locations.

2.2 Summary of Previous Site Investigation Results

Below lists the previously performed remedial investigations for the Site.

- **Summary Letter of Phase II Subsurface Investigation, 1199-1221 Sutter Avenue, Brooklyn, New York. Atlantic Environmental Solutions, Inc., January 12, 2009;**

- **Phase II Subsurface Investigation, 1199-1221 Sutter Avenue, Brooklyn, New York. Associated Environmental Services, Ltd., May 19, 2009;**
- **Remedial Action Report, 1199-1221 Sutter Avenue, Brooklyn, New York. Associated Environmental Services, Ltd., January 29, 2010;**
- **Remedial Action Report Addendum, 1199-1221 Sutter Avenue, Brooklyn, New York. Associated Environmental Services, Ltd., March 24, 2010;**
- **Remedial Investigation Report, 1199-1221 Sutter Avenue, Brooklyn, New York. Associated Environmental Services, Ltd., July 23, 2015;**
- **Supplemental RI Report, 1199-1221 Sutter Avenue, Brooklyn, New York. Associated Environmental Services, Ltd., July 6, 2016.**

Soil

Soil samples were previously collected from the Site during the Phase II ESA, Supplemental Phase II ESA, Site Characterization, and Supplemental RI. The previous soil sampling results showed that tetrachloroethene (PCE) and acetone were detected at concentrations that exceeded the 6 NYCRR Part 375 Subpart 375-6.8 Unrestricted Use Soil Cleanup Objectives (UUSCOs) in several borings located beneath the former dry cleaner and in the rear parking lot to the north of the former dry cleaner unit. **Table 1** summarizes the previous soil boring sample exceedances. **Figure 2** shows the previous soil boring locations.

Groundwater

Groundwater samples were previously collected from the Site during the Phase II ESA, Supplemental Phase II ESA, IRM, Site Characterization, RI, Supplemental RI, and other groundwater sampling events. Previous groundwater samples were also collected from the adjoining properties to the south and east during the Site Characterization, RI, and Supplemental RI. The previous groundwater monitoring results showed that PCE, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), acetone, and chloroform were detected at concentrations that exceeded their respective NYSDEC Class GA Ambient Water Quality Standards and Guidance Values (NYSDEC Groundwater Standards) in locations beneath the former dry cleaner, in the rear parking lot to the north of the former dry cleaner unit, to the south beneath the sidewalk along the northern and southern portions of Sutter Avenue, and on the adjoining property to the south, across Sutter Avenue during the previous investigations. The results of the previous investigations showed that elevated levels of CVOCs

in groundwater existed beneath the Site and had migrated to the south, across Sutter Avenue. During the February 2021 groundwater monitoring event, all VOCs previously detected in the groundwater samples are currently at not detectable levels except for PCE, which had a maximum detection of 34.2 microgram per liter (ug/L) at MW-10S. **Table 2** summarizes the February 2021 groundwater monitoring results. **Figure 2** shows the locations of the groundwater monitoring wells.

Soil Vapor Intrusion

Sub-slab soil vapor samples, soil gas samples, indoor air samples, and outdoor air samples were previously collected from the Site and in the vicinity of adjoining properties to the north, south, and east during the Site Characterization and RI. The results were compared to the NYSDOH Matrices 1 and 2 included in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006. The previous sampling results showed that vapors emanating from soil and groundwater located beneath the Site were infiltrating into the former dry cleaner unit and had the potential to infiltrate into the adjacent supermarket unit. The results showed that no soil vapor intrusion (SVI) impacts were present in the other units within the Site building or in the vicinity of the adjoining properties to the north, south, and east. **Table 3** summarizes the previous sub-slab soil vapor and soil gas sampling results and **Table 4** summarizes the previous indoor and outdoor air sampling results. Previous sub-slab soil vapor, soil gas, indoor air, and outdoor air sample locations are shown on **Figure 2**.

Since the installation of the SVE/AS remediation system at the Site and the SSDS within the supermarket unit, the presence of impacted soil vapors beneath the former dry cleaner/current laundromat and adjoining supermarket are likely to have decreased to significantly lower concentrations, and mitigation may no longer be required.

2.3 Technical Approach

2.3.1 Subsurface Soil Sampling

A total of three (3) soil samples will be collected from the previous boring locations S3, S4, and B7. Soil sample S3 was collected from 10 feet below grade in 2009. Soil sample S4 was collected from 11 to 12 feet below grade in 2016. Soil sample B7 was collected from eight (8) to

13 feet below grade or from just below the basement slab to five (5) feet below the basement slab in 2009. **Figure 3** shows the proposed boring locations.

2.3.1.1 Subsurface Soil Sampling Procedures

Approximately one (1) week prior to drilling, a subsurface utility markout will be ordered to indicate the location of subsurface utilities within the proposed boring locations. Prior to advancing the Geoprobe rods, the first five (5) feet of soil will be hand cleared to verify that no subsurface utilities will be impacted.

The soil samples from the rear parking lot will be collected using a Geoprobe drill rig from the above-referenced depths. Soil cores for S3 and S4 will be obtained using the Geoprobe into acetate sleeves from approximately nine (9) to approximately 13 feet below grade. The soil cores will be screened for visual and olfactory indications of contamination and well as with a photoionization detector (PID). Soil characteristics and PID readings will be recorded for each soil core.

The soil sample from the basement of the former dry cleaner/current laundromat will be collected using a concrete corer and a hand auger. The soil collected will be screened for visual and olfactory indications of contamination and well as with a PID. Soil characteristics and PID readings will be recorded for the sub-slab soil sample.

Boring logs will be provided in the Subsurface Investigation Report.

2.3.1.2 Subsurface Soil Samples Laboratory Analysis

The soil samples will be placed into laboratory-supplied glassware, placed into an ice-filled cooler, and delivered via courier to Pace Analytical Long Island Laboratory (Pace) in Melville, NY for analysis of VOCs by EPA Method 8260c. The laboratory analyte list is provided as **Appendix A.** A chain of custody form will be completed to document sample possession. NYSDEC Category B Deliverables packages will be obtained from the laboratory, and the

laboratory packages will be reviewed by a third-party chemist that will provide a Data Usability Summary Report (DUSR).

2.3.2 Soil Vapor Intrusion (SVI) Investigation Procedures

2.3.2.1 Pre-sampling Inspection

A pre-sampling inspection will be performed immediately prior to initiating sample collection to document potential sources of VOCs and other important features (e.g., HVAC layout and operation) within the sampling area and ultimately to aid in the interpretation of the sampling results. The inspection will include the following:

a. current storage and uses of volatile chemicals will be identified;
b. the use of heating or air conditioning systems during sampling will be noted;
c. floor plan sketches will be drawn that include the floor layout with sampling locations, chemical storage areas, doorways, stairways, location of basement sumps or subsurface drains and utility perforations through building foundations, HVAC system air supply and return registers, compass orientation (north), footings that create separate foundation sections, and any other pertinent information will be completed;
d. the building floor will be inspected and any penetrations (cracks, floor drains, utility perforations, sumps, etc.) will be noted and recorded/photographed;
e. outdoor plot sketches will be drawn that include the building site, area streets, outdoor air sampling locations (if applicable), compass orientation (north), and paved areas;
f. weather conditions (e.g., precipitation and indoor and outdoor temperature) and ventilation conditions (e.g., heating system active and windows closed) will be reported; and
g. any pertinent observations, such as spills, floor stains, smoke tube results, odors, and readings from field instrumentation (e.g., vapors via PID, ppb RAE, Jerome Mercury Vapor Analyzer, etc.), will be recorded.

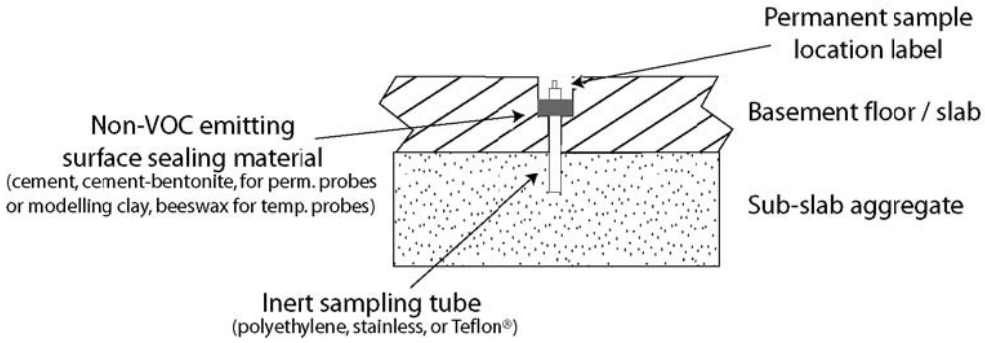
Results of the pre-sampling inspection will be recorded using the form provided in **Appendix B.** Additional documentation including photographs will accompany floor plan sketches.

2.3.2.2 Sub-slab Soil Vapor Sampling

Sub-slab sampling probes will be installed at locations where the potential for ambient air infiltration via floor penetrations is minimal to the extent practicable.

a. permanent recessed probes should be constructed with brass or stainless-steel tubing and fittings;
b. temporary probes should be constructed with inert tubing (e.g., polyethylene, stainless steel, nylon, Teflon®, etc.) of the appropriate size (typically 1/8 inch to ¼ inch diameter), and of laboratory or food grade quality;
c. tubing should not extend further than 2 inches into the sub-slab material;
d. porous, inert backfill material (e.g., glass beads, washed #1 crushed stone, etc.) should be added to cover about 1 inch of the probe tip for permanent installations; and
e. the implant should be sealed to the surface with non-VOC-containing and non-shrinking products for temporary installations (e.g., permagum grout, melted beeswax, putty, etc.) or cement for permanent installations.

The following schematic of a sub-slab vapor probe construction is consistent with NYSDOH guidance.



Sub-slab Vapor Sampling:

To obtain representative samples that meet the data quality objectives, sub-slab vapor samples will be collected in the following manner:

a. after installation of the probes, one (1) to three (3) volumes (i.e., the volume of the sample probe and tube) must be purged prior to collecting the samples to ensure samples collected are representative;
b. flow rates for both purging and collecting must not exceed 0.2 liters per minute to minimize ambient air infiltration during sampling; and
c. samples should be collected, using conventional sampling methods, in an appropriate container — one which;
    i. meets the objectives of the sampling (e.g., investigation of areas where low or high concentrations of volatile chemicals are expected; to minimize losses of volatile chemicals that are susceptible to photo-degradation),
    ii. is consistent with the sampling and analytical methods (i.e., low flow rate; Summa canisters analyzing by using EPA Method TO-15), and
    iii. is certified clean by the laboratory;
d. sample size depends upon the volume of that will achieve minimum reporting limits, the flow rate, and the sampling duration; and
e. ideally, samples should be collected over the same period as concurrent indoor and outdoor air samples.

The field sampling team will maintain a sample log sheet summarizing the following:

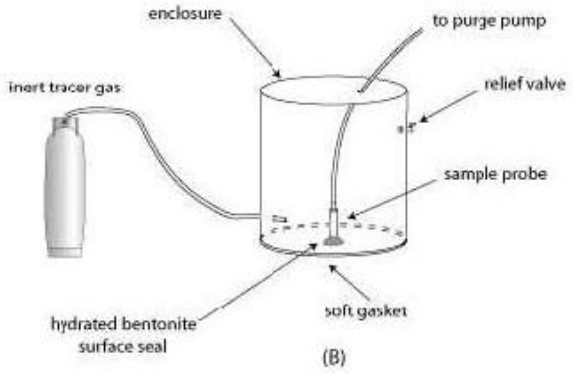
a. Sample identification;
b. Date and time of sample collection;
c. Sampling depth;
d. Identity of samplers;
e. Sampling methods and devices;
f. Purge volumes;
g. Volume of soil vapor extracted;
h. Canister vacuum before and after samples were collected;
i. Apparent moisture content (dry, moist, saturated, etc.) of the sampling zone; and
j. Chain of custody protocols and records used to track samples from sampling point to analysis.

Tracer gas:

When collecting sub-slab soil vapor samples, a tracer gas will be used as a quality assurance/quality control measure to verify the integrity of the soil vapor probe seal. Without the use of a tracer, there is no way to verify that a soil vapor sample has not been diluted by outdoor air. Helium will be used as the tracer as it is readily available, has low toxicity, can be monitored with portable measurement devices, and can be detected in the laboratory.

The protocol for using a tracer gas is straightforward: simply enrich the atmosphere in the immediate vicinity of the area where the probe intersects the ground surface with the tracer gas and measure a vapor sample from the probe for the presence of high concentrations (> 10%) of the tracer. A plastic pail will serve to keep the tracer gas in contact with the probe during the testing.

The tracer gas (helium) will be released in the enclosure prior to initially purging the sample point, taking care to avoid excessive purging prior to sample collection. Care will also be taken to prevent pressure build-up in the enclosure during introduction of the tracer gas. Inspection of the installed sample probe, specifically noting the integrity of the surface seal and the porosity of the soil in which the probe is installed, will help to determine the tracer gas setup.



Helium Tracer Testing Schematic

The tracer gas (helium) will be included in the list of target analytes reported by the laboratory for the sub-slab samples.

2.3.2.3 Indoor Air Sampling

The proposed testing will be conducted outside of the heating season that spans the time November 15 through March 30. However, it can be requested that the heating systems for each of the units be operated to maintain normal indoor air temperatures (i.e., 65 – 75 °F) for at least 24 hours prior to and during the scheduled sampling time.

The indoor air samples will be collected in the following manner:

a. sampling duration will reflect the exposure scenario being evaluated without compromising the detection limit or sample collection flow rate (i.e., a 24-hour sampling duration will be used);
b. samples will be collected in the vicinity of the sub-slab samples;
c. sample intakes will be placed approximately three (3) to five (5) feet above the floor surface;
d. personnel will avoid lingering in the immediate area of the sampling device while samples are being collected;
e. sample flow rates will conform to the specifications in the sample collection method and will be consistent with the flow rates for concurrent outdoor air and sub-slab samples; and
f. samples will be collected, using conventional sampling methods, in laboratory prepared and supplied six (6) Liter Summa Canisters:

The field sampling team will maintain a sample log sheet summarizing the following:

a. sample identification,
b. date and time of sample collection,
c. sampling height,
d. identity of samplers,
e. sampling methods and devices,
f. vacuums of canisters before and after samples collected, and
g. chain of custody protocols and records used to track samples from sampling point to analysis.

2.3.2.4 Outdoor Air Sampling

The outdoor air sample will be collected concurrently with the sub-slab and indoor air samples to identify potential outdoor air interferences associated with infiltration of outdoor air into the sampling apparatus while the sub-slab and indoor air samples are collected. To obtain representative samples that meet the data quality objectives, the outdoor air sample will be collected in a manner consistent with that for the indoor air samples. The outdoor air sample will be situated in the vicinity of the Site and in an upgradient location with respect to wind direction on the day of sample collection. The following actions will be taken to document conditions during outdoor air sampling and ultimately to aid in the interpretation of the sample results:

a. An outdoor plot sketch will be drawn that include the testing site, area streets, outdoor air sampling locations, the location of potential interferences (e.g., gasoline stations, factories, lawn movers, etc.), compass orientation (north), and paved areas;
b. Weather conditions (e.g., precipitation and outdoor temperature) will be reported; and
c. Pertinent observations, such as odors, readings from field instrumentation, and significant activities in the vicinity (e.g., operation of heavy equipment, dry cleaners, and other potential sources of VOCs) will be recorded.

2.3.2.5 Blind Duplicate Sample

A field sample duplicate (blind duplicate) indoor air sample will be collected and analyzed to assess sampling precision and errors as discussed in the NYSDOH SVI Guidance. The duplicate will be collected in accordance with the sampling and analytical methods being implemented for indoor air samples.

2.3.2.6 SVI Samples Laboratory Analyses

The SVI samples will be collected into laboratory-supplied 6L Summa Canisters equipped with eight (8) hour flow controllers. The Summa Canisters will be delivered via courier to Pace for analysis of VOCs via EPA Method TO-15 and helium, EPA 3C (sub-slab soil vapor samples only). NYSDEC Category B Deliverables packages will be obtained from the laboratory, and the laboratory packages will be reviewed by a third-party chemist that will provide a DUSR.

2.3.3 Evaluation of Subsurface Investigation Results

2.3.3.1 Subsurface Soil Sample Results

The subsurface soil sample results will be summarized in the Subsurface Investigation Report and a copy of the laboratory report will be provided. The results will be compared to the NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs), Residential Use Soil Cleanup Objectives (RUSCOs), and Restricted Residential Use Soil Cleanup Objectives (RRUSCOs). Should the soil sample result concentrations be lower than the NYSDEC RRUSCOs, then the SVE system may no longer be required to operate. If this is the case, EnviroTrac will petition to shut down the SVE system and the decommissioning procedures for the remediation system will also be provided in the Subsurface Investigation Report.

2.3.3.2 SVI Investigation Results

The SVI investigation results will be summarized in the Subsurface Investigation Report and a copy of the laboratory report will be provided. The results will be compared to the NYSDOH Decision Matrices A, B, and C. Should the SVI investigation results indicate that mitigation is no longer required for either unit (former dry cleaner/current laundromat and supermarket), then EnviroTrac will petition to not reconnect the SSDS for the former dry cleaner/current laundromat and to disconnect the SSDS for the supermarket. The decommissioning procedures for the mitigation systems will also be provided in the Subsurface Investigation Report.

2.4 Health and Safety

Health and safety procedures that will be employed during the Subsurface Investigation are presented in the HASP included in **Appendix C**.

3.0 REPORTING OF RESULTS

3.1 Subsurface Investigation Report

A Subsurface Investigation Report will be prepared and submitted at the completion of the investigation. The report will present and discuss the sampling results, if the remedial goals have been met by the current operating SVE system, if mitigation is still required for the former dry cleaner/current laundromat and supermarket, and if not, the decommissioning procedures for systems that are no longer required.

3.2 Electronic Data Deliverable

In accordance with requirements specified in DER-10, laboratory data developed during the Subsurface Investigation will be submitted to the NYSDEC in the NYSDEC-approved Electronic Data Deliverable (EDD) format.

4.0 PROJECT SCHEDULE

The Subsurface Investigation will be conducted in accordance with the following schedule:

Remediation System and Mitigation System Shutdowns

Forty-eight (48) prior to the subsurface investigation, the SVE system will be switched off within the remediation shed and the mitigation system for the supermarket unit will be unplugged. These systems will remain off until the completion of the investigation. Following the completion of the SVI samples, these systems will be turned back on.

Install Soil Borings Within the Rear Parking Lot and Basement and Collection of SVI Investigation Samples

Field work will be initiated after a one (1) to two (2) week period following the approval of the Subsurface Investigation Work Plan by the NYSDEC. The NYSDEC case manager will be notified a minimum of 7-10 days in advance prior to start of work.

Subsurface Investigation Completion and Reporting of Results

A summary of laboratory analysis findings for submitted samples will be provided in a Subsurface Investigation Report that will be submitted to the NYSDEC within 60 days following completion of the investigation. This will allow for laboratory testing, data validation by a third-party chemist, evaluation of results, and preparation of the report.

5.0 REFERENCES

New York State Department of Environmental Conservation (May 3, 2010). Final Program Policy DER-10 - Technical Guidance for Site Investigation and Remediation.

Code of Federal Regulations – Title 40: Protection of the Environment 144.26 – Inventory Requirements.

New York State Department of Health (October 2006). Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

FIGURES

TOPOGRAPHIC MAP

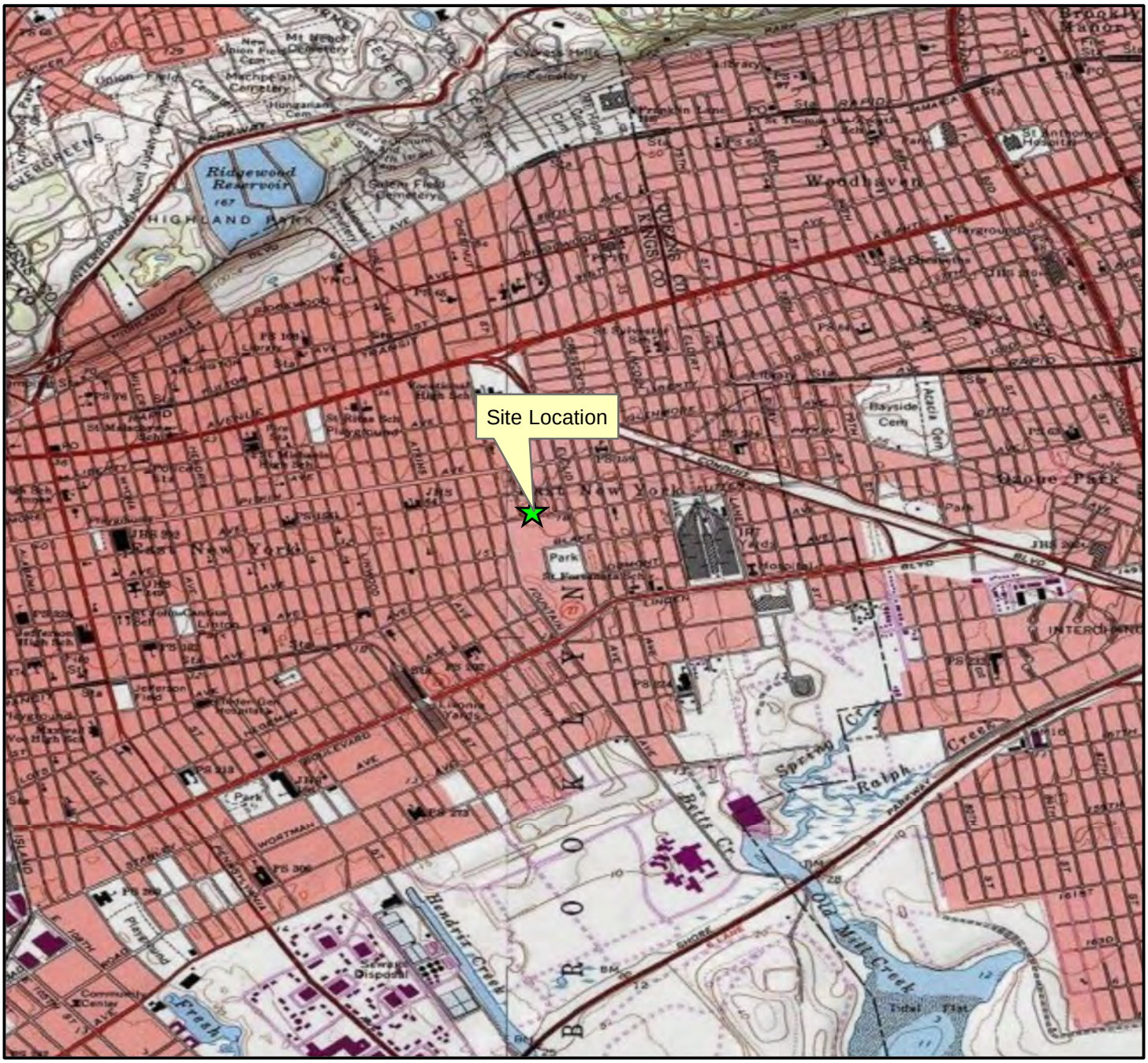


Figure 1
Topographic Map

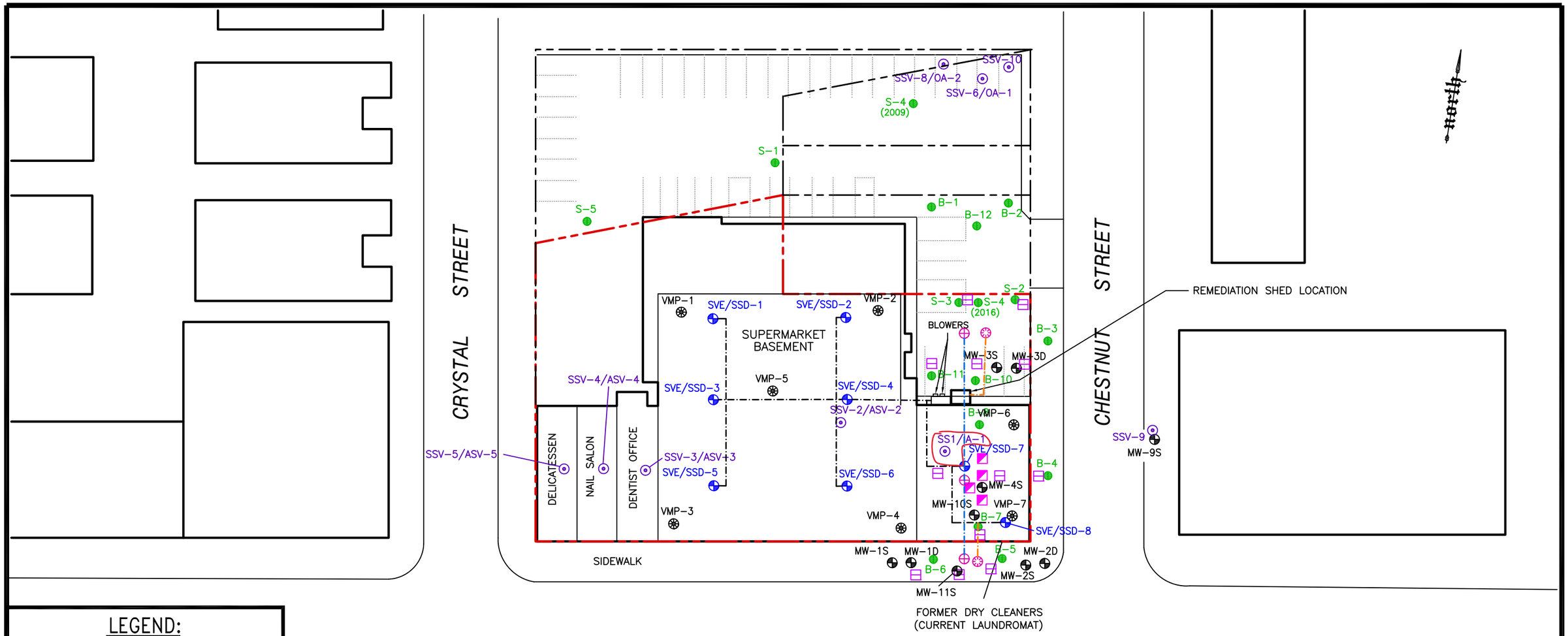
1199 Sutter Avenue
Brooklyn, NY 11208

USGS Quadrangle:
Brooklyn

Approx. Elevation:
19 feet

N
W E
S

EnviroTrac
Environmental Services
5 Old Dock Road
Yaphank, NY 11980
P: 631-924-3001 F:631-924-5001



LEGEND:

- BCP AGREEMENT SITE PROPERTY OUTLINE
- GROUNDWATER MONITORING WELL
- VAPOR MONITORING POINT
- EXISTING SVE/SSDS PIPING
- EXISTING SVE/SSDS WELL
- AIR SPARGE WELL
- SOIL VAPOR EXTRACTION WELL
- SVE PIPING
- AS PIPING
- SOIL BORING
- SOIL & AMBIENT VAPOR SAMPLE
- SSV — SUB-SLAB SAMPLE
- IA/ASV — INDOOR AIR SAMPLE
- OA — OUTDOOR AIR SAMPLE
- INJECTION WELL (INSTALLED 2009)
- INJECTION WELL (INSTALLED 2017)

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

0 20 40
SCALE IN FEET

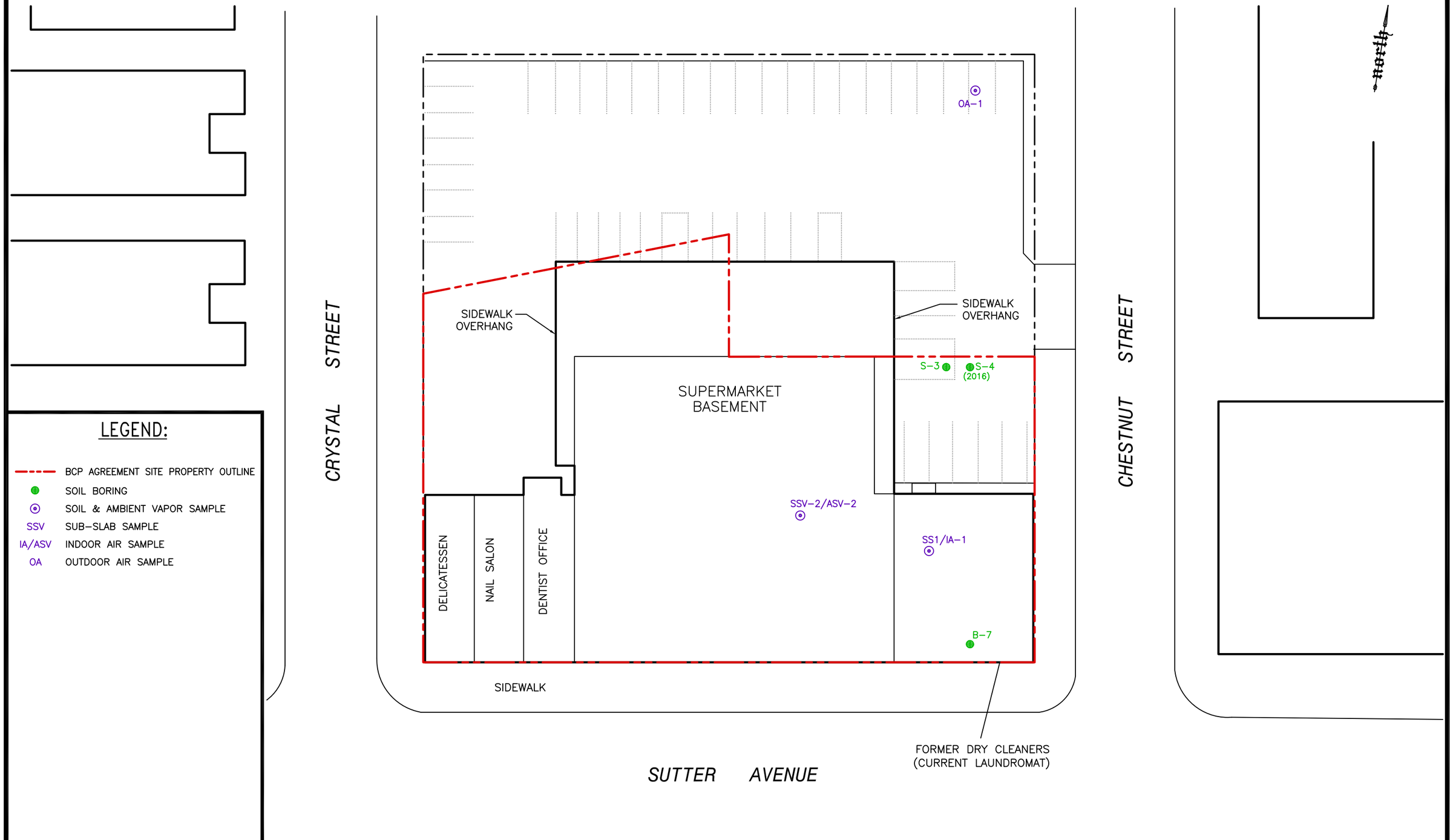
DATE: 4/8/2021

REVISED BY: BS

1199 SUTTER AVENUE
BROOKLYN, NEW YORK

PREVIOUS SAMPLING LOCATIONS, EXISTING REMEDIATION SYSTEM, EXISTING MITIGATION SYSTEM, AND EXISTING GROUNDWATER MONITORING WELL LOCATIONS

FIGURE # 2



EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

0 15 30
SCALE IN FEET

DATE: 4/8/2021

REVISED BY: BS

1199 SUTTER AVENUE
BROOKLYN, NEW YORK

PROPOSED SOIL BORING LOCATIONS AND PROPOSED SUB-SLAB SOIL VAPOR, INDOOR AIR, AND OUTDOOR AIR SAMPLING LOCATIONS

FIGURE # 3

TABLES

Table 1
Remaining Soil Sample Exceedances
Historical Soil Sample Results Detected Above NYSDEC SCOs
2009 to April, 2016
1199 Sutter Avenue, Brooklyn, New York
BCA No. C224141

Sample Collection Depth	10'	11'-12'	8-13'	5'-6'	9'-10'	NYSDEC Soil Cleanup Objectives			
Sample Location	S3	S4	B-7	B-10	B-12	Unrestricted Use	Residential Use	Restricted Residential Use	Restricted Commercial Use
Sample Date	1/6/2009	4/5/2016	4/1/2009	7/27/2011	7/27/2011				
Volatile Organic Compounds									
Acetone	ND	ND	ND	**170**	**210**	50	100,000	100,000	500,000
Tetrachloroethene	**37,500**	**15,000**	**5,100**	640	560	1,300	5,500	19,000	150,000

Notes:
All results reported as parts per billion (ppb) / micrograms per kilogram (ug/kg).
Analysis performed in accordance with USEPA Method 8260.
ND - Not Detected above method detection limit
Bolded and shaded values indicate an exceedance of the New York State Department of Environmental Conservation (NYSDEC) Part 375 Soil Cleanup Objectives.

EnviroTrac
Environmental Services

Table 2
Summary of Groundwater Monitoring Well Results - July 2011 - February 2021
BCP Site # 244141
1199 Sutter Avenue, Brooklyn, NY

Sample ID	MW-1S												NYSDEC Groundwater Standards
Sample Date	**7/20/2011**	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/2021**	
Volatile Organic Compounds *(in micrograms per liter)*													
Acetone	ND	ND	ND	ND	18.4	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	**30.0**	ND	ND	ND	ND	1.00	1.50	5.30	**7.10**	3.70	3.60	**14.6**	7
cis-1,2-Dichloroethylene	0.71 J	ND	ND	ND	ND	1.70	ND	ND	ND	ND	ND	ND	5*
Tetrachloroethene	**84.0**	**49.5**	**46.1**	**24.9**	**21.7**	**21.6**	**18.4**	**11.6**	**5.4**	**14.4**	**8.1**	**5.3**	5*
Trichloroethene	3.2	2.1	2.8	1.3	ND	1.2	ND	ND	ND	ND	ND	2.2	5*

Sample ID	MW-2S												NYSDEC Groundwater Standards
Sample Date	**7/20/2011**	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/2021**	
Volatile Organic Compounds *(in micrograms per liter)*													
Acetone	ND	8.90	ND	ND	13.4	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	**13.0**	ND	ND	ND	ND	**8.40**	2.80	**7.70**	5.70	4.90	3.50	4.80	7
cis-1,2-Dichloroethylene	0.20 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5*
Tetrachloroethene	**10.0**	2.20	1.10	2.90	1.50	ND	ND	ND	ND	1.50	1.00	1.30	5*
Trichloroethene	0.36 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5*

Sample ID	MW-4S	MW-10S										NYSDEC Groundwater Standards
Sample Date	**4/6/2016**	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/221**	
Volatile Organic Compounds *(in micrograms per liter)*													
Acetone	ND	ND	ND	ND	12.4	ND	6.70	ND	ND	ND	ND	ND	50
Chloroform	3.00 J	1.50	1.40	ND	ND	ND	ND	ND	3.30	2.70	1.30	ND	7
Chloromethane	ND	ND	ND	ND	ND	ND	1.40	ND	ND	ND	ND	ND	5*
cis-1,2-Dichloroethylene	2.60	ND	**6.10**	**5.10**	**5.30**	ND	ND	ND	ND	ND	ND	ND	5*
Tetrachloroethene	**390**	**575**	**363**	**441**	**719**	**111**	**112**	**78.8**	**59.8**	**47.1**	**34.0**	**34.2**	5*
Trichloroethene	**14.0**	**21.0**	**16.2**	**13.4**	**16.2**	2.20	2.00	1.10	ND	ND	ND	ND	5*

Sample ID	MW-11S											NYSDEC Groundwater Standards
Sample Date	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/2021**	
Volatile Organic Compounds *(in micrograms per liter)*												
Acetone	ND	ND	ND	9.00	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	ND	ND	**9.00**	**9.80**	1.00	**9.50**	6.70	2.90	3.10	7
cis-1,2-Dichloroethylene	ND	1.50	3.50	2.50	ND	ND	ND	ND	ND	ND	ND	5*
Tetrachloroethene	**24.1**	**37.4**	**86.7**	**105**	1.70	ND	**7.00**	1.50	1.20	1.60	**17.1**	5*
Trichloroethene	1.10	2.00	3.40	4.70	ND	ND	ND	ND	ND	ND	ND	5*

Sample ID	MW-5S												NYSDEC Groundwater Standards
Sample Date	**4/6/2016**	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/2021**	
Volatile Organic Compounds *(in micrograms per liter)*													
Acetone	ND	ND	ND	ND	17.6	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	2.40 J	ND	ND	ND	ND	**8.30**	4.30	**8.00**	**7.70**	5.10	4.50	2.60	7
cis-1,2-Dichloroethylene	**5.10**	ND	**5.30**	4.80	ND	2.20	ND	ND	ND	ND	ND	1.30	5*
Tetrachloroethene	**200**	**122**	**128**	**136**	**258**	**45.1**	**17.3**	**12.3**	**14.3**	**6.80**	**12.6**	**17.0**	5*
Trichloroethene	**10.0**	**7.40**	**8.20**	**7.30**	**9.60**	2.40	1.20	ND	ND	ND	ND	1.20	5*

Sample ID	MW-8S											NYSDEC Groundwater Standards
Sample Date	**4/6/2016**	**5/17/2017**	**6/27/2017**	**7/27/2017**	**8/29/2017**	**8/13/2019**	**11/22/2019**	**2/14/2020**	**5/20/2020**	**8/26/2020**	**11/18/2020**	**2/10/2021**	
Volatile Organic Compounds *(in micrograms per liter)*													
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	3.30 J	ND	ND	ND	ND	ND	ND	1.00	ND	1.30	2.80	2.20	7
cis-1,2-Dichloroethylene	0.34 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	5*
Tetrachloroethene	**12.0**	**5.50**	4.30	4.40	**8.40**	**13.9**	**6.40**	**6.80**	**8.30**	**5.20**	**6.50**	**7.30**	5*
Trichloroethene	0.62 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5*

Notes:
Only detected analytes are reported.
ND = Not Detected
J = The concentration is estimated.
* = The Principal Organic Compound Standard applies
Bold values indicate an exceedance of the New York State Department of Environmental Conservation (NYSDEC) Class GA Ambient Water Quality Standards.

EnviroTrac
Environmental Services

Table 3
Historical Soil Vapor Sample Results
July, 2011 to August, 2017
1199 Sutter Avenue, Brooklyn, New York
BCA No. 224141

Sample ID:	SS-1	VP-1	SSV-2	SSV-3	SSV-4	SSV-5	SSV-6	SSV-7	SSV-8	SSV-9	SSV-10				SSV-11			
Sample Date:	7/20/11	3/21/17	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/6/16	4/6/16	5/17/17	6/27/17	7/27/17	8/29/17	5/17/17	6/27/17	7/27/17	8/29/17
Media:	Sub-Slab	Sub-Slab	Indoor Air	Sub-Slab	Sub-Slab	Sub-Slab	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas				Soil Gas			
Location:	Former Dry Cleaner	Former Dry Cleaner	Supermarket	Dentist Office	Nail Salon	Deli	Rear Parking Lot	Sidewalk Across Sutter Ave	Rear Parking Lot	Sidewalk Across Chestnut St	Rear Parking Lot, Near Northern Property Perimeter				Sidewalk Across Sutter Avenue, Near NYCHA Apartment Building			
Parameter:																		
Propylene	--	--	--	--	--	--	--	--	191	131	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	--	5.82	--	9.2	9.05	4.32	--	3.16	4.99	--	1.94	2.90 J	2.56	3.91	--	UJ	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	1.01	UJ	--	--	--	UJ	6.75	--
Vinyl Chloride	795	--	--	--	--	--	--	--	--	--	--	--	--	--	19.6 J	--	25.80	24.30
1,3-Butadiene	--	--	--	8.5	15	1.67	2.99	1.37	20.6	13.7	--	--	--	--	--	--	--	--
2-Hexanone	--	--	--	--	--	--	--	--	323	97.0	--	--	--	--	--	--	--	--
Chloroethane	--	1.75	--	0.161	0.063	0.087	--	--	--	--	--	--	--	--	--	--	--	--
Ethanol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	--	36.7	--	--	--	--	--	--	995	356	60.60	33.30	39.90	25.50	778 D	--	--	--
Trichlorofluoromethane	--	16.7	--	5.61	4.07	5.62	--	--	2.35	1.39	--	2.79	2.07	3.21	--	--	--	--
Isopropanol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride	--	--	--	--	--	--	--	--	1.64	--	--	--	--	6.83	--	--	--	--
Methyl butyl ketone											--	1.41	1.05	0.94 J	50.5 J	--	--	--
Methyl ethyl ketone											18.90	17.60	13.60	13.1 J	434 J	8.82	46.20	15.3 UJ
Methyl isobutyl ketone											--	1.82	--	1.27	0.82	--	--	--
Freon 113	3,720	--	--	0.537	0.69	0.606	--	--	--	--	--	--	--	--	--	--	--	UJ
trans-1,2-Dichloroethene	390	22.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	380	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	3.51	--	--	--	--	--	--	4,480	1,550	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	3,830	30.5	--	--	--	0.163	--	--	--	--	--	--	--	--	--	--	--	--
Ethyl Acetate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	444	61.5	222	2.57	6.79	18.6	--	--	4.71	--	--	--	--	--	--	--	--	--
Tetrahydrofuran	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	538	--	--	0.271	--	0.409	--	--	--	--	--	--	--	--	--	--	--	--
n-Hexane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	4,020	--	--	0.207	0.235	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	3.8	--	3.35	6.71	4.92	--	4.54	5.49	5.78	4.28 J	1.77	2.34	3.02	17.10	4.65	20.40	26.30
Carbon Disulfide											1.31 J	2.72	1.81	0.80	62.00	--	5.59	5.03
Carbon Tetrachloride	--	--	--	--	--	0.176	--	--	--	0.28	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	--	--	--	--	1.97	--	--	--	--	--	--	--	--
Bromodichloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	9,730	399 J	677	--	0.167	2.09	7.69	--	--	--	--	--	--	--	--	--	--	--
2,2,4-Trimethylpentane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heptane	--	--	--	--	--	--	--	--	23.1	4.79	--	--	--	--	--	--	--	--
Toluene	757	7.29	40.7	43.3	45.6	55.4	59.2	50.5	29.3	10.4	9.47	13.00	13.80	25.40	18.9 J	9.90	16.60	27.50
Tetrachloroethene	428,000	831 J	20,100	0.678	16.4	2.9	214	--	1.96	13.3	2.43	9.99	17.70	14.40	--	--	16.60	--
Ethylbenzene	330	1.23	11	11.3	14.6	13.0	11.4	11.2	6.55	4.23	2.50	5.20	1.25	7.91	7.16 J	3.77	6.15	11.40
p+m Xylenes	--	4.44	41	46.9	59.9	52.6	41	42.3	18.3	13.0	9.99	21.10	5.19	34.1 J	29.5 J	14.20	24.50	44.60
Styrene	262	--	--	0.485	0.553	0.528	--	--	--	--	--	1.29	1.37	1.75	J	--	--	--
o Xylene	--	1.46		15.9	27.1	17.7	13.9	14.2	6.16	4.73	3.98	7.12	2.13	11.8 J	10.1 J	5.00	11.20	18.90
4-Ethyltoluene	--	--	--	5.9	6.49	6.24	--	4.23	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene											3.68 J	8.95	2.06	--	5.51	7.86	8.92	--
1,3,5-Trimethylbenzene	--	--	--	5.75	6.49	5.95	--	4.18	--	--	1.97 J	2.15	2.41	5.81	2.81	--	--	7.30
1,2,4-Trimethylbenzene	--	1.42	16	21.5	23.9	22.9	9.83	15.1	--	4.09	7.63 J	7.27	2.41	23.4 J	9.53	5.80	9.75	24.60
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	2.66 J	3.87	--	2.25	2.87	--	5.10	--

Notes:
All concentrations provided in micrograms per cubic meter (ug/m^3)
-- Not Detected Relative to Laboratory Reporting Limit

Table 4
Historical Ambient Air Sample Results
July, 2011 to March, 2017
1199 Sutter Avenue, Brooklyn, New York
BCA No. 224141

Parameter:	Sample Designation:	IA-1	IA-1	OA-1	ASV-2	ASV-3	ASV-4	ASV-5	OA-1	OA-2	OA-1
	Sampling Date:	7/20/11	3/21/17	7/20/11	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/6/16	3/21/17
	Sample Media:	Indoor Air	Indoor Air	Outdoor Air	Indoor Air	Indoor Air	Indoor Air	Indoor Air	Outdoor Air	Outdoor Air	Outdoor Air
	Location:	Former Dry Cleaner	Former Dry Cleaner	Rear Parking Lot	Supermarket	Dentist Office	Nail Salon	Deli	Rear Parking Lot	Rear Parking Lot	Parking Area, Rear of Former Dry Cleaner
	NYSDOH Indoor Air Guidance Value										
Propylene	NA	1.91	--	--	--	--	--	--	--	1.46	--
Dichlorodifluoromethane	NA	3.81	2.22	2.38	6.03	2.18	3.45	4.29	2.78	1.66	2.15
Chloromethane	NA	3.45	1.00	1.2	1.94	1.73	1.68	1.52	1.18	--	0.94
Vinyl Chloride	NA	--	--	--	--	--	--	--	--	--	--
1,3-Butadiene	NA	--	--	--	0.173	0.407	0.341	0.192	0.201	--	--
2-Hexanone	NA	--	--	--	--	--	--	--	--	--	--
Chloroethane	NA	--	--	--	0.124	0.092	0.069	0.063	0.069	--	--
Ethanol	NA	920	--	14.9	--	--	--	--	--	7.87	--
Acetone	NA	--	7.79	6.44	--	--	--	--	--	4.04	9.56
Trichlorofluoromethane	NA	27.8	2.41	1.4	8.99	7.19	5.55	6.18	2.49	1.53	1.27
Isopropanol	NA	61.4	--	1.81	--	--	--	--	--	1.16	--
Methylene Chloride	60	--	1.15	--	--	--	7.5	4.79	12.9	--	0.88
Freon 113	NA	--	--	--	0.636	0.713	0.636	0.981	0.621	--	--
trans-1,2-Dichloroethene	NA	--	--	--	--	--	--	--	0.135	--	--
1,1-Dichloroethane	NA	--	--	--	--	--	--	--	--	--	--
2-Butanone	NA	16.5	1.06	2.13	--	--	--	--	--	--	1.60
cis-1,2-Dichloroethene	NA	--	--	--	--	--	--	--	--	--	--
Ethyl Acetate	NA	8.11	--	--	--	--	--	--	--	--	--
Chloroform	NA	38.4	3.21	--	8.74	8.06	4.88	4.88	0.156	--	--
Tetrahydrofuran	NA	17.5	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	NA	--	--	--	--	--	--	--	1.64	--	--
n-Hexane	NA	7.79	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	--	--	--	--	--	--	--	--	--	--
Benzene	NA	3.77	1.24	0.831	1.38	1.44	1.33	1.03	11.1	1.44	1.35
Carbon Tetrachloride	NA	--	--	--	0.566	0.516	0.484	0.497	0.384	0.55	--
Cyclohexane	NA	2.11	--	--	--	--	--	--	--	--	--
Bromodichloromethane	NA	1.67	--	--	0.174	0.194	--	0.141	--	--	--
Trichloroethene	2	1.27	--	--	--	0.113	--	--	--	--	--
2,2,4-Trimethylpentane	NA	1.63	--	--	--	--	--	--	--	--	--
Heptane	NA	5.04	--	--	--	--	--	--	--	--	--
Toluene	NA	11.4	3.55	1.96	10.9	14.7	39.2	5.88	73.1	--	3.07
Tetrachloroethene	30	**68.5**	3.60	--	1.89	0.983	0.976	0.685	0.156	--	--
Ethylbenzene	NA	1.7	--	--	1.34	1.35	2.01	0.786	9.73	--	--
p+m Xylenes	NA	6.34	1.84	--	5.21	4.86	6.04	2.81	37.2	--	1.85
Styrene	NA	--	--	--	0.856	0.732	0.728	0.366	0.298	--	--
o Xylene	NA	2.96	--	--	2.16	1.83	2.25	1.16	11.4	--	--
4-Ethyltoluene	NA	1.9	--	--	1.20	1.29	1.42	0.787	3.26	--	--
1,3,5-Trimethylbenzene	NA	2.9	--	--	1.23	1.34	1.47	0.846	3.62	--	--
1,2,4-trimethylbenzene	NA	8.65	--	--	4.36	4.49	4.51	2.85	12.3	--	--
1,4-Dichlorobenzene	NA	2.84	--	--	1.05	0.613	0.601	0.367	--	--	--

Notes:

All concentrations provided in micrograms per cubic meter (ug/m^3)
-- Detected Below the Laboratory Method Detection Limit
NA - Not Applicable/Not Available
IA - Indoor Air
OA - Outdoor Air
NYSDOH - New York State Department of Health
Bolded and shaded values indicate exceedance of the NYSDOH Indoor Air Guidance Values.

EnviroTrac Environmental Services

APPENDICES

APPENDIX A

Reference Limits and Evaluations Groundwater VOCs 8260c

EnviroTrac
Environmental Services

4.3 Reference Limits and Evaluation

Groundwater VOCs US EPA Method 8260C

					% RECOVERIES			
&Analyte	Units	MDL	PQL	SPK	Low	High	RPD	%DLimit
1,1,1-Trichloroethane	µg/L	0.06	10	50	24	129	0	0
1,1,2,2-Tetrachloroethane	µg/L	0.12	10	50	46	164	0	0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	0.761	10	50	53	122	0	0
1,1,2-Trichloroethane	µg/L	0.104	10	50	62	138	0	0
1,1-Dichloroethane	µg/L	0.07	10	50	52	152	0	0
1,1-Dichloroethene	µg/L	0.155	10	50	62	131	0	0
1,2,4-Trichlorobenzene	µg/L	0.296	10	50	10	175	0	0
1,2-Dibromo-3-chloropropane	µg/L	0.178	10	50	33	137	0	0
1,2-Dibromoethane	µg/L	0.085	10	50	55	129	0	0
1,2-Dichlorobenzene	µg/L	0.114	10	50	60	134	0	0
1,2-Dichloroethane	µg/L	0.087	10	50	48	133	0	0
1,2-Dichloropropane	µg/L	0.095	10	50	40	152	0	0
1,3-Dichlorobenzene	µg/L	0.129	10	50	61	133	0	0
1,4-Dichlorobenzene	µg/L	0.113	10	50	59	134	0	0
2-Butanone	µg/L	0.77	10	50	33	175	0	0
2-Hexanone	µg/L	0.439	10	50	34	175	0	0
4-Methyl-2-pentanone	µg/L	0.164	10	50	44	162	0	0
Acetone	µg/L	0.356	10	50	33	175	0	0
Benzene	µg/L	0.074	10	50	64	139	0	0
Bromodichloromethane	µg/L	0.063	10	50	55	138	0	0
Bromoform	µg/L	0.486	10	50	51	126	0	0
Bromomethane	µg/L	0.216	10	50	67	126	0	0
Carbon disulfide	µg/L	0.543	10	50	19	165	0	0
Carbon tetrachloride	µg/L	0.467	10	50	19	134	0	0
Chlorobenzene	µg/L	0.034	10	50	65	135	0	0
Chloroethane	µg/L	0.196	10	50	66	140	0	0
Chloroform	µg/L	0.111	10	50	56	142	0	0
Chloromethane	µg/L	0.181	10	50	58	142	0	0
cis-1,2-Dichloroethene	µg/L	0.149	10	50	72	132	0	0
cis-1,3-Dichloropropene	µg/L	0.105	10	50	66	126	0	0
Cyclohexane	µg/L	0.087	10	50	33	152	0	0
Dibromochloromethane	µg/L	0.174	10	50	50	133	0	0
Dichlorodifluoromethane	µg/L	0.102	10	50	16	152	0	0
Ethylbenzene	µg/L	0.132	10	50	67	128	0	0
Isopropylbenzene	µg/L	0.108	10	50	58	131	0	0
Methyl Acetate	µg/L	0.24	10	50	45	175	0	0

					% RECOVERIES			
&Analyte	Units	MDL	PQL	SPK	Low	High	RPD	%DLimit
Methyl tert-butyl ether	µg/L	0.031	10	50	64	117	0	0
Methylcyclohexane	µg/L	1.27	10	50	22	171	0	0
Methylene chloride	µg/L	0.169	10	50	47	159	0	0
Styrene	µg/L	0.118	10	50	71	132	0	0
Tetrachloroethylene	µg/L	0.384	10	50	46	124	0	0
Toluene	µg/L	0.077	10	50	69	124	0	0
trans-1,2-Dichloroethene	µg/L	0.075	10	50	64	133	0	0
trans-1,3-Dichloropropene	µg/L	0.144	10	50	61	126	0	0
Trichloroethene	µg/L	0.08	10	50	43	150	0	0
Trichlorofluoromethane	µg/L	0.141	10	50	10	144	0	0
Vinyl chloride	µg/L	0.119	10	50	61	127	0	0
Xylene (total)	µg/L	0.065	10	150	70	133	0	0
1,4-Difluorobenzene	µg/L	0	10	50	50	200	0	0
Bromochloromethane	µg/L	0.074	10	50	50	200	0	0
Chlorobenzene-d5	µg/L	0	10	50	50	200	0	0
1,2-Dichloroethane-d4	µg/L	2.44	10	50	53	183	0	0
4-Bromofluorobenzene	µg/L	1.54	10	50	63	140	0	0
Toluene-d8	µg/L	1.78	10	50	60	135	0	0
1,2,3-Trichlorobenzene	µg/L	0.252	10	50	60	140	0	0
1,2-Dichloroethene (total)	µg/L		10	100	17	147	0	0
1,4-Dioxane	µg/L	28.259	250	1250	60	140	0	0
2-Chloroethylvinyl ether	µg/L	0.133	10	50	60	140	0	0
m,p-Xylene	µg/L	0.151	10	100	72	133	0	0
Naphthalene	µg/L	0.259	10	50	70	118	0	0
o-Xylene	µg/L	0.065	10	50	72	137	0	0
tert-Butyl Alcohol	µg/L	0.319	50	250	12	121	0	0
Total NAPL	µg/L	0	500	0	0	0	0	0

Notes:
Ug/l – micrograms per liter
MDL – Method Detection Limit
PQL – Practical Quantitation Limit
SPK – Spike
RPD – Relative Percent Difference
%D Limit – Percent Detection Limit

APPENDIX B

NYSDOH Soil Vapor Intrusion – Structure Sampling Building Questionnaire

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Steam radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

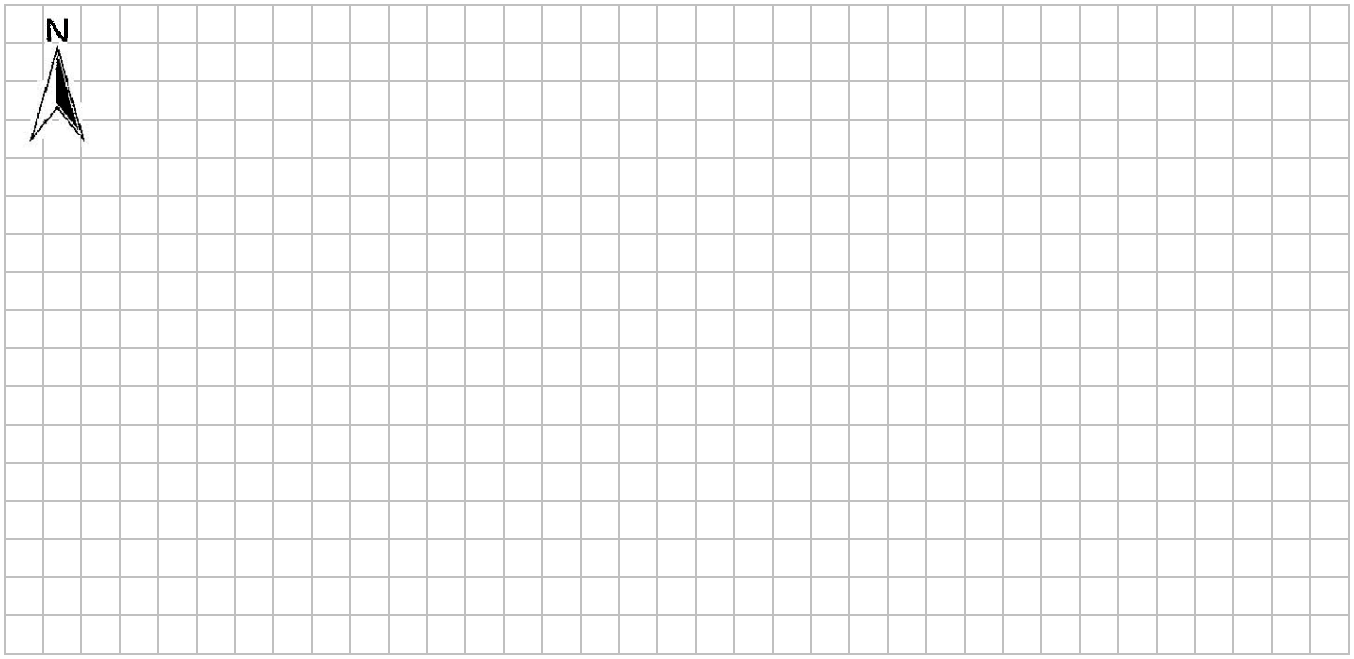
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

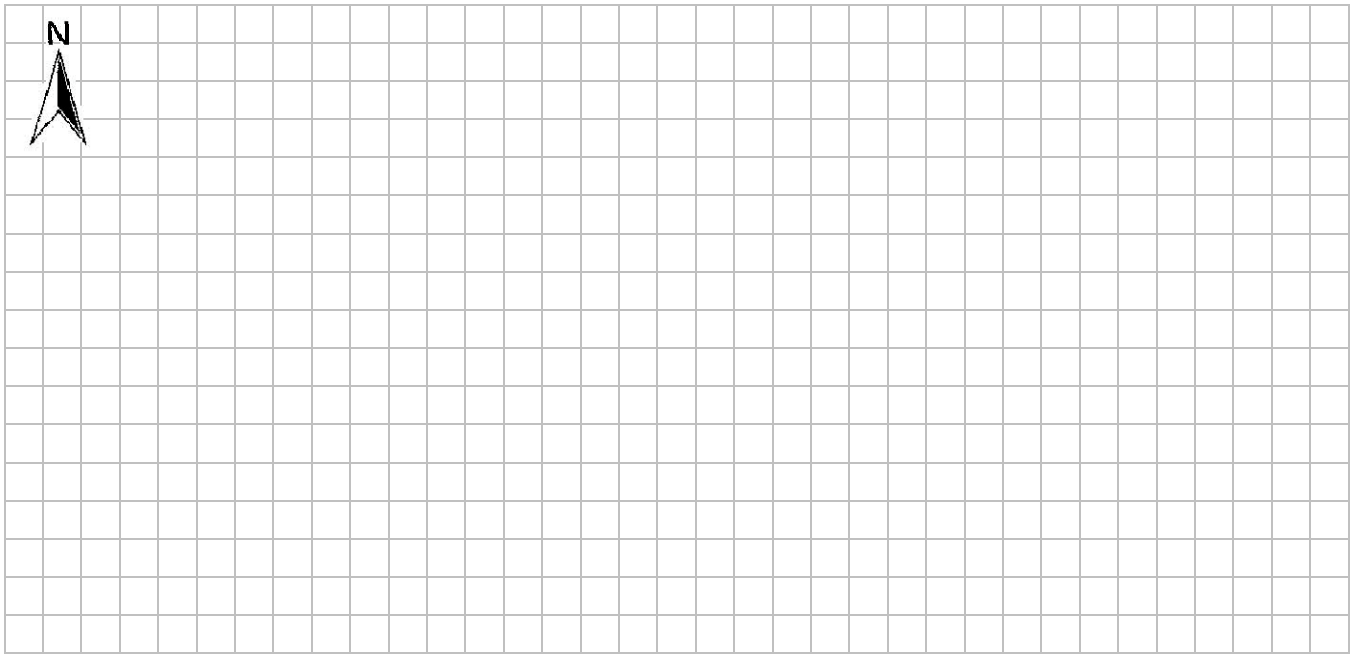
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



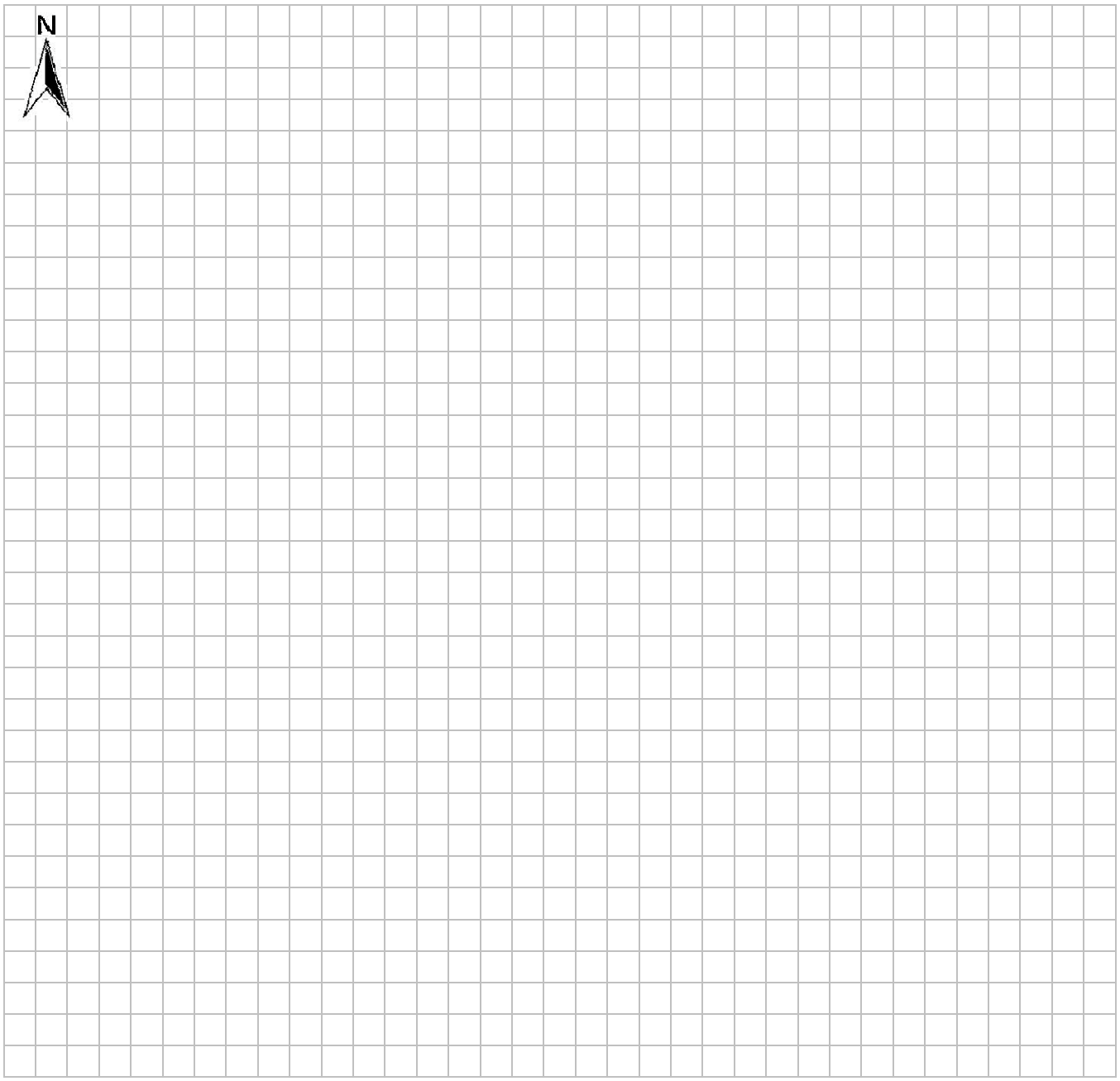
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX C

Health and Safety Plan

HEALTH AND SAFETY PLAN

Soil Sampling Event

1199 Sutter Avenue
Brooklyn, New York

Prepared for:
AAA Sutter Realty, LLC
153-157 Seventh Street
Garden City, New York 11530

Prepared By:

_____

EnviroTrac Ltd.
Michael Clark, Director Health and Safety

April 8, 2021

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared by EnviroTrac Ltd. (ET) to address the health and safety issues during soil sampling event which includes the collection of surbsurface soil samples via Geoprobe and beneath the basement slab via concrete corer at 1199 Sutter Avenue, Brooklyn, NY (the Site). The procedures in this HASP were developed in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard 29 CFR 1910.120 to protect site workers, the public, and the environment. The site map is provided as **Appendix A.**

2.0 OBJECTIVES

The objective of this HASP is to protect on-site worker health and safety during field activities at each site as well as the welfare of the public and the environment. The health and safety procedures in this plan have been established based on analysis of potential hazards on the site and the activities/tasks associated with the work in order to alleviate the risks associated with the work to be performed. These procedures have been designed to meet the following objectives:

1. Provide for the identification, recognition, evaluation, and control of health, safety, and environmental hazards;
2. Develop site specific procedures so personnel are not exposed to avoidable risks, accidents, or injuries in the performance of their duties;
3. Establish site specific monitoring and personal protection requirements to address exposure issues from potentially hazardous substances; and
4. Identify the roles and responsibilities of on-site and support personnel for the project.

3.0 SITE CHARACTERIZATION

1199-1221 Sutter Avenue, Brooklyn, NY (herein referred to as the Site) is located in a mixed residential / commercial area of Brooklyn. The Site is bounded by Sutter Ave. to the south, Chestnut St. to the east, residences to the north, and Crystal St. to the west.

Site Features: The Site occupies about half of a city block on the north side of Sutter Avenue. An asphalt parking lot covers the northern portion of the Site and a single-story building is located along the southern portion of the Site. The building is underlain with a basement segmented for each retail/office unit with utilities, storage and service rooms.

Current Zoning and Land Use: The Site is within an R5 (residential) zoned area. The Site is zoned C1-2 (commercial) as are the properties along the north side of a seven-block stretch of Sutter Avenue.

Past use of the Site: The structures on the Site were constructed in 1957 and were the original development on the property. Spanish American Dry Cleaners occupied the eastern-most unit from September 1988 to May 1995. The former location of the dry cleaner is presently occupied by a self-service laundromat.

Site Geology and Hydrogeology: The property is located within the Pavement and Buildings-Flatbush-Riverhead Series Soil Map Unit, which is described as anthropogenic urban fill overlying glacial outwash deposits and characterized as a sandy loam. The groundwater table is approximately 13 feet below grade and generally flows south. Groundwater is not utilized as a source of potable water at the Site or surrounding area.

The scope of work is outlined in the Subsurface Investigation Work Plan and consists of the installation two (2) soil borings in the rear parking lot to the north of the former dry cleaner/current laundromat unit, the removal of a portion of the basement slab in the former dry cleaner/current laundromat via concrete corer to collect soils samples, and a soil vapor intrusion (SVI) investigation conducted within the basements of the former dry cleaner/current laundromat and adjoining supermarket to the west. Forty-eight (48) hours prior to the work, the soil vapor extraction (SVE) system and sub-slab depressurization system (SSDS) operating at the Site will be shut down.

4.0 WORK DESCRIPTION

A total of two (2) soil borings will be installed to a maximum depth of 13 feet below grade in the rear parking lot. Prior to drilling utility markouts will be obtained to located the subsurface utilities at and surrounding the property. The first five (5) feet of soil will also be pre-cleared using a hand auger or post hole diggers to determine if subsurface utilities are present within the boring locations.

One (1) boring will be advanced within the basement of the former dry cleaner/current laundromat via concrete corer. Soil will be removed to approximately five (5) feet below grade using a hand auger.

Two (2) sub-slab soil vapor samples will be collected from beneath the basement of the former dry cleaner/current laundromat and adjoining supermarket by creating two (2) ¼-inch diameter hole through the concrete slab using a hammer drill. The hammer drill will either be battery operated or plugged into a nearby electrical outlet and connected through a GFI/GFCI per assured electrical grounding precedures. The sub-slab soil vapor samples will be collected by placing the tubing within the created holes, sealing the holes with non-volatile organic compound (VOC) modeling clay, purging the tubing of air, and then connecting the tubing to a 6L Summa Canisters. Indoor and outdoor air samples will also be collected from the basements and rear parking lot during this time. The sampling period is eight (8) hours.

Forty-eight (48) hours prior to the work, the soil vapor extraction (SVE) system and sub-slab depressurization system (SSDS) operating at the Site will be shut down. System shutdowns include flipping a switch within the remediation shed located in the rear parking lot and placing a ladder against the rear of the laundromat to reach and unplug the SSDS.

4.1 *PERSONNEL RESPONSIBILITIES*

Responsibilities of Personnel		
Position	**Job Description**	**Interactions**
Tracy Wall, PG (ET) **Project Manager**	Responsible for technical and administrative performance of the project. Supports Site Supervisor and is available to him at all times. Will visit the site periodically, or as necessary. Reports progress of project on a regular basis. Assigns key personnel, and identifies requests, secures, and monitors use of resources for project. Supervises all on-site personnel and subcontractors. Coordinates daily site-specific work efforts, and ensures all activities are in strict compliance with site-specific health and safety plan. Has authority to suspend all work that possesses any health and safety risk. Briefs subordinate technical personnel on task requirements. Identifies and resolves technical problems. Provides periodic review of project progress.	Is responsible to manage the project for EnviroTrac.
To Be Determined (ET) **Site Health & Safety Officer (SHSO)**	Assures compliance with HASP. Instructs site personnel in health and safety procedures through daily pre-work meetings. Performs any monitoring activities as required. Has authority to discontinue site operations if safety violations exist.	Reports directly to Project Manager. Works closely with Director, Health & Safety, and Site Supervisor.
Mr. Michael Clark (ET) **Director, Health & Safety (DHS)**	Develops, implements, and enforces the on-site safety project. Oversees all health and safety aspects of project, conducts periodic audits to ensure compliance. Available at all times to discuss project progress and health and safety related issues.	Reports directly to President/CEO of EnviroTrac. Works closely with Project Manager, Site Supervisor, and SHSO.

All site personnel and contract workers will have received the appropriate level of training necessary to perform applicable duties and comply with 29 CFR 1910.120 (aka: HAZWOPER). For this project, training requirements are listed in SECTION 6 – PERSONNEL TRAINING of this HASP.

This HASP will be available to all on-Site personnel, subcontractors, and visitors who access the work zone. Personnel responsible for HASP monitoring during on-site activities will be responsible for informing the field workers, subcontractors, and visitors of any changes in conditions and/or levels of protection required in the work zone.

4.2 ***Exposure Hazard Evaluation***

Contaminant(s) of Concern: Chlorinated Volatile Organic Compounds (CVOCs)

Soil

Soil samples were collected from the Site during the Phase II ESA, Supplemental Phase II ESA, Site Characterization, and Supplemental RIR. The soil sampling results showed that tetrachloroethene (PCE) and acetone were detected at concentrations that exceeded the 6 NYCRR Part 375 Subpart 375-6.8 Unrestricted Use Soil Cleanup Objectives (UUSCOs) in several borings located beneath the former dry cleaner and in the rear parking lot to the north of the former dry cleaner unit.

Groundwater

Groundwater samples were collected from the Site during the Phase II ESA, Supplemental Phase II ESA, IRM, Site Characterization, RIR, Supplemental RIR, and other groundwater sampling events. Groundwater samples were also collected from the adjoining properties to the south and east during the Site Characterization, RIR, and Supplemental RIR. The groundwater sampling results showed that PCE, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), acetone, and chloroform were detected at concentrations that exceeded the NYSDEC Class GA Ambient Water Quality Standards and Guidance Values (NYSDEC Groundwater Standards) in locations beneath the former dry cleaner, in the rear parking lot to the north of the former dry cleaner unit, to the south beneath the sidewalk along the northern and southern portions of Sutter Avenue, and on the adjoining property to the south, across Sutter Avenue. The results of the investigations show that groundwater contamination exists beneath the Site and has migrated to the south, across Sutter Avenue. The groundwater concentrations detected in the wells across the street on the south side of Sutter Avenue were significantly lower than the concentrations detected in the wells and borings at the Site. The most recent quarterly groundwater monitoring event occurred in February 2021. The maximum PCE detection was 34.5 micrograms per liter (ug/L) in well MW-10S.

Soil Vapor Intrusion

Sub-slab soil vapor samples, soil gas samples, indoor air samples, and outdoor air samples were collected from the Site and in the vicinity of adjoining properties to the north, south, and east during the Site Characterization and RIR. The results showed that vapors emanating from soil and groundwater contaminated with solvents located beneath the Site were infiltrating into the former dry cleaner unit and had the potential to infiltrate into the adjacent supermarket unit. The results showed that no soil vapor intrusion (SVI) impacts were present in the other units within the Site building or in the vicinity of the adjoining properties to the north, south, and east.

Potential routes by which workers could be exposed generally include: inhalation, ingestion, dermal contact, and injection. The following control measures will be used alleviate exposure by routes of entry:

Control of Potential Exposure by Route of Entry	
Route of Entry	**Control of Potential Exposure**
INHALATION	Tasks associated with this project have a reasonable risk of exposure to inhalation hazards at or near published exposure limits and therefore, respiratory protection is not required during any task associated with this work. Dust generated from concrete during cutting, drilling, etc. is to be controlled per ET's Silica Dust Control Program by using wet methods while conducted any dust generating activities. If wet methods cannot be used, or if dust is not controlled using wet methods, then workers will wera appropriate respiratory protection according to ET's Silica Dust Control Program. If there is a change in scope of work or environmental conditions, the SHSO will stop work and the new conditions will be evaluated for potential inhalation hazards. Work will not proceed until the new conditions are assessed and workers health is addressed. COVID-19 is an infectious disease spread mainly through respired droplets from infected people. The SARS-CoV-2 virus (that causes Corona Virus Disease 2019 aka COVID-19) is a highly infectious disease that can cause illness ranging from mild to severe and, in some cases, can be fatal. To control the spread of the virus, follow the precautions outlined in **APPENDIX I** - INFECTIOUS DISEASE PREPAREDNESS AND RESPONSE PLAN.
INGESTION	Tasks associated with this project have a risk of exposure to chemicals or hazardous substances that pose mild to moderate toxicity if ingested. To control exposure, the following precautions will be followed by all site workers and visitors: • **Follow good hygiene practices - wash hands, face, and exposed skin with soap and water after work and prior to eating, drinking, smoking, or applying cosmetics or lip balm, or immediately after contact with chemicals or hazardous substances. Do not touch mouth, nose, or eyes with unwashed hands or with used gloves.** • **Chemical-resistant gloves (e.g. nitrile, neoprene, or butyl rubber gloves) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that involve direct contact with chemicals or hazardous substances.**
DERMAL CONTACT	Tasks associated with this project have a risk of exposure to chemicals or hazardous substances that pose mild to moderate toxicity through dermal contact, including contact with eyes. To control exposure, the following precautions will be followed by all site workers and visitors: • **Follow good hygiene practices - wash hands, face, and exposed skin with soap and water after work and prior to eating, drinking, smoking, or applying cosmetics or lip balm, or immediately after contact with chemicals or hazardous substances. Do not touch mouth, nose, or eyes with unwashed hands or with used gloves.** • **Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone.** • **Chemical-resistant gloves (e.g., nitrile) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that involve direct contact**

	with chemicals or hazardous substances. • **Safety shoes/boots that comply with ANSI Z41, ASTM F-2412, or ASTM F-2413 are to be worn when there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole.** • **Long pants and sleeved shirts are required to be worn at all times in the work zone.**
INJECTION	Tasks associated with this project have a risk of exposure to chemicals, hazardous substances, and biological hazards that pose mild to moderate toxicity through injection. Injection is the puncturing or abrasion of the skin allowing toxins to enter the body. To control exposure, the following precautions will be followed by all site workers and visitors: • **Abrasive-resistant or cut-resistant gloves (i.e., leather, Mechanix®, Kevlar-type, etc.) are to be worn while working with tools or manipulating objects that can cause cuts or abrasions to the hands.** • **Chemical-resistant gloves (e.g., nitrile) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that could result in direct contact with chemicals or hazardous substances.** • **Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone.** • **Long pants and sleeved shirt are required to be worn at all times in the work zone.** • **Safety shoes/boots that comply with ANSI Z41, ASTM F-2412, or ASTM F-2413 are to be worn when there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole.**

4.3 *Site / Operational Hazard Evaluation*

Precautions must be taken to prevent injuries and exposures to the following potential hazards and implement control measure to reduce any potential risks identified on the next table.

Potential Site Hazards and Risk Characterization		
Hazards	**Risk Characterizations**	**Control Measures**
SLIP/TRIP/FALL	Potential wet, or slippery conditions due to weather, on-site spills, on-site water, and drainage/runoff.	**Inspect/be aware of ground conditions and wet or slippery conditions.** **Use PPE to alleviate hazards, good boots, laced and tied; take small steps in slippery conditions, install handrails or use walking devices, like hiking poles.** **Use salt, calcium chloride, sand, or other material to alleviate slippery conditions and/or to melt snow/ice.**

	Potential slips, trips, and falls may result due to the proposed equipment and activities at the site like: drilling / excavation, well installation, system installation, loading/unloading, traffic control, etc.	**Clear trip hazards, when possible.** **Use good housekeeping practices and maintain the work zone free of debris and have equipment, supplies, and tools organized and out of main travel paths.** **Focus on path of travel and keep solid footing. Install handrails, steps, ramps, etc. to alleviate trip or fall hazards.**
INJURY TO BACK	Moving / lifting / carrying supplies, equipment, and materials around the work zone. Performing manual equipment operations such as shoveling, sweeping, raking, pushing (such as a wheel barrow), hand auguring, etc. Removal of well covers, manway covers, or manholes. Lifting and maneuvering cones and barriers to establish Work Zone Protection.	**Use proper lifting techniques: lift with legs, not back; keep load close to the body; do not twist torso, turn by moving your feet.** **Use proper bending techniques: bend at the knees, straighten back, lift and pull using legs, and do not use back or shoulders to lift up or pull.** **Use proper manual equipment techniques for shoveling, raking, sweeping: turn by moving your feet, do not twist torso, use legs not back** **take breaks as needed to alleviate muscle and joint strain.** **Get help or use mechanical lifting equipment when loads exceed 50 lbs or as needed.**
INJURY TO FOOT/FEET	Injury from moving or dropping of equipment, supplies, drums, tanks, and buckets onto foot/feet. Feet being run over by vehicles or being crushed from lowering equipment like a tailgate lift or equipment footing.	**Wear ANSI/ASTM compliant safety boots with steel, composite, or aluminum toes while performing any tasks on site.** **Properly secure equipment and objects. Anticipate and recognize any potential conditions which may cause the dropping of equipment (i.e., ground conditions and wet, icy, or slippery conditions).** **Ensure proper clearance when lowering outriggers on equipment.**

INJURY TO HANDS	Sharps including glass, pieces of metal, wood, plastic, etc. during clean up and debris removal process. Potential pinch points/sharp edges during equipment handling, dropping of equipment on hands. Exposure to hazardous substances from the material stored in the tanks or possible contamination in soil/ground water.	**Debris should not be handled, use shovels, dust pans, etc., to pick up debris. If debris is required to be handled, use cut-resistant gloves (e.g., Kevlar).** **Abrasive-resistant or cut-resistant gloves (e.g., leather, Kevlar, etc.) are to be worn while working with tools, equipment, or manipulating objects that can cause cuts or abrasions to the hands.** **Wear chemical-resistant gloves (e.g. nitrile, neoprene, or butyl rubber gloves) during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that involve direct contact with chemicals or hazardous substances.**
INJURY TO HEAD AND EYES	Potential of being struck by overhead equipment such as drill rigs, or other equipment, material, and supplies around work site. Potential projectiles from equipment or surrounding environmental and remediation chemical spills during the proposed monitoring/sampling/injection activities. Potential of being sprayed or splashed in eyes or face while using liquid chemicals under pressure, such as subsurface injection of sodium permanganate. Potential of projectiles impacting face and eyes during preclearing of boreholes.	**Wear a hard hat in compliance with ET's Hard Hat Policy while in the Work Zone (certified ANSI Z89.1)** **Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone.** **Full faceshield attached to the hard hat <u>in addition</u> to safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn while using airknife for preclearing, working with liquid chemicals, or similar activities that require the protection offered by a full faceshield.**

INJURY TO HEARING	Potential noise due to operating equipment during the proposed activities will not exceed the following levels at the designated durations: Duration — Decibel Levels. (dB) (hrs) 8 — 90 6 — 92 4 — 95 3 — 97 2 — 100 1.5 — 102 1 — 105 0.5 — 110 <0.25 — 115	**Wear appropriate ear protection, such as:** **Ear Plugs:** **3M™ E-A-R™ Push-Ins™ corded foam earplugs (NRR 28 dB)** **Ear Muffs:** **MSA Cap Mounted Ear Muff Model: 10087422 (NRR 28)**
WORK IN HOT WEATHER CONDITIONS	Potential heat stress due to the warmer weather conditions (generally) late Spring through the Summer and into late Fall. Indoor and enclosed environments can produce heat stress related to activity, temperature, and lack of ventilation. Working in protective suites including Tyvek, Saranex, FRC, and Level A and Level B PPE. Chemical protective suites will attribute to heat stress in any weather and temperature conditions.	**Review weather forecast prior to going to site and plan accordingly.** **Use appropriate hot weather work apparel.** **Have fluids available on-site and ensure employees are hydrated, take frequent breaks in shade or air conditioned space, accordingly.** **Review OSHA Quick Card for: protecting Workers from Heat Stress.** **Follow requirements or EnviroTrac's Heat/Cold Stress Program.**

WORK IN COLD WEATHER CONDITIONS	Potential cold stress due to the cooler weather conditions (generally) late Fall through the Winter and into Spring. NOTE: Contact with water, being wet, and wet conditions (including rain) will exacerbate cold.	**Review weather forecast prior to going to site and plan accordingly.** **Cold conditions effect reaction time and decision making.** **Use appropriate protection from cold weather conditions including insulated gloves, neck and head coverings, insulated socks, and layering of clothing. Take breaks in warm areas as necessary.** **Protect from water and other wet conditions that can exacerbate cold conditions. Employees are not work in wet clothing.** **Review OSHA Quick Card for: protecting workers from Cold Stress.** **Follow requirements or EnviroTrac's Heat/Cold Stress Program.**
WORK FROM LADDERS	Potential to fall from ladder and injury self and others.	**Make sure ladders are in good working order, inspect for cracks or corrosion. Do not use if found defective, mark and take out of service.** **Use non-conductive ladders near electrical wires.** **Use ladders with secure safety feet. Pitch ladders at a 4:1 Ratio. Secure ladders whenever possible. Use buddy system. Keep other people a safe distance from ladder.** **Use 3-points of contact when going up or down a ladder. Stay within working limits of ladder, at least 3-rungs from top and do not reach further than the center of the breast bone beyond the side rail.** **Do not carry items up the ladder, raise items using a rope.**

PRE-CLEARING BOREHOLE	Potential to be struck-by debris from air stream Body part can be injured if contacts vacuum from vacuum extractor. Slips, trips from hoses and equipment, fall into bore hole.	**Use face shield attached to hardhat along with safety glasses when preclearing.** **Place a debris catcher, such as a traffic cone, over borehole while pre-clearing to alleviate amount of debris from hole** **Use good housekeeping and keep hoses, equipment, and materials in order, mark location of bore hole and cover when not actively clearing.** **Do not let intake hose of vacuum extractor come in contact with body part. Shut off equipment when not actively clearing hole.**
DRILLING **DIRECT PUSH TECHNOLOGY (GeoProbe)**	Potential of injury from rotating augers or being struck-by or crushed by the drill rig; potential of entanglement or struck by drill rig cables; being struck by materials and supplies falling off, or a fall from drill rig.	**Operators of equipment are to be trained and qualified, drillers are required to be licensed with a copy of the license available on site.** **Equipment is to be inspected prior to operation, and must be in satisfactory working order or removed from site.** **A safety zone is to be established around the ground disturbance operation. Equipment is to be shut off and locked out prior to approaching augers to remove cuttings, inspection, maintenance, repair, or for any reason** **Secure equipment and supplies that have the potential of falling or rolling, follow good housekeeping to prevent trip and slip hazards.** **Do not climb on equipment with feet over 6 feet above the ground without implementing fall protection.** **Follow ET's Ground Disturbance Practice.**

HAMMER DRILL USE	Potential injury from moving or vibrating equipment. Damage to hearing from excess noise generated. Potential injury from being struck by hammer drill. Possible injury or fatigue from vibration during use of hammer drill.	**Trained and experienced employees are to operate the hammer drill. Keep hands and feet clear of moving parts. Take breaks and/or alternate operators to reduce fatigue.** **Wear hearing protection while operating hammer drill. Other people are to maintain their distance from operations to lessen noise exposure.** **Maintain good grip on tool. Ensure body parts are not in way when releasing equipment.** **Take breaks when experiencing muscle fatigue. Switch workers, if possible to avoid fatigue.**
EXPOSURE TO HAZARDOUS SUBSTANCES (i.e., CARBON MONOXIDE)	Exposure to carbon monoxide (CO) from the exhaust of fuel burning equipment in enclosed space. An enclosed space is any place where natural air movement is limited and may allow CO concentrations to elevate.	**When fuel burning equipment is used in an enclosed space, the concentration of CO in air is to be continuously measured using a direct reading instrument (i.e., 5-Gas Analyzer, such as MiniRae)** **Ventilate the area, if possible, using natural ventilation or bring in fresh air using fans or blowers.** **If CO levels meets or exceeds 25 PPM, work is to STOP, equipment is to be turned off, and employees are to leave the work area until CO levels decrease to below 25 PPM.** **Work is not to proceed until the area is ventilated to allow working conditions below 25 PPM CO.**

SILICA DUST EXPOSURE	Potential inhalation hazard due to excessing exposure to silica dust during: - Cutting, drilling, or grinding concrete, masonry, block, or stone - Breaking or crushing concrete, masonry, block, or stone (includes jack hammering) - Moving or working with sandy soils or sand - Milling concrete or flooring composed of silica	**Follow ET's practice for Controlling Exposure to Crystalline Silica.** **Comply with the requirements in: Table 1: Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica** **When practicable, use wet methods.** **Use water spray feature of equipment that is equipped with the feature.** **Do not dry sweep or dry brush, vacuum (except for HEPA filtered vacuums), or use compressed air.** **Wear proper respiratory protection as required.**

5.0 SITE CONTROL

5.1 *Site Work Zones*

Due to the low exposure risk of the contaminants of concern, an Exclusion Zone, Contaminate Reduction Zone, or Support Zone will not be required for this project. If site conditions or scope of work changes, work will be stopped and the need to establish zones will be reevaluated.

5.2 *Spill Containment and Control Procedures*

The following procedures should be followed by on-site personnel in the event of a release of vehicle or equipment fluids:

1. Use proper PPE for handling potential chemical exposure including: safety glasses with side shields, nitrile gloves, sleeved shirts, full-length pants, and safety shoes;
2. Control sensitive receptors such as storm drains, surface water, and soil;
3. Prevent further flow of the material;
4. Contain the discharged material;
5. Vacuum, sweep up, or shovel the material and place into a suitable DOT disposal container for isolation for disposal;
6. Thoroughly wash the area after a spill or leak clean-up;
7. Provide adequate ventilation;

8. Keep combustibles away from the spilled material;
9. In case of large spills, follow all facility emergency response procedures.

5.3 *Fire Prevention*

To protect and prevent against accidental fire hazards, safe work practices will be followed:

1. Smoking is prohibited on site and in ET vehicles.
2. In the event of fire, 1) notify all site occupants of fire and to evacuate area, 2) gather at established primary or secondary muster point, and 3) contact emergency services.
3. At least one (1) ABC/BC rated fire extinguisher (minimum 10 lbs) will be available on site and is to be used according to manufacturer's specifications and guidelines. Only trained personnel are to use an extinguisher and only on incipient fires.
4. Follow ET's Practice for *Hot Works* procedures when using primary or secondary source ignition equipment. A PID will be used to detect flammable atmospheres. If flammable atmospheres are detected at or above 10% of the LEL, work will stop and all sources of ignition will be contained until the source can be determined and eliminated.
5. Keep flammable liquids in closed containers and away from any possible source of ignition (electric service boxes, remediation enclosures, vehicle exhausts).
6. Keep site clean of debris.

5.4 *Control of Hazardous Energy and Underground Facility Identification*

Follow the requirements listed for the Control of Hazardous Energy, including procedures for Lockout/Tagout, in the ET Health & Safety Manual, section 27 – *Control of Hazardous Energy*.

Prior to any ground disturbance activities, both private and public utility mark outs will be conducted and respected during activities. Soft dig techniques will be used prior to any drilling or excavation activities and follow procedures in the ET Health & Safety Manual, section 28 – *Ground Disturbance* Program.

5.5 *Emergency Notification*

In the event of a personal injury, motor vehicle accident, or other incident, the Site Safety Officer will follow ET's Personal Injury Accident Procedures and/or Motor Vehicle Accident Procedures listed in **Appendix D**. Contact and emergency numbers are also located in **Appendix E**.

Directions to the nearest Hospital and the nearest ET designated contract medical facility are located in **Appendix J**, the last appendix of the HASP. Incidents are to be reported on the ET Incident Reporting

form located in **Appendix E**.

5.6 *Site Communications*

Verbal communication will be the primary means of communication. Cell phones and other communications devices will be used as necessary.

5.7 *Site Security*

The area is monitored and non-essential personnel will not be allowed in the areas of remediation activities. All equipment, materials, and supplies left overnight will be secured to prevent slip/trip/fall hazards. Facility contact and emergency numbers are also located in **Appendix D**.

5.8 *Traffic Control and Work Zone Protection*

Employees exposed to vehicular traffic on or near active traffic patterns will wear Class 2 high-visibility attire. Traffic at the work zone is to be controlled using proper Work Zone Protection according to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) and ET Work Zone Protection Practice. Traffic safety cones will be installed during all site activities to control and designate the work exclusion zone on the site. It is the responsibility of all on site personnel to ensure proper safety measures are implemented or adjusted during site activities for worker safety.

5.9 *Site Illumination*

Temporary lighting will be supplied if facility lighting is not sufficient or not available. Temporary lighting is to be connected through GFCI as per ET;s Assured Electrical Grounding practice. Flashlights are to be used for illumination as needed. Workers are not to perform tasks in the dark or insufficient lighting.

5.10 *Noise Control*

Follow the requirements listed for the noise control and hearing protection in the ET Health & Safety Manual, section 20 – *Hearing Protection Program*.

5.11 *Assured Electrical Grounding*

Any required electrical power connections will be equipped with Ground Fault Circuit Interrupters (GFI/GFCI) at the source of the power. Electrical cords are to be inspected prior to use and not used if the insulation has been compromised or if wires are exposed, if the cord has been kinked, or if the grounding plug is missing.

5.12 *Lightning Safety Plan*

- Establish a location during Daily Tailgate Safety meeting where people will go in the event lightning or thunder storms are predicted or possible;
- Use the 30/30 rule – suspend activities when "flash to bang" (lightning to thunder) is within 30

seconds , and resume work 30 minutes after the last flash or bang; and

- Follow the plan without exception.

5.13 *General Work Rules*

To protect against the occurrence of accidents and dangerous situations, as well as to minimize the potential for emergency events, all on-site personnel shall:

1. Read and sign this HASP prior to beginning of all on-site activities. The HASP will be reviewed periodically by all personnel conducting field activities and visitors to the work zone.
2. Conduct field work only be during daylight hours unless supplemental lighting is provided.
3. Do not eat, drink, or smoke in the work zone.
4. Be knowledgeable in the use of first-aid equipment.
5. Maintain sufficient quantities of absorbent/spill collection materials to address a spill or release that may occur during work.

To minimize the possibility of injuries, the following general precautions will be taken:

1. All hand and power tools will be inspected prior to use and maintained in a safe condition.
2. Safety guards will be kept in place during use.
3. Power tools will be double-insulated and all electric cords will be connected through GFI protective circuitry.
4. Walkways will be kept clear of equipment, supplies, excavated material, or other obstructions.
5. Proper work gloves will be provided and used, as required.
6. Hard hats are to be worn if required by the location or activity (refer to ET's Hardhat Policy).
7. Sturdy, enclosed work or safety shoes/boots are to be worn, as required by the activity.
8. Employees exposed to vehicular traffic on or near public roads will wear high-visibility attire. Traffic at the work zone is to be controlled using proper Work Zone Protection according to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD).
9. Employees will observe proper lifting techniques and obey sensible lifting limits and get assistance when required.

5.14 *Health and Safety Responsibilities*

All Project Personnel are responsible to:

1. Take all reasonable precautions to prevent injury to themselves, to their fellow employees, and to

the public.

2. Implement the requirements of this HASP and report any deviations from the procedures listed or the conditions described.

3. Perform only those tasks that they believe can be done safely and immediately report any accidents, unsafe conditions, or near misses according to ET's On The Job Accident Procedures and complete the required ET Incident Reporting Forms.

4. **Stop Work** whenever the risk associated with the work is not clearly understood, established, or controlled. Work will not commence until the conditions that caused the Stop Work intervention have been addressed, corrected, or resolved. Any and all workers on the site have the authority and responsibility to initiate a stop work intervention.

5.15 ***Decontamination***

Follow the requirements listed for the decontamination of personnel and equipment in the ET Health & Safety Manual, section 31 – *Decontamination.*

6.0 PERSONNEL TRAINING

Field team personnel associated with activities that have a potential for exposure to hazardous substances are required to participate in a health and safety training program that complies with the OSHA standard 29 CFR 1910.120 (aka: HazWOPER) and 1910.1200 (aka: HazCom). This program instructs employees on general health and safety principles and procedures, proper operation of monitoring instruments, and use of personnel protective equipment.

In addition, field team personnel must undergo site-specific training prior to the start-up of any given project or task. As activities change at a particular work site, related training must be provided as necessary. The site-specific training will address potential hazards and associated risks, site operating procedures, emergency response and site control methods to be employed. The following training is required to perform tasks at this site:

TRAINING REQUIREMENTS FOR SITE TASKS

Task	Training Required
General site operations	• OSHA standard 29 CFR 1910.120 (aka: HAZWOPER) • OSHA standard 29 CFR 1910.1200 (aka: HazCom) • First Aid/CPR (at least one (1) worker on-site must be certified in First Aid/CPR) • Requirements of ET's Health and Safety Program and this HASP

	• API WorkSafe certification
Operator of drilling equipment	• The operator of drilling equipment is required to be a Licensed Driller and have proof of license available for inspection at the worksite.
Operator of other heavy equipment	• Training on operations of equipment per manufacturers specifications.
Operation of power equipment including concrete saw, hammer drill, etc.	• Operators will be trained and/or experienced with the operation of power tool use, the hazards, controls, PPE, and use of assured electrical grounding (GFCI). Inexperienced or untrained employees are not to operate power tools.

6.1 *Personal Protective Equipment*

Based on available data, it is anticipated that all field activities will be performed at **Level D protection**. Personal protection at Level D will consist of the following based on task performed:

PERSONAL PROTECTIVE EQUIPMENT BY TASK	
Task	**PPE**
All site Tasks	• **Hard hats** are to be worn, if required by the location or activity per to ET's Hardhat Policy. • **Safety glasses with side shields** (ANSI Z-87 + certified) or full-face safety shields are to be worn at all times while on-site. • **Proper gloves** will be provided and used, as required. Abrasion resistant gloves (i.e., leather or similar) and chemical resistant, gauntlet style gloves (i.e., nitrile/neoprene/butyl rubber) will be used as tasks require. • **Safety boots** (ANSI Z-41, ASTM F-249, or ASTM F-2413 compliant) are to be worn, as required by the activity, laced and tied. • **High-visibility attire**, i.e., Class 2, Safety Vests, are to be worn when employees are exposed to vehicular traffic. • **Long pants and sleeved shirts** will be worn while on site. • **Chemical protective outerwear (Tyvek)** as needed to protect clothing from being over soiled and contamination in soil and dirt, and exposure to sodium permanganate.

6.2 *First-Aid Supplies and Safety Equipment*

First-Aid supplies will be available to all personnel on site including an eyewash kit/station. All first aid supplies are to be periodically inspected for sufficient quantities and expiration date and restocked accordingly. At least one (1) ABC/BC rated fire extinguisher (minimum 10 lbs) will be available on site and is to be used according to manufacturer's specifications and guidelines. Only trained personnel are to use an extinguisher and only on incipient fires.

6.3 *Heat Stress / Cold Stress Prevention*

Follow the requirements listed for heat stress and/or cold stress procedures, as climate conditions require, in the ET Health & Safety Manual, section 25 – *Heat Stress / Cold Stress Policy*. OSHA Quick Cards for Heat Stress and Cold Stress are included in **Appendix F**.

7.0 MEDICAL SURVEILLANCE

A medical surveillance program will be instituted for those employees who:

1. are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limit without regard to the use of respirators, for 30 days or more a year;
2. wear a respirator for 30 days or more a year or as required by 29 CFR 1910.134 (OSHA Respiratory Protection Standard);
3. are injured, become ill, or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation; or
4. are members of HAZMAT teams.

Employees will be medially evaluated and qualified prior to being fit tested for a respirator or prior to being required to enter a confined space. Records will be retained according to legal requirements.

Employees exposed to noise thresholds equal or exceeding an 8-hour time-weighted average of 85 decibels will participate in an audiometric testing program.

All medical and monitoring records will be retained according to legal requirements and available to employees upon request to the Director of Health and Safety.

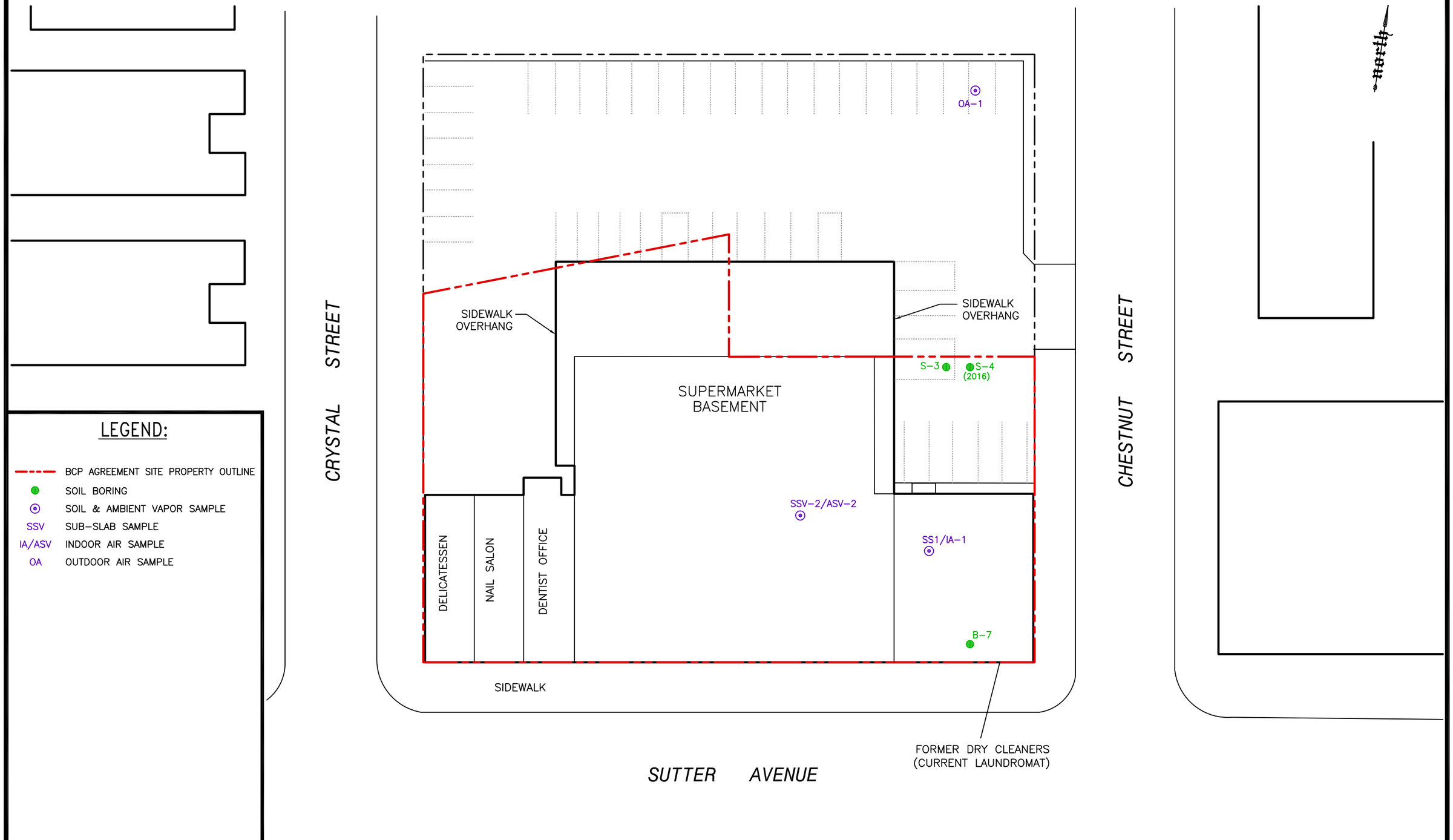
8.0 CONFINED SPACE ENTRY PROCEDURES

Entry into a confined space is beyond the scope of this project. No employees are to enter a confined space to perform any task associated with this work.

If Confined Space Entry is required, a confined entry safety plan will be developed and a CSE Permit will be issued prior to allowing employees to enter a confined space.

APPENDIX A

Site Map



EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

0 15 30
SCALE IN FEET

DATE: 4/8/2021

REVISED BY: BS

1199 SUTTER AVENUE
BROOKLYN, NEW YORK

PROPOSED SOIL BORING LOCATIONS AND PROPOSED SUB-SLAB SOIL VAPOR, INDOOR AIR, AND OUTDOOR AIR SAMPLING LOCATIONS

FIGURE # 3

APPENDIX B

EnviroTrac's Practice

Ground Disturbance Program

29 GROUND DISTURBANCE PROGRAM

29.1 Purpose

To clearly specify under what conditions the employees of EnviroTrac may conduct operations where any indentation, interruption, intrusion, excavation, construction, or other activity results in the penetration of the ground at any depth.

This document also covers the hazards, procedures, and training associated with the entering of trenches and excavations by employees of EnviroTrac, as defined under 29 CFR 1926 Subpart P. It is intended to provide the guidelines that protect employees from the hazards of entrapment and engulfment when working around trenches and excavations.

29.2 Identification of Underground Installations

It is the policy of EnviroTrac that prior to any operations that disturb more than one foot below surface grade that all underground installations are to be identified. Before any ground disturbance activities, available records will be referenced and operator personnel and/or others that may be familiar with the property will be contacted to determine the existence and location of underground installations such as facilities/tanks/pipelines and utilities in the vicinity of the work area to verify, as far as is reasonable and practicable, the existence of known underground installations.

Areas where hand tools are used for ground disturbance operations, such as shovels, hand augers, etc., will be visually assessed for possible underground installations, utilities, and/or facilities. If underground installations are identified as having hazardous energy, such as electrical power, hydraulic pressure, chemical pipelines, etc., then procedures to control that hazardous energy will be instituted as required in Section 26 – Control of Hazardous Energy Sources (Lockout / Tagout).

Ground disturbance operations that use mechanical equipment pose a greater threat to underground installations. Prior to ground disturbance operations using mechanical equipment, local requirements for identification of underground utilities will be followed, such as notifying a “One Call Center”, “Call Before Your Dig”, etc. or engaging a third-party utility mark out contractor. The Regional Safety Coordinator will maintain current underground utility identification requirements for the regional operations.

<u>Exposing Underground Installations</u>

All underground installations within the dig zone or a drill zone will be hand exposed or vacuum excavated (pothole) to sufficiently verify location, line size, and alignment of underground installations. Care must be taken during the process of exposing underground installations; damage could occur if cautious work procedures are not followed. The process to expose any installations is to be selected based on site conditions/risks.

The pothole(s) will be made large enough and suitably spaced to accurately determine location, depth, orientation, and facility size. The bottom and sides of the pothole are to be adequately illuminated to determine the presence or absence of underground facilities. Visually confirm the presence or absence of underground facilities continuously during potholing. Use a commercial jacking tool or A-frame and winch to extract a hand auger if the force required to extract the tool exceeds personal 4ing limits (50 pounds).

Boreholes will be cleared to a minimum of 5 feet and 110 percent of the mechanical drilling tool diameter, or to the client's/facility's requirements, if different. If a boring is located within 2 feet of an underground facility, a protective casing will be placed in the cleared boring prior to mechanical drilling to guide the drilling tool instead of exposing the underground facility.

29.3 Overhead Utilities and other Overhead Hazards

Overhead utilities pose several hazards including electrical shock or burn, electrical arc or blast, and disruption of services provided by the overhead utilities. All work sites will be assessed for hazards associated with the overhead utilities including all means of access to and egress from the site.

In addition, other overhead and low clearance facilities and structures will be evaluated and assessed for hazards associated with the type of work being performed including all means of access to and egress from the site.

For work areas with overhead utilities, all work performed by EnviroTrac personnel or contractors will not violate the **Minimum Approach Distances** specified below:

- For voltages to ground of 50kV or below, the minimum approach distance is 10 feet;
- For voltages to ground over 50kV - the minimum approach distance is 10 feet, plus 4 inches for every 10kV over 50kV.

The specific voltage of a line cannot be visually determined strictly by the placement of the line on the utility pole. Contact the local power company to determine specific voltages of power lines if the scope of work or access to or egress from the site could affect overhead utilities.

If Minimum Approach Distances cannot be maintained during the scope of the work, the lines are to be de-energized by the utility company who will need to certify, in writing, that the lines have been de-energized. To prevent damage, provisions will have to be made so de-energized lines are not contacted.

If the scope of work will bring workers or equipment near the Minimum Approach Distances, these areas will be demarcated and/or cordoned off to prevent crossing into unsafe areas. Spotters will be used if demarcation is not enough to prevent encroachment into these areas. The sole responsibility of the spotter will be to warn workers and/or equipment operators that the Minimum Approach Distances may be encroached.

Equipment and vehicles will not be parked overnight or refueled under energized power lines.

In the event of a downed utility line (power or communication), a "circle of safety" will be maintained at a minimum of a 30-foot radius from the downed line. Contact emergency services (911) to report the downed line. Communication lines can become energized when dislodged from the pole or if in contact with power lines.

Other Overhead Hazards

Communication Lines:

Communications lines (generally the lines closest to the ground) usually do not transmit hazardous voltage under normal operating conditions. These lines can cause obstructions that may dislodge loads and/or equipment if contacted. In addition, the company may incur liability for disruption of service if these lines are broken.

Guy Wire:

Guy lines are used to support utility poles and are composed of braded steel cables generally under tension. These lines are not energized under normal operating conditions but may cause damage to equipment or personal injury if contacted.

Demark all Guy Lines in work areas and access to or egress from the site. Spotters will be used if demarcation is not enough to prevent contact with Guy Lines.

Building Overhang, Canopies, Bridges, Overpasses, Signs, etc.

In addition to overhead utilities, the project is to be assessed for other overhead hazards that may interfere with the scope of work. These hazards include canopies, building overhang, signs, bridges, overpass and other hazards. The Project Manager will assess or have the work site assessed for these overhead hazards and include provisions in the work plan to prevent contact, damage, or encroachment of safe Minimum Approach Distances.

29.4 Traffic Control in Construction Sites

Limited space in a construction site increases the potential for worker injury and property damage from vehicle accidents and collisions. To alleviate this, construction sites are to be designed to facilitate vehicle flow and to limit backing.

When vehicles are required to back, a spotter should be used to clear a path of travel. Construction vehicles are to be equipped with a backup beeper. Workers are to wear high visibility apparel (i.e., safety vests), either Class I, II, or III depending on the speed limit of the work site and adjacent traffic areas.

The swing radius of construction equipment is to be demarked, so workers are aware of the area and do not enter while equipment is operating. Workers will seek and receive acknowledgement from equipment operators prior to entering the swing radius. Equipment operators will stop operations when workers or equipment enters the swing area.

Operations adjacent to an active traffic area will follow the requirements of EnviroTrac's Work Zone Protection program and the requirements of the USDOT Uniform Traffic Control Manual.

29.5 Environmental Drilling

Work Zone Designation

A Work Zone will be established and controlled around environmental drilling activities that allow only authorized personnel access to the zone. The driller will *Stop Work* when an unauthorized person enters the drilling zone. Follow the procedures listed in the ET Stop Work Practice. The current version of the practice is located on the Safety Portal.

Where open auger operations are used, the driller will establish additional controls such as risk-assessed procedures, signals, an area guard, or other effective means to verify that personnel are clear

of the auger any time it is rotating.

Inspection of Drilling Equipment
The driller will inspect the drilling equipment daily or before each new setup by using an inspection checklist. The inspection will verify that the equipment is in good working order; pressurized hoses are in good condition, and safeguards and kill switches are in place and operational. Any substandard items will be corrected prior to drilling.

Drill Rig Operator
The drill rig operator will remain at the controls unless the rig is shut down. While the drill rig is running, the drill rig operator will not use a mobile phone or radio. The drill rig operator will not wear loose objects or clothing that could inadvertently activate the rig clutch or controls.

Performing Drilling Operations
Prior to conducting drilling operations on site, a Pre-Drilling Site Walkover will be conducted by the drilling operators and a person familiar with the site, preferably the site owner/operator.

During the site walkover, the following will be reviewed, documented, and discussed with the Workforce during the Tailgate Safety Meeting:

- Emergency provisions including the location and operation of emergency shut offs.
- Ground conditions and topography of locations where drilling rig is to be located.
- Overhead utilities and/or obstructions.
- Lay down of materials and supplies including the process to secure of drilling rods and flights, and sampling and waste barrels from falling or rolling.
- Access and egress for the site and muster points in the event of emergency.

If during the site walkover it is determined that the proposed scope of work may impact underground facilities, the project will be re-evaluated for the necessity of data collection versus the risk from impacting underground facilities. If revised or alternative locations are selected, another site walkover will be conducted.

During drilling operations, caution must be taken when drilling between the cleared depth and 20' as underground facilities may still be present. Provisions must be made to communicate during high-noise conditions including the agreement on the meaning of hand signals.

Climbing the Rig
In the event it is necessary to the climb the drilling rig for maintenance or repair, follow procedures listed below:

- If the lowest part of the worker will be higher than 6', Working At Heights provisions will be required and the provisions of the ET Working At Heights practice will be followed.
- If work on the mast is to proceed, the drill rig will be shut down and locked out before any work on the rig, including the mast can proceed.

29.6 Trenching and Excavation
This section defines the conditions under which employees may enter trenches and excavations. The Excavation Awareness Program described herein is based upon the following government regulations and industry standards:

- CFR Title 29 Part 1926 Subpart P - Excavations
- CFR Title 29 Part 1926.650- Scope, applications, definitions
- CFR Title 29 Part 1926.651- General requirements
- CFR Title 29 Part 1926.652- Requirements for protective systems

The following definitions are included in the above regulations, and are considered pertinent to this program:

- EXCAVATION: Any man-made cut, cavity, trench or depression in the earth surface, made by earth removal.
- TRENCH: A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width cannot exceed 15 feet.
- BENCHING: A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal steps.
- SHIELDING: A structure that can withstand the forces imposed by a cave-in and thereby protects employees within the structure.
- SHORING: A structure that supports the sides of an excavation and which are designed to prevent cave-ins.
- SLOPING: A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the bottom of the excavation to prevent cave-ins.
- STABLE ROCK: Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
- COMPETENT PERSON: Defined by OSHA as a person capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous, or dangerous to employees. Authorized to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required. A competent person should have and be able to demonstrate the following:
    1. Training, experience, and knowledge of:
        a. Soil Analysis
        b. Use of protective systems
    2. Ability to detect:
        a. Conditions that could result in cave-ins
        b. Failures in protective systems
        c. Hazardous atmospheres
        d. Other hazards including those associated with confined spaces

Any excavation five feet deep or deeper is not considered safe from cave-ins unless one or more of the following conditions exist:

- It is made entirely of stable rock.
- It has been inspected daily by a competent person and pronounced safe.
- Protective systems are installed which have the capacity to protect workers from cave-ins, which include sloping, benching, shielding, and shoring that have been inspected daily by a competent person and pronounced safe.

Any excavation four feet deep or deeper that requires human occupancy will require a Competent Person to classify the soil and/or rock deposits of the excavation area as Stable Rock, Type A, Type B,

or Type C in accordance with the definitions set forth in 1926 CFR Subpart P Appendix A paragraph (b). Protective systems will be selected based on the flow chart listed in 1926 CFR Subpart P, Appendix F – Selection of Protective Systems. For excavations greater than 20 feet, protective systems will be designed by a Professional Engineer. All protective systems will meet or exceed the minimum standards as specified in 1926 CFR Subpart P:

- Appendix B – Sloping and Benching,
- Appendix C – Timer Shoring for Trenches,
- Appendix D – Aluminum Hydraulic Shoring for Trenches, or
- Appendix E – Alternatives to Timber Shoring.

Atmospheric Testing of Excavation and Trenches

Any excavation, including trenches, four feet deep or deeper that requires human occupancy located in an area where hazardous atmospheres could reasonably be expected to exist, such as landfills, hazardous materials storage facilities, hazardous waste sites, and other environmental remediation areas may only be entered after the atmospheres in those excavations are tested to ascertain that the oxygen content in the excavation is greater than 19.5% and the combustible gas concentration is less than 10% of the LEL of the gas present.

Additional air monitoring is to be conducted for the presence of airborne toxins suspected based on the contamination present at the area of ground disturbance. Engineering controls will be instituted to alleviate employee exposure or, if not feasible, sufficient personal protective equipment will be worn to control worker exposure.

Access, Egress, and Crossings of Excavation or Trench

Any excavation four feet deep or deeper that requires human occupancy must have a ladder, ramp, or other safe means of egress located so that each employee need travel no more than 25 feet in any direction to reach a means of escape.

Crossings over the excavation or walkways within six (6) feet of the excavation are to be designed with handrails that meet OSHA requirements for fall protection.

Water Accumulation in Excavation or Trench

In the event water accumulates in the excavation, the following requirements for controlling this accumulation must be provided if personnel are to enter or work in the excavation:

- Personnel must not work in excavations where standing water has accumulated,
- Water removal or de-watering equipment, such as pumps, are installed and monitored by a competent person,
- Personnel must exit from excavations during rainstorms,
- Trenches must be carefully inspected by a competent person after each rain and before personnel are permitted to re-enter.

Suspended Loads

Workers in the excavation and other areas of the worksite are to be protected against falling loads and are not allowed to be under or in the swing radius of any equipment working with a load.

Authority and Administration
Within EnviroTrac, the Director of Health and Safety, and the designated Regional Health and Safety Coordinators will be responsible for the generation and execution of all portions of the program, and will have the necessary authority to assure that all requirements of this program are properly fulfilled, will administer this program.

29.7 Excavation Entering Procedure

It will be the policy of EnviroTrac not to allow any of its employees to enter excavations for any reason unless that excavation meets the conditions for being safe from cave-in, has been tested to assure that the atmosphere is safe, and has a proper means of ingress/egress as outlined above.

When EnviroTrac is employed as the prime/sole contractor at a facility where excavations are or will be present, the EnviroTrac designated Competent Person will have the responsibility to ascertain that all excavations meet the requirements of the above regulations prior to any employee or contractor entering into such excavations. The Competent Person will perform daily inspections of the excavations or immediately after a rain event using the Trench Inspection and Entry Authorization form located at the end of this practice.

When EnviroTrac is employed as a sub-contractor at a facility where the client has the responsibility for determining the hazards at the site or location associated with excavations, and consequently controls the compliance to the pertinent excavation regulations, EnviroTrac employees will enter such excavations only if the excavations has been inspected and cleared by the Competent Person and the employee is satisfied that the excavations are safe and meet the conditions for being safe from cave-in.

Should contractors, clients or others request an employee to enter an excavation that the employee does not feel is safe and free from cave-in hazards, the employee is to state that he/she does not consider the excavation safe, inform his/her supervisor and/or the Project Manager, and await further instructions.

29.8 Alternatives to Excavation Entry

Sampling in excavations should always be performed utilizing construction equipment such as backhoes or long handled samplers wherever possible. Entering excavations should always be the last alternative, and must never be undertaken without first ensuring that the excavation is safe from cave-in.

29.9 Employee Training

All employees who are required to enter excavations for any reason will successfully complete an Excavation Awareness Training Program, which will include, but not be limited to the following topics:

- The contents of 29 CFR 1926 Subpart P
- The contents of this EXCAVATION AWARENESS PROGRAM.
- The dangers of excavation entry.
- Alternatives to entering excavations for sampling.

EnviroTrac employees must be made aware of the danger of sidewall collapse for persons standing

near the excavation during training. The awareness training will include Control of Hazardous Energy (Lockout/Tagout) for operations that require ground disturbance and include local and pertinent requirements for underground utility identification and mark out.

Documentation of training will be maintained by the EnviroTrac's Safety Department and will include the employee's name; date(s) of training; subject, curriculum, handouts, and pertinent training materials; and trainer's name and title.

The Regional Health and Safety Coordinator will conduct periodic inspection of random work sites to ascertain that this Excavation Awareness Program is conscientiously being followed.

29.10 Program Evaluation

The Corporate Health and Safety staff will review all aspects of this Excavation Awareness Program at least annually to assure its effectiveness. Whenever modifications in work scope, equipment changes or modification, revision of federal regulations or standards, or any action that would necessitate a change in any of the contents of this Excavation Awareness Program occur, such changes will be made, and everyone affected by those changes notified and retrained, if necessary. All such modifications will be made in writing, and the nature of the modification noted and dated.

29.11 Enforcement

The following disciplinary actions will be administered to employees found to be willfully negligent or not complying with the provisions of this policy:

- First Offense: If the violation is correctable, the employee will receive a written warning detailing the nature of the offense, which will be documented in the employee's personnel file. In addition, if the violation is not correctable, the employee will be dismissed from the site and sent home for the day without pay.
- Second Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one day off without pay, regardless of whether the violation is correctable.
- Third Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one week off without pay, regardless of whether the violation is correctable.
- Fourth Offense: The employee will be terminated with cause.

Should willful noncompliance or negligence to the provisions of this policy result in injury or increased risk to another individual then disciplinary action will be more severe than the normal sequence of the above procedures may be administered. All the above disciplinary steps will be administered within the scope and intent of written company personnel policies.

EnviroTrac Environmental Services

TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM

LOCATION:				**DATE:**	
TIME OF INSPECTION(S)					
WEATHER CONDITIONS:				**APPROX. TEMP.:**	
CREW LEADER:				**SUPERVISOR:**	
DIMENTIONS:	**DEPTH =**			Yes No	**HAZARDOUS CONDITIONS**
	TOP =	W	L	❑ ❑	..... Saturated soil / standing or seeping water
	BOTTOM =	W	L	❑ ❑	..... Cracked or fissured wall(s)
SOIL TYPE:		**TESTED:**		❑ ❑	..... Bulging wall(s)
❑ Solid rock (most stable)		❑ Yes		❑ ❑	..... Floor heaving
❑ Average soil		❑ No		❑ ❑	..... Frozen soil
❑ Fill material				❑ ❑	..... Super-imposed loads
❑ Loose sand				❑ ❑	..... Vibration
				❑ ❑	..... Depth greater than 10'
PROTECTION METHODS:				**PLACEMENT OF SPOILS & EQUIPMENT**	
(Walls MUST be vertical—NO voids)				❑ ❑	..... Spoils at least 2 feet from edge of trench
SHORING				❑ ❑	..... Equipment at least 2 feet from edge
❑ Timber				❑ ❑	..... Backhoe at end of trench
❑ Pneumatic				❑ ❑	..... Compressor, etc. at remote location
❑ Hydraulic				**LADDER LOCATION**	
❑ Screw Jacks				❑ ❑	..... Located in protected area
❑ Trench Shield				❑ ❑	..... Within 25 feet of safe travel
UNEVEN, IRREGULAR WALLS				❑ ❑	..... Secured
❑ Trench Box				❑ ❑	..... Extends 36 inches above the landing
Sloping: ❑ **q 1:1 (45°)** ❑ **q 1 ½:1 (34°)**				❑ ❑	..... Leads to safe landing
Yes No	**ENVIRONMENTAL CONDITIONS:**			**OTHER:**	
❑ ❑	Gas detector used?			❑ ❑	Shoring equip. & matls inspected prior to use?
❑ ❑	Confined space permit issued?			❑ ❑	Is trench SAFE to enter?
COMMENTS:					
				Work Order #	

NOTE All unsafe conditions must be corrected prior to trench entry. If any hazardous conditions are observed, the trench must be immediately evacuated and no one is allowed to re-enter until corrective action has been taken.

Certification by Competent Person

Excavation Entry Authorized By: _____

Designated Competent Person

APPENDIX C

HASP AGREEMENT AND ACKNOWLEDGEMENT

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

Acknowledgement Agreement

HEALTH AND SAFETY PLAN REVIEW RECORD

I acknowledge that I have read and understood the contents of this Health and Safety Plan and Job Safety Analysis (JSA's) for the work and I agree to abide by all provisions as set forth.

If unidentified or new hazards not listed in this HASP or JSA's are indentified or if the scope of work changes, I will report these finding to the Site Safety Officer and work will stop and not re-start work until contingencies and/or control measures are in place to address the hazards.

NAME & SIGNATURE	DATE & CELL PHONE NUMBER

Add additional sheets as necessary

APPENDIX D

INCIDENT REPORTING

- Personal Injury Accident Procedures
- Motor Vehicle Accident Procedures

Contact and emergency phone numbers for this project:

Brookdale University Hospital and Medical Center	718-240-5000
(1 Brookdale Plaza, Brooklyn, NY 11212)	

All Emergencies call	911
National Response Center	800-424-8802
National Poison Control	800-926-953

ET CONTACTS

Mr. Joseph P. Byrnes (ET-Project Manager)	Office: 631-924-3001
	Cell 516-807-8976
Ms. Tracy Wall (ET-Site Supervisor)	Cell 631-905-4259
Mr. Michael Clark (ET-Director of Health and Safety)	Office: 609-387-5553
	Cell: 516-790-0998

CLIENT CONTACT

Mr. Tony Bileddo (Property Owner)	Office: 800.386.9198
	Cell: 516.510.7170

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

APPENDIX E

ENVIROTRAC'S

INCIDENT REPORTING FORM

INCIDENT AND NEAR MISS REPORTING FORM

1.Name of person(s) involved:	2. Title of person(s) involved:
3. Type: Personal Injury Motor Vehicle Accident Property Damage Stop Work Intervention Near Miss	
4. Date & Time of Incident: Date: _____ Time: _____ (indicate AM or PM)	5. Location (physical location and street address)
6. Client:	

7. Name of person completing form:		8.Title of person completing form:
9. ET reg office:	10. Contact phone number(s):	11. Witness name(s) & phone numbers:

12. Full Description of Incident: (if incident involves vehicle, provide identification information)

(Describe in detail: weather during the incident, physical attributes of the location, what was happening prior to the incident including procedures being followed, the actual incident, failure of equipment, results of the incident, description of vehicle or property involved, etc. Use additional sheets if necessary.)

INCIDENT AND NEAR MISS REPORTING FORM

1.Name of person(s) involved:	2. Title of person(s) involved:
3. Type: Personal Injury Motor Vehicle Accident Property Damage Stop Work Intervention Near Miss	
4. Date & Time of Incident: Date: _____ Time: _____ (indicate AM or PM)	5. Location (physical location and street address)
6. Client:	

13. List Personal Protective Equipment (PPE) used during the incident, if applicable:
14. Corrective Actions: (What should be done to prevent recurrence of this incident, i.e., employee training, modify procedures, different equipment, etc.?)
15. Miscellaneous information: (Provide any other information or recommendations which you feel are pertinent to this incident. Use this section to list any Police or government agency information, report numbers, contact information, etc.)

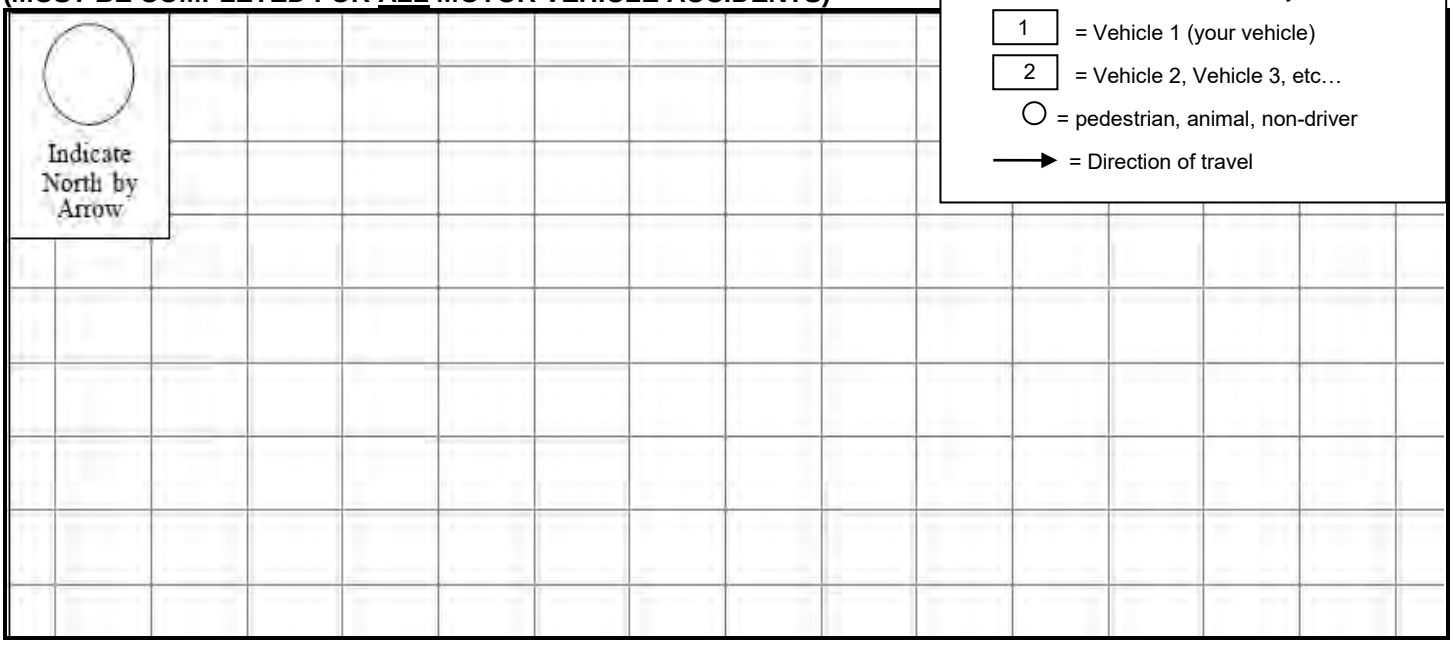
INCIDENT AND NEAR MISS REPORTING FORM

1.Name of person(s) involved:	2. Title of person(s) involved:
3. Type: Personal Injury Motor Vehicle Accident Property Damage Stop Work Intervention Near Miss	
4. Date & Time of Incident: Date: _____ Time: _____ (indicate AM or PM)	5. Location (physical location and street address)
6. Client:	

MOTOR VEHICLE INCIDENT DIAGRAM
(MUST BE COMPLETED FOR ALL MOTOR VEHICLE ACCIDENTS)

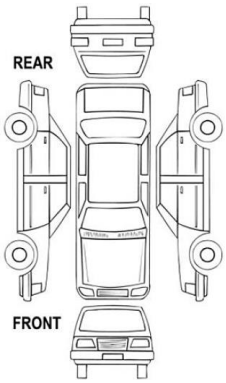
Draw a diagram of the roadway or streets where crash occurred, indicating vehicles involved and direction of travel. Use the follow symbols:

- 1 = Vehicle 1 (your vehicle)
- 2 = Vehicle 2, Vehicle 3, etc…
- ○ = pedestrian, animal, non-driver
- → = Direction of travel

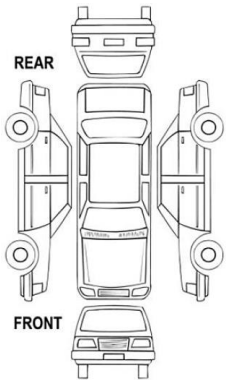


Indicate damage to vehicle(s):

Your Vehicle



Other Vehicle



INCIDENT AND NEAR MISS REPORTING FORM

1.Name of person(s) involved:	2. Title of person(s) involved:
3. Type: Personal Injury Motor Vehicle Accident Property Damage Stop Work Intervention Near Miss	
4. Date & Time of Incident: Date: _____ Time: _____ (indicate AM or PM)	5. Location (physical location and street address)
6. Client:	

MOTOR VEHICLE INCIDENT INFORMATION

Company Vehicle (vehicle 1):

Make / Model: _____

EnviroTrac Vehicle No.: _____

Other Vehicle (vehicle 2):

Make / Model /Yr _____

License Plate No: _____

Driver's Name: _____

Address: _____

Phone No: _____

Driver's License No. & ST: _____

Insurance Co / Policy No: _____

Other Vehicle (vehicle 3):

Make / Model /Yr _____

License Plate No: _____

Driver's Name: _____

Address: _____

Phone No: _____

Driver's License No. & ST: _____

Insurance Co / Policy No: _____

Include any other pertinent information:
(witness name & contact no., injured parties including medical treatment provided and where taken, Police Officer name and badge no., any else to assist in the investigation/claim)

PERSONAL INJURY ACCIDENT PROCEDURES

Personal Injury

Requires immediate medical attention

Requires First Aid

No — **Safe to travel?** — Yes

CALL 911

Stabilize:
1st - bleeding
2nd - breathing
3rd - prepare for shock

ET representative to travel with or meet injured employee at the hospital/medical facility

Go to nearest
- hospital emergency room, or
- emergency care facility, or
- location listed in HASP.

Apply as appropriate:
- bandage
- ice
- ointment
- lotion

Provide: rest, liquids, shade, or elevate body part as required.

CONTACT OFFICE

DO NOT LEAVE MESSAGE ON VOICE MAIL

Collect information on injury

Collect required information using ET Incident Reporting Form:
- Weather conditions
- Site conditions
- What was happening before, during, and after incident
- PPE used
- Failure of equipment, if any
- Police or third party report, if any
- Witnesses statements, if any

Immediately report incident to and then forward copies of everything to: Director of Health & Safety

CONTACT INFORMATION

DURING OFFICE HOURS

Call office:
631-924-3001
Report that you had an accident

Call will be routed to:

1st – Mary Ann Froehlich
2nd – Ted Masters
3rd – other available manager

AFTER HOURS CALL

1st – Ted Masters
516-790-7289

2rd – Stephen Sussman
631-484-9348

IF NECESSARY, CONTACT
Corporate Health and Safety
Michael Clark, Director
Office: 609-387-5553
Cell: 516-790-0998
michaelc@envirotrac.com

EnviroTrac New York

Rev. 3/2/2018

Controlled version of this document located is in the Safety Portal under the Documents, file name:

ETNY Flow Chart-Injury w/date

MOTOR VEHICLE ACCIDENT PROCEDURES

Motor Vehicle Accident

Includes personal injury

Follow procedures for personal injury

From *Personal Injury Accident Procedures* flowchart

CALL 911

If incident involves a third party, then

Call Police and report accident regardless of damage.

Police report is required for incidents resulting in any damage to 3rd party property.

CONTACT OFFICE

DO NOT LEAVE MESSAGE ON VOICE MAIL

Collect information for accident report

1. Collect required information using ET Incident Reporting Form:
   - Describe the accident in Box 12 (page 1) include road conditions, weather, mechanical issues with vehicle, etc.
   - Provide a detailed drawing of the accident and damage to vehicles on Page 4.
   - Collect and completed required information on Page 5.
   - Take multiple and comprehensive pictures (use cell phone camera, if necessary)
   - Get copy of police report or find out how to obtain a copy.
2. Immediately notify and then forward everything to Dir of H&S
3. ETNY office will submit *Report of Motor Vehicle Accident* form.

***NYS DMV Report of Motor Vehicle Accident* form required for property damage over $1,000 or any personal injury. Report *must* be filed within 10 days.**

CONTACT INFORMATION

DURING OFFICE HOURS

Call office:
631-924-3001
Report that you had an accident

Call will be routed to:

1st – Mary Ann Froehlich
2nd – Ted Masters
3rd – other available manager

AFTER HOURS CALL

1st – Ted Masters
516-790-7289

2rd – Stephen Sussman
631-484-9348

IF NECESSARY, CONTACT
Corporate Health and Safety
Michael Clark, Director
Office: 609-387-5553
Cell: 516-790-0998
michaelc@envirotrac.com

EnviroTrac New York

Rev. 3/2/2018

Controlled version of this document located is in the Safety Portal under the Documents, file name:

ETNY Flow Chart-MV Accident w/date

APPENDIX F

OSHA QUICK CARDS FOR:

HEAT STRESS

COLD STRESS

OSHA® QUICK CARD™

Protecting Workers from Heat Stress

Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions your employer should take any time temperatures are high and the job involves physical work.

Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- Low liquid intake
- Heavy physical labor
- Waterproof clothing
- No recent exposure to hot workplaces

Symptoms of Heat Exhaustion

- Headache, dizziness, or fainting
- Weakness and wet skin
- Irritability or confusion
- Thirst, nausea, or vomiting

Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- May stop sweating

To Prevent Heat Illness, Your Employer Should

- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.

For more information:

OSHA® Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov (800) 321-OSHA (6742)

OSHA 3154-09-11R

OSHA® QUICK CARD™

- Schedule frequent rest periods with water breaks in shaded or air-conditioned areas.
- Routinely check workers who are at risk of heat stress due to protective clothing and high temperature.
- Consider protective clothing that provides cooling.

How You Can Protect Yourself and Others

- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty. Drink water every 15 minutes.
- Avoid beverages containing alcohol or caffeine.

- Wear lightweight, light colored, loose-fitting clothes.

What to Do When a Worker is Ill from the Heat

- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- Move the worker to a cooler/shaded area.
- Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.

If you have any questions or concerns, call OSHA at 1-800-321-OSHA (6742).

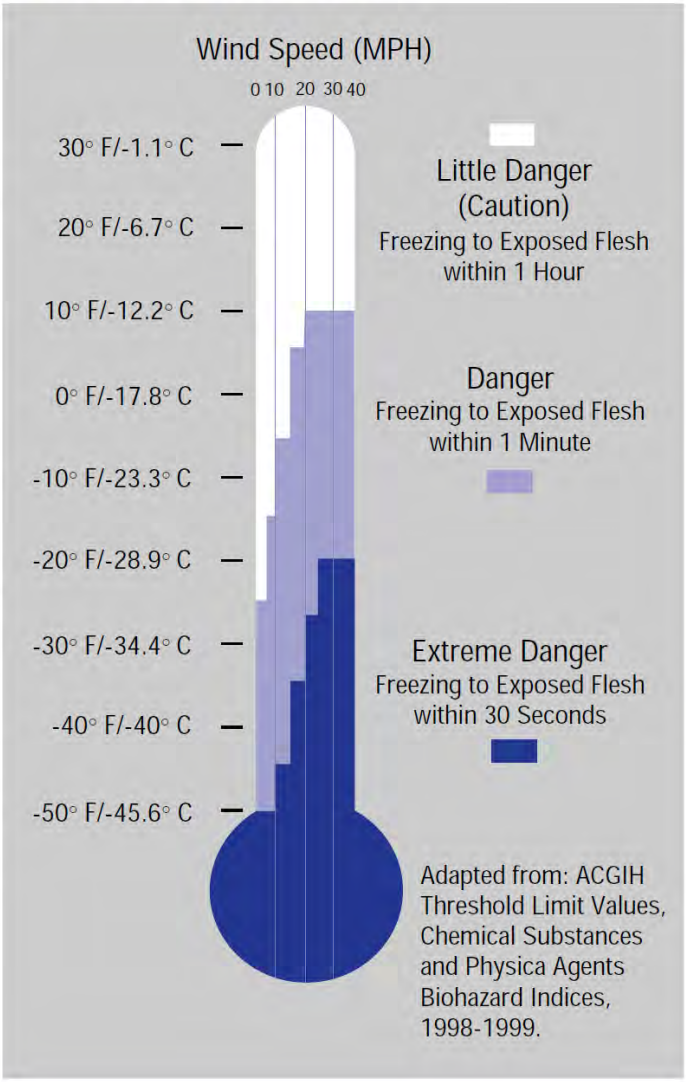
For more information:

OSHA® Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov (800) 321-OSHA (6742)

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.



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3156
1998

FROST BITE

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 THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath 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 about 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.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^{0}C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any 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 they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 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 the body's 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.

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 the workforce 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 medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

APPENDIX G

DAILY TAILGATE SAFETY MEETING LOG

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

Daily Tailgate Safety Meeting Log

(to be completed on site)

Site Name _____

Scope of Work _____

Weather _____

Safety Topics discussed _____

_____

_____

Employee Names:	Signatures

By signing, I acknowledge that I am knowledgeable of the scope of work being performed, the associated hazards, and will institute the controls or contingencies necessary to mitigate those hazards. Furthermore, I will stop work in the event there are new or unidentified hazards and will not commence until proper controls or contingencies are instituted to mitigate those hazards.

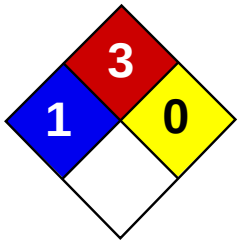
Signature of Site Safety Officer (or designee)_____ Date _____

Add additional sheets as necessary

APPENDIX H

SAFETY DATA SHEETS

(SDS)



Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Acetone MSDS

Section 1: Chemical Product and Company Identification

Product Name: Acetone

Catalog Codes: SLA3502, SLA1645, SLA3151, SLA3808

CAS#: 67-64-1

RTECS: AL3150000

TSCA: TSCA 8(b) inventory: Acetone

CI#: Not applicable.

Synonym: 2-propanone; Dimethyl Ketone; Dimethylformaldehyde; Pyroacetic Acid

Chemical Name: Acetone

Chemical Formula: C3-H6-O

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Acetone	67-64-1	100

Toxicological Data on Ingredients: Acetone: ORAL (LD50): Acute: 5800 mg/kg [Rat]. 3000 mg/kg [Mouse]. 5340 mg/kg [Rabbit]. VAPOR (LC50): Acute: 50100 mg/m 8 hours [Rat]. 44000 mg/m 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. The substance is toxic to central nervous system (CNS). The substance may be toxic to kidneys, the reproductive system, liver, skin. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 465°C (869°F)

Flash Points: CLOSED CUP: -20°C (-4°F). OPEN CUP: -9°C (15.8°F) (Cleveland).

Flammable Limits: LOWER: 2.6% UPPER: 12.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Vapor may travel considerable distance to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Forms explosive mixtures with hydrogen peroxide, acetic acid, nitric acid, nitric acid + sulfuric acid, chromic anydride, chromyl chloride, nitrosyl chloride, hexachloromelamine, nitrosyl perchlorate, nitryl perchlorate, permonosulfuric acid, thiodiglycol + hydrogen peroxide, potassium ter-butoxide, sulfur dichloride, 1-methyl-1,3-butadiene, bromoform, carbon, air, chloroform, thitriazylperchlorate.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis.

Storage:
Store in a segregated and approved area (flammables area) . Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Keep away from direct sunlight and heat and avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 500 STEL: 750 (ppm) from ACGIH (TLV) [United States] TWA: 750 STEL: 1000 (ppm) from OSHA (PEL) [United States] TWA: 500 STEL: 1000 [Austalia] TWA: 1185 STEL: 2375 (mg/m3) [Australia] TWA: 750 STEL: 1500 (ppm) [United Kingdom (UK)] TWA: 1810 STEL: 3620 (mg/m3) [United Kingdom (UK)] TWA: 1800 STEL: 2400 from OSHA (PEL) [United States]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Fruity. Mint-like. Fragrant. Ethereal

Taste: Pungent, Sweetish

Molecular Weight: 58.08 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 56.2°C (133.2°F)

Melting Point: -95.35 (-139.6°F)

Critical Temperature: 235°C (455°F)

Specific Gravity: 0.79 (Water = 1)

Vapor Pressure: 24 kPa (@ 20°C)

Vapor Density: 2 (Air = 1)

Volatility: Not available.

Odor Threshold: 62 ppm

Water/Oil Dist. Coeff.: The product is more soluble in water; log(oil/water) = -0.2

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, ignition sources, exposure to moisture, air, or water, incompatible materials.

Incompatibility with various substances: Reactive with oxidizing agents, reducing agents, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 3000 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 44000 mg/m3 4 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. Causes damage to the following organs: central nervous system (CNS). May cause damage to the following organs: kidneys, the reproductive system, liver, skin.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May affect genetic material (mutagenicity) based on studies with yeast (S. cerevisiae), bacteria, and hamster fibroblast cells. May cause reproductive effects (fertility) based upon animal studies. May contain trace amounts of benzene and formaldehyde which may cancer and birth defects. Human: passes the placental barrier.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: May cause skin irritation. May be harmful if absorbed through the skin. Eyes: Causes eye irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. Inhalation: Inhalation at high concentrations affects the sense organs, brain and causes respiratory tract irritation. It also may affect the Central Nervous System (behavior) characterized by dizziness, drowsiness, confusion, headache, muscle weakeness, and possibly motor incoordination, speech abnormalities, narcotic effects and coma. Inhalation may also affect the gastrointestinal tract (nausea, vomiting). Ingestion: May cause irritation of the digestive (gastrointestinal) tract (nausea, vomiting). It may also

affect the Central Nevous System (behavior), characterized by depression, fatigue, excitement, stupor, coma, headache, altered sleep time, ataxia, tremors as well at the blood, liver, and urinary system (kidney, bladder, ureter) and endocrine system. May also have musculoskeletal effects. Chronic Potential Health Effects: Skin: May cause dermatitis. Eyes: Eye irritation.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 5540 mg/l 96 hours [Trout]. 8300 mg/l 96 hours [Bluegill]. 7500 mg/l 96 hours [Fatthead Minnow]. 0.1 ppm any hours [Water flea].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Acetone UNNA: 1090 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Benzene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzene, Formaldehyde Connecticut hazardous material survey.: Acetone Illinois toxic substances disclosure to employee act: Acetone Illinois chemical safety act: Acetone New York release reporting list: Acetone Rhode Island RTK hazardous substances: Acetone Pennsylvania RTK: Acetone Florida: Acetone Minnesota: Acetone Massachusetts RTK: Acetone Massachusetts spill list: Acetone New Jersey: Acetone New Jersey spill list: Acetone Louisiana spill reporting: Acetone California List of Hazardous Substances (8 CCR 339): Acetone TSCA 8(b) inventory: Acetone TSCA 4(a) final test rules: Acetone TSCA 8(a) IUR: Acetone

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R36- Irritating to eyes. S9- Keep container in a well-ventilated place. S16- Keep away from sources of ignition - No smoking. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

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

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Material safety data sheet issued by: la Commission de la SantÃ© et de la SÃ©curitÃ© du Travail du QuÃ©bec. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. LOLI, RTECS, HSDB databases. Other MSDSs

Other Special Considerations: Not available.

Created: 10/10/2005 08:13 PM

Last Updated: 05/21/2013 12:00 PM

Material Safety Data Sheet
cis-1,2-Dichloroethylene, 97%

ACC# 97773

Section 1 - Chemical Product and Company Identification

MSDS Name: cis-1,2-Dichloroethylene, 97%
Catalog Numbers: AC113380000, AC113380025, AC113380100
Synonyms: cis-Acetylene dichloride.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
156-59-2	cis-1,2-Dichloroethylene	97	205-859-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Clear liquid. Flash Point: 6 deg C.
Warning! Flammable liquid and vapor. Harmful if inhaled. Unstabilized substance may polymerize. Causes eye and skin irritation. May be harmful if swallowed. May cause respiratory tract irritation.
Target Organs: Central nervous system, respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes moderate eye irritation.
Skin: Causes moderate skin irritation. May cause dermatitis.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed. May cause central nervous system depression.
Inhalation: May cause respiratory tract irritation. May cause narcotic effects in high concentration. Eye irritation, vertigo, and nausea were reported in humans exposed at 2200 ppm.
Chronic: Not available. Some German investigators reported fatty degeneration of the liver upon repeated narcotic doses in rats and

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is

difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

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. Vapors may form an explosive mixture with air. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Fire or excessive heat may result in violent rupture of the container due to bulk polymerization. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Hazardous polymerization may occur under fire conditions.
Extinguishing Media: Use water fog, dry chemical, carbon dioxide, or regular foam.
Flash Point: 6 deg C (42.80 deg F)
Autoignition Temperature: 440 deg C (824.00 deg F)
Explosion Limits, Lower:9.70 vol %
Upper: 12.80 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/ Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Pure vapor will be uninhibited and may polymerize in vents or other confined spaces.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Flammables-area. Store protected from light and air.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
cis-1,2-Dichloroethylene	200 ppm TWA	none listed	none listed

OSHA Vacated PELs: cis-1,2-Dichloroethylene: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are

exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: Clear
Odor: Pleasant odor
pH: Not available.
Vapor Pressure: 201 mm Hg @ 25 deg C
Vapor Density: 3.34 (air=1)
Evaporation Rate:Not available.
Viscosity: Not available.
Boiling Point: 60 deg C @ 760 mm Hg
Freezing/ Melting Point:-80 deg C
Decomposition Temperature:Not available.
Solubility: Insoluble.
Specific Gravity/ Density:1.2800
Molecular Formula:C2H2Cl2
Molecular Weight:96.94

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. This material is a monomer and may polymerize under certain conditions if the stabilizer is lost.
Conditions to Avoid: Light, ignition sources, exposure to air, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong bases, copper.
Hazardous Decomposition Products: Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide.
Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 156-59-2: KV9420000
LD50/ LC50:
CAS# 156-59-2:
    Inhalation, rat: LC50 = 13700 ppm;
.

Carcinogenicity:
CAS# 156-59-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

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	Canada TDG
Shipping Name:	DOT regulated - small quantity provisions apply (see 49CFR173.4)	1,2-DICHLOROETHYLENE
Hazard Class:		3
UN Number:		UN1150
Packing Group:		II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 156-59-2 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.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances 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# 156-59-2 can be found on the following state right to know lists: Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/ International Regulations

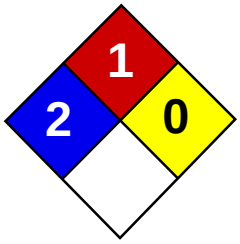
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN F
Risk Phrases:
R 11 Highly flammable.
R 20 Harmful by inhalation.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 7 Keep container tightly closed.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)
CAS# 156-59-2: No information available.
Canada - DSL/NDSL
CAS# 156-59-2 is listed on Canada's NDSL List.
Canada - WHMIS
WHMIS: Not available.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 2/09/1998
Revision #5 Date: 3/16/2007



Health	2
Fire	1
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Trichloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Trichloroethylene

Catalog Codes: SLT3310, SLT2590

CAS#: 79-01-6

RTECS: KX4560000

TSCA: TSCA 8(b) inventory: Trichloroethylene

CI#: Not available.

Synonym:

Chemical Formula: C2HCl3

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Trichloroethylene	79-01-6	100

Toxicological Data on Ingredients: Trichloroethylene: ORAL (LD50): Acute: 5650 mg/kg [Rat]. 2402 mg/kg [Mouse]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 420°C (788°F)

Flash Points: Not available.

Flammable Limits: LOWER: 8% UPPER: 10.5%

Products of Combustion: These products are carbon oxides (CO, CO2), halogenated compounds.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/

spray. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Carcinogenic, teratogenic or mutagenic materials should be stored in a separate locked safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 50 STEL: 200 (ppm) from ACGIH (TLV) TWA: 269 STEL: 1070 (mg/m3) from ACGIH Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 131.39 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 86.7°C (188.1°F)

Melting Point: -87.1°C (-124.8°F)

Critical Temperature: Not available.

Specific Gravity: 1.4649 (Water = 1)

Vapor Pressure: 58 mm of Hg (@ 20°C)

Vapor Density: 4.53 (Air = 1)

Volatility: Not available.

Odor Threshold: 20 ppm

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water; log(oil/water) = 0

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, acetone.

Solubility:
Easily soluble in methanol, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity:
Extremely corrosive in presence of aluminum. Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 2402 mg/kg [Mouse]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Passes through the placental barrier in human. Detected in maternal milk in human.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Trichloroethylene : UN1710 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Trichloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene Pennsylvania RTK: Trichloroethylene Florida: Trichloroethylene Minnesota: Trichloroethylene Massachusetts RTK: Trichloroethylene New Jersey: Trichloroethylene TSCA 8(b) inventory: Trichloroethylene CERCLA: Hazardous substances.: Trichloroethylene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R36/38- Irritating to eyes and skin. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

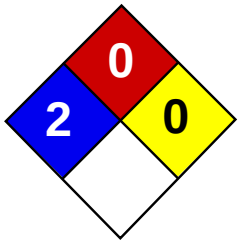
References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:54 PM

Last Updated: 11/06/2008 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.



Health	2
Fire	0
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Chloroform MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chloroform

Catalog Codes: SLC1888, SLC5044

CAS#: 67-66-3

RTECS: FS9100000

TSCA: TSCA 8(b) inventory: Chloroform

CI#: Not available.

Synonym: Trichloromethane; Methane, trichlor-

Chemical Name: Chloroform

Chemical Formula: CHCl3

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Chloroform	67-66-3	100

Toxicological Data on Ingredients: Chloroform: ORAL (LD50): Acute: 695 mg/kg [Rat]. 36 mg/kg [Mouse]. 820 mg/kg [Guinea pig]. DERMAL (LD50): Acute: >20000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 47702 mg/m 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, heart. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances: Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: May explode if it comes in contact with aluminum powder, lithium, perchlorate, pentoxide, bis(dimethylamino)dimethylstannane, potassium, potassium-sodium alloy, sodium (or sodium hydroxide or sodium methoxide), and methanol

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions: Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as metals, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: TWA: 10 (ppm) [Australia] Inhalation TWA: 2 (ppm) from OSHA (PEL) [United States] Inhalation STEL: 9.78 (mg/m3) from NIOSH Inhalation STEL: 2 (ppm) from NIOSH Inhalation TWA: 9.78 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 10 (ppm) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 2 (ppm) [United Kingdom (UK)] Inhalation TWA: 9.9 (mg/m3) [United Kingdom (UK)] InhalationConsult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pleasant. Sweetish. Etheric. Non-irritating

Taste: Burning. Sweet.

Molecular Weight: 119.38 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 61°C (141.8°F)

Melting Point: -63.5°C (-82.3°F)

Critical Temperature: 263.33°C (506°F)

Specific Gravity: 1.484 (Water = 1)

Vapor Pressure: 21.1 kPa (@ 20°C)

Vapor Density: 4.36 (Air = 1)

Volatility: Not available.

Odor Threshold: 85 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, Light

Incompatibility with various substances: Reactive with metals, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Light Sensitive. Incompatible with triisopropyl phosphine, acetone, disilane, fluorine, strong bases and reactive metals (aluminum, magnesium in powdered form), light.

Special Remarks on Corrosivity: It will attack some forms of plastics, rubber, and coatings.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation.

Toxicity to Animals: WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 36 mg/kg [Mouse]. Acute dermal toxicity (LD50): >20000 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 47702 mg/m 4 hours [Rat]. 3

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, heart.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May affect genetic material (possible mutangen) and cause adverse reproductive effects(embryotoxicity and fetotoxicity) Suspected carcinogen (tumorigenic) and teratogen based on animal data. Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans: Acute Potential Health Effects: Skin: Causes skin irritation and may cause chemical burns. Eye: Causes eye irritation, burning pain and reversible injury to corneal epithelium. Inhalation: Causes irritation of the respiratory system (mucous membranes). May affect behavior/Nervous system (CNS depressant, fatigue, dizziness, nervousness, giddiness, euphoria, loss of coordination and judgement, weakness, hallucinations, muscle contraction/spasticity, general anesthetic, spastic paralysis, headache), anorexia (neurological and gastrointestinal symtoms resembling chronic alcoholism), and possibly coma and death. May affect the liver, kidneys and gastrointestinal tract (nausea, vomiting). Ingestion: Causes gastrointestinal tract irritation (nausea, vomiting). May affect the liver, urinary system (kidneys), respiration, behavior/nervous system (symptoms similar to inhalation),and heart. Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect the liver (hepatitis, jaundice, hepatocellular necrosis), metabolism (weight loss), respiration (fibrosis, pneumoconoisis), behavior/central nervous system (symptoms similar to acute inhalation), blood, musculoskeletal system, and kidneys. Ingestion: Prolonged or repeated ingestion may affect the liver, kidneys, metabolism (weight loss), endocrine system (spleen), blood (changes in cell count).

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 43.8 mg/l 96 hours [Trout].

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Chloroform UNNA: UN1888 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations: California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Chloroform California prop. 65 (no significant risk level): Chloroform: 0.02 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Chloroform New York release reporting list: Chloroform Rhode Island RTK hazardous substances: Chloroform Pennsylvania RTK: Chloroform Massachusetts RTK: Chloroform New Jersey: Chloroform California Director's List of Hazardous Subtances (8 CCR 339): Chloroform Tennessee: Chloroform TSCA 8(b) inventory: Chloroform TSCA 8(d) H and S data reporting: Chloroform: effective: 6/1/87; sunset: 6/1/97 SARA 302/304/311/312 extremely hazardous substances: Chloroform SARA 313 toxic chemical notification and release reporting: Chloroform CERCLA: Hazardous substances.: Chloroform: 10 lbs. (4.536 kg)

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC): R20/22- Harmful by inhalation and if swallowed. R38- Irritating to skin. R40- Possible risks of irreversible effects. S36/37- Wear suitable protective clothing and gloves.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment: Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

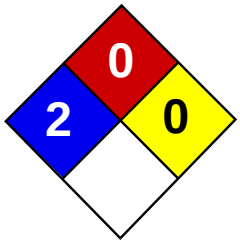
Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:16 PM

Last Updated: 05/21/2013 12:00 PM



Health	2
Fire	0
Reactivity	0
Personal Protection	G

Material Safety Data Sheet
Tetrachloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Tetrachloroethylene

Catalog Codes: SLT3220

CAS#: 127-18-4

RTECS: KX3850000

TSCA: TSCA 8(b) inventory: Tetrachloroethylene

CI#: Not available.

Synonym: Perchloroethylene; 1,1,2,2-Tetrachloroethylene; Carbon bichloride; Carbon dichloride; Ankilostin; Didakene; Dilatin PT; Ethene, tetrachloro-; Ethylene tetrachloride; Perawin; Perchlor; Perclene; Perclene D; Percosolvel; Tetrachloroethene; Tetraleno; Tetralex; Tetravec; Tetroguer; Tetropil

Chemical Name: Ethylene, tetrachloro-

Chemical Formula: C2-Cl4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Tetrachloroethylene	127-18-4	100

Toxicological Data on Ingredients: Tetrachloroethylene: ORAL (LD50): Acute: 2629 mg/kg [Rat]. DERMAL (LD): Acute: >3228 mg/kg [Rabbit]. MIST(LC50): Acute: 34200 mg/m 8 hours [Rat]. VAPOR (LC50): Acute: 5200 ppm 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (anticipated carcinogen) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, respiratory tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:
Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 25 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 100 (ppm) from ACGIH (TLV) [United States] TWA: 170 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Ethereal.

Taste: Not available.

Molecular Weight: 165.83 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 121.3°C (250.3°F)

Melting Point: -22.3°C (-8.1°F)

Critical Temperature: 347.1°C (656.8°F)

Specific Gravity: 1.6227 (Water = 1)

Vapor Pressure: 1.7 kPa (@ 20°C)

Vapor Density: 5.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 5 - 50 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.4

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Miscible with alcohol, ether, chloroform, benzene, hexane. It dissolves in most of the fixed and volatile oils. Solubility in water: 0.015 g/100 ml @ 25 deg. C It slowly decomposes in water to yield Trichloroacetic and Hydrochloric acids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Oxidized by strong oxidizing agents. Incompatible with sodium hydroxide, finely divided or powdered metals such as zinc, aluminum, magnesium, potassium, chemically active metals such as lithium, beryllium , barium. Protect from light.

Special Remarks on Corrosivity: Slowly corrodes aluminum, iron, and zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2629 mg/kg [Rat]. Acute dermal toxicity (LD50): >3228 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5200 4 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion.

Special Remarks on Toxicity to Animals:
Lowest Publishe Lethal Dose/Conc: LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Route: Oral; Dose: 4000 mg/kg LDL [Cat] - Route: Oral; Dose: 4000 mg/kg

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects(teratogenic). May affect genetic material (mutagenic). May cause cancer.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation with possible dermal blistering or burns. Symtoms may include redness, itching, pain, and possible dermal blistering or burns. It may be absorbed through the skin with possible systemic effects. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Eyes: Contact causes transient eye irritation, lacrimation. Vapors cause eye/conjunctival irritation. Symptoms may include redness and pain. Inhalation: The main route to occupational exposure is by inhalation since it is readily absorbed through the lungs. It causes respiratory tract irritation, . It can affect behavior/central nervous system (CNS depressant and anesthesia ranging from slight inebriation to death, vertigo, somnolence, anxiety, headache, excitement, hallucinations, muscle incoordination, dizziness, lightheadness, disorentiation, seizures, enotional instability, stupor, coma). It may cause pulmonary edema Ingestion: It can cause nausea, vomiting, anorexia, diarrhea, bloody stool. It may affect the liver, urinary system (proteinuria, hematuria, renal failure, renal tubular disorder), heart (arrhythmias). It may affect behavior/central nervous system with symptoms similar to that of inhalation. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may result in excessive drying of the skin, and irritation. Ingestion/Inhalation: Chronic exposure can affect the liver(hepatitis,fatty liver degeneration), kidneys, spleen, and heart (irregular heartbeat/arrhythmias, cardiomyopathy, abnormal EEG), brain, behavior/ central nervous system/peripheral nervous system (impaired memory, numbness of extremeties, peripheral neuropathy and other

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 18.4 mg/l 96 hours [Fish (Fatthead Minnow)]. 18 mg/l 48 hours [Daphnia (daphnia)]. 5 mg/l 96 hours [Fish (Rainbow Trout)]. 13 mg/l 96 hours [Fish (Bluegill sunfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Tetrachloroethylene UNNA: 1897 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Tetrachloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Tetrachloroethylene Connecticut hazardous material survey.: Tetrachloroethylene Illinois toxic substances disclosure to employee act: Tetrachloroethylene Illinois chemical safety act: Tetrachloroethylene New York release reporting list: Tetrachloroethylene Rhode Island RTK hazardous substances: Tetrachloroethylene Pennsylvania RTK: Tetrachloroethylene Minnesota: Tetrachloroethylene Michigan critical material: Tetrachloroethylene Massachusetts RTK: Tetrachloroethylene Massachusetts spill list: Tetrachloroethylene New Jersey: Tetrachloroethylene New Jersey spill list: Tetrachloroethylene Louisiana spill reporting: Tetrachloroethylene California Director's List of Hazardous Substances: Tetrachloroethylene TSCA 8(b) inventory: Tetrachloroethylene TSCA 8(d) H and S data reporting: Tetrachloroethylene: Effective date: 6/1/87; Sunset date: 6/1/97 SARA 313 toxic chemical notification and release reporting: Tetrachloroethylene CERCLA: Hazardous substances.: Tetrachloroethylene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R40- Possible risks of irreversible effects. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S23- Do not breathe gas/fumes/vapour/spray S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: g

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

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:29 PM

Last Updated: 05/21/2013 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

APPENDIX I

INFECTIOUS DISEASE PREPAREDNESS AND RESPONSE PLAN

APPENDIX

Infectious Disease Preparedness And Response Plan

This plan is to be followed for all projects in New York State. Perform the following to implement this plan:

1. Keep a copy of this plan on-site and present to an inspector, as requested. Post the two (2) attached posters on site.

2. Have all workers and visitors read and follow the attached plan. Review how the plan will be implemented during the work at the Tailgate Safety Meeting.

3. Have all workers and visitors sign the Tailgate Safety Meeting Log and confirm their responses to the COVID-19 Screening questions. Return the completed log to Vikki Saso in the ETNY office.

EnviroTrac
Environmental Services
Health and Safety Program

June 4, 2020

EnviroTrac's Infectious Disease Preparedness And Response Plan

During construction activities in New York State, EnviroTrac will require the following to prevent the spread of potentially infectious diseases, in particular, the SARS-CoV-2 virus that causes Corona Virus Disease 2019, aka COVID-19. COVID-19 is spread mainly through respired droplets from infected people and is a highly infectious disease. The disease can cause illness ranging from mild to severe and in some cases, can be fatal.

To control the spread to COVID-19, the following procedures are to be followed:

1. Employees are not to report to work if currently presenting symptoms of COVID-19 or have had symptoms of COVID-19 within the past 14 days, symptoms include: fever, cough, shortness of breath, chills, repeated shaking with chills, muscle pain, headache, sore throat, or new loss of taste or smell.

   If the employee has knowingly been in close or proximate contact in the past 14 days with anyone who has tested positive or presumed to have COVID-19, he/she will be required to follow CDC guidelines that require the employee to maintain a social distance of six (6) feet to other persons and to always wear an appropriate face mask while on site and when in contact with other people regardless of maintaining social distance. If the employee is unable to maintain social distancing or wear an appropriate face covering, then the employee is not to report to work.

   The employee will be required to attest to these requirements prior to work each day on the Daily Tailgate Safety Meeting Log.

   If the employee becomes sick at work, the employee is required to immediately self-identify and be isolated from other people until he/she is able to leave the worksite. If able, the employee will wear an appropriate face mask until he/she has left the worksite.

2. Employees will maintain a social distance of six (6) feet at all times unless safety concerns of the task require closer contact. Social Distance is to be maintained in all directions including the front, side-to-side, and behind.

   If six feet of social distance cannot be maintained, all employees are required to wear an appropriate face covering. Employees must be prepared to don a face covering if another person unexpectedly comes within six feet.

   When in tight spaces such as elevators, hoists, and vehicles, all employees are to wear an appropriate face covering. However, even with face coverings in use, occupancy is not to exceed 50% of the maximum capacity of the space or vehicle

(unless it is designed for use by a single occupant). Ventilation with outdoor air should be increased to the greatest extent possible, while maintaining safety protocols. Measures are to be taken to prevent congregation in waiting areas to maintain social distancing. Staggering start times and limiting the gathering of employees are ways to maintain social distancing.

3. Employees are required to don personal protective equipment as required by the tasks performed and include at a minimum: safety shoes, safety eyewear (safety glasses, safety goggles, or a face shield), a hardhat, appropriate work clothing, and gloves. If work gloves are required by the task, employees are to wear nitrile gloves underneath. Do not touch your eyes, nose, or mouth with unclean gloves.

   Respiratory protection will be required per EnviroTrac's Respiratory Protection Program and may require the use of N-95 filtering facepiece, half-face or full-face respirators or additional respiratory protection. The use of respiratory protection will meet the requirement of appropriate face coverings.

   When respirators are not required, appropriate face coverings include disposable surgical-style masks, fabricated face masks, double-folded bandanas, or a balaclava. Face coverings must be cleaned or replaced after use and may not be shared.

4. Employees will practice good personal hygiene, including washing of hands frequently and not touching the mouth, nose or eyes with unwashed hands or unclean gloves. Use a clean tissue or napkin if you need to touch or scratch your face. If soap and water is not available, employees are to use hand sanitizer. Employees will control coughs and sneezes using disposable tissues or napkins and disposing of them appropriately or coughing/sneezing into the crux of the elbow and not the hand.

   Effective handwashing takes 20-seconds. Count the seconds with a cadence (1-1000, 2-1000, 3-1000), or sing a song that takes 20-seconds, like two verses of Happy Birthday. If using hand sanitizer, it must be at least 60% alcohol. After applying the sanitizer, keep rubbing your hands until they feel dry.

   Equipment and tools must be regularly disinfected using EPA registered disinfectants, at least as often as when workers change workstations or move to a new set of tools. Frequently touched surfaces such as doorknobs, handles, handrails, and pushbuttons are to be disinfected at least daily.

   Shared food and beverages (e.g. milk cartons and coffee creamers) must be prohibited, bringing lunch from home should be encouraged, and adequate space for employees to observe social distancing while eating meals must be identified and reserved.

   Adequate sanitary and waste disposal systems are to be provided to accommodate the number of employees on site.

Business Affirmation

We have received your reopening affirmation on 06/08/2020 at 04:38 pm.

Print or take a screenshot of this page for your records.

Your next step is to create and post your NY Forward Business Safety Plan.

Download the NY Forward Business Safety Plan Template

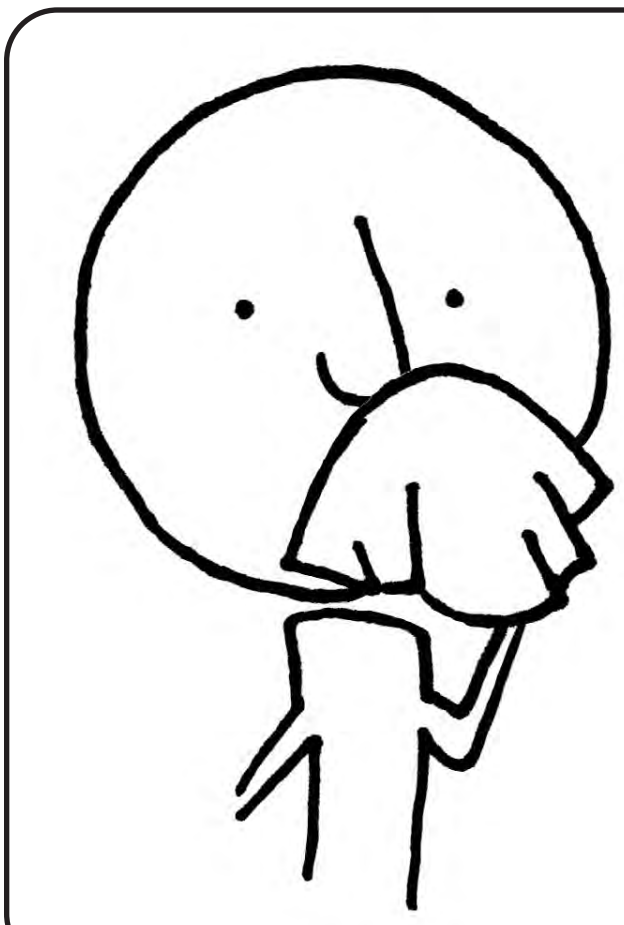
I am the owner or agent of the business listed. I have reviewed the New York State interim guidance for business re-opening activities and operations during the COVID-19 public health emergency and I affirm that I have read and understand my obligation to operate in accordance with such guidance.

EnviroTrac Ltd

Construction
Michael Clark
(631) 924-3001
michaelc@envirotrac.com
5 Old Dock Rd
Yaphank, NY 11980
Suffolk County

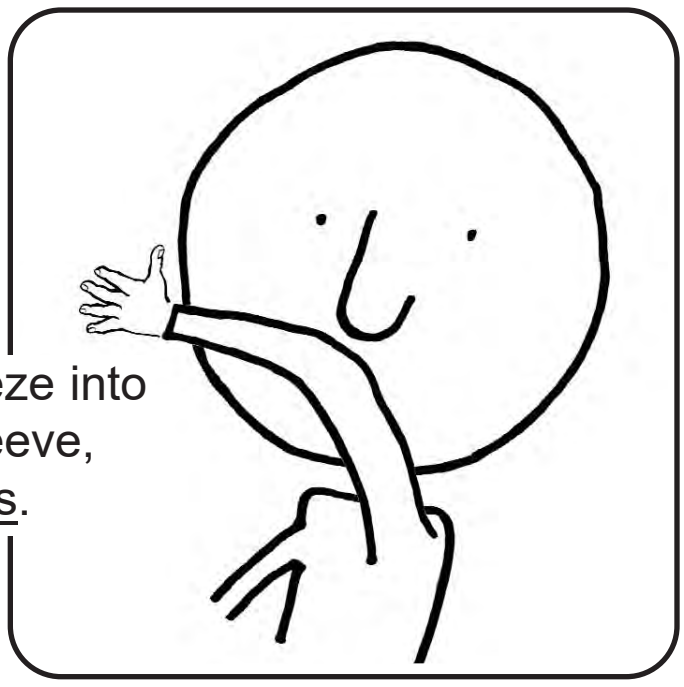
Stop the spread of germs that make you and others sick!

Cover your Cough and sneeze

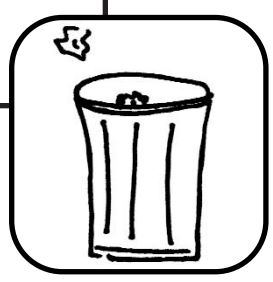


Cover your mouth and nose with a tissue when you cough or sneeze

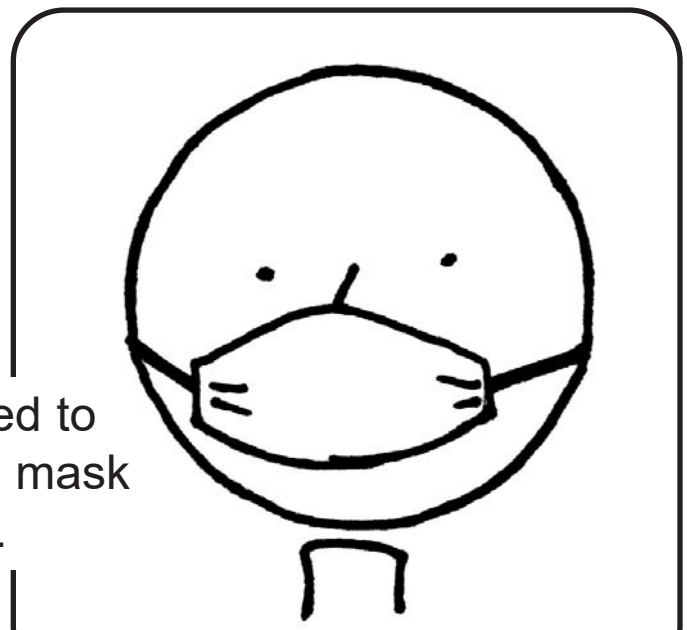
or



cough or sneeze into your upper sleeve, not your hands.



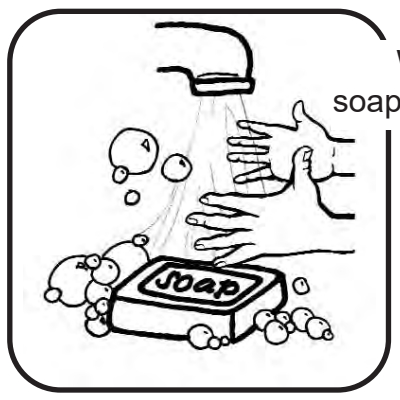
Put your used tissue in the waste basket.



You may be asked to put on a surgical mask to protect others.

Clean your Hands

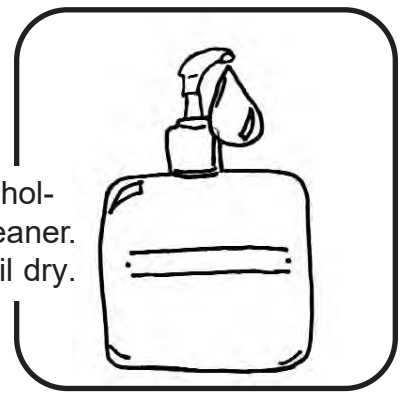
after coughing or sneezing.



Wash hands with soap and warm water for 20-seconds,

or

clean with alcohol-based hand cleaner. Rub hands until dry.



MINNESOTA MDH DEPARTMENT OF HEALTH

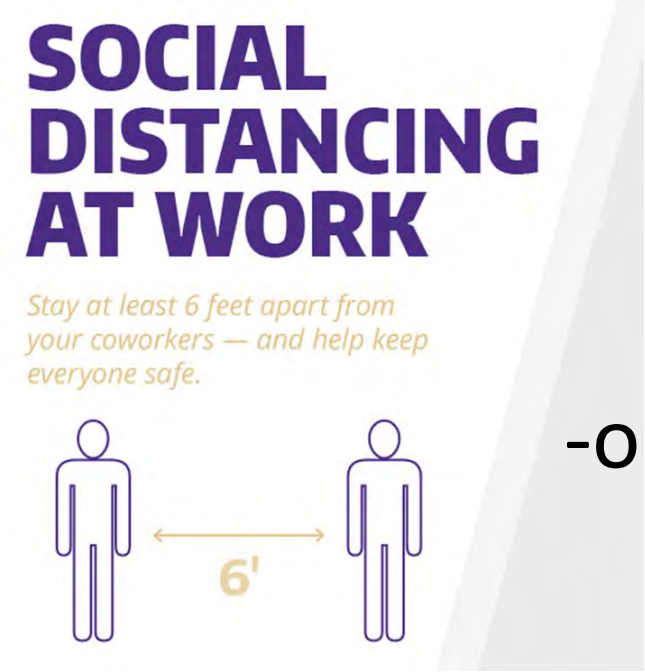
Minnesota Department of Health
625 N Robert Street, PO Box 64975
St. Paul, MN 55164-0975
651-201-5414 TDD/TTY 651-201-5797
www.health.state.mn.us

Minnesota Antibiotic Resistance Collaborative

APIC
ASSOCIATION FOR PROFESSIONALS IN INFECTION CONTROL AND EPIDEMIOLOGY, INC.

IC#141-1428

Work at a distance of 6 feet
or
Everyone in the area is to wear a mask



-or-

Have a mask available

and put it on when someone

comes within 6 feet of your workspace

Issue: 6/8/2020

Daily Tailgate Safety Meeting Log

(to be completed on site)

Site Name _____

Scope of Work _____

Weather _____

Safety Topics discussed _____

_____

Covid-19 Screening: By signing this log, you attest that you do not currently have or had symptoms of COVID-19 within the past 14 days, symptoms include: fever, cough, shortness of breath, chills, repeated shaking with chills, muscle pain, headache, sore throat, or new loss of taste or smell, AND have not knowingly been in close or proximate contact in the past 14 days with anyone who has tested positive or presumed to have COVID-19.

Employee Names:	Signatures

By signing, I acknowledge that I am knowledgeable of the scope of work being performed, the associated hazards, and will institute the controls or contingencies necessary to mitigate those hazards. Furthermore, I will stop work in the event there are new or unidentified hazards and will not commence until proper controls or contingencies are instituted to mitigate those hazards.

Signature of Site Safety Officer (or designee)_____ Date _____

Add additional sheets as necessary

HASP
1199 Sutter Avenue
Brooklyn, New York
Site Number: C224141

APPENDIX J

DIRECTIONS TO NEAREST HOSPITAL

YOUR TRIP TO:

Brookdale Hospital

12 MIN | 3.1 MI

Est. fuel cost: $0.31

Trip time based on traffic conditions as of 3:10 PM on February 2, 2017. Current Traffic: Heavy

1. Start out going **east** on Sutter Ave toward Chestnut St.

Then 0.10 miles — 0.10 total miles

2. Turn **right** onto Euclid Ave.

Euclid Ave is just past Doscher St.

May May Restaurant is on the corner.

If you reach Pine St you've gone a little too far.

Then 0.34 miles — 0.44 total miles

3. Turn **right** onto NY-27/Linden Blvd.

NY-27 is just past Linden Blvd.

If you are on Euclid Ave and reach Linden Blvd you've gone a little too far.

Then 2.50 miles — 2.94 total miles

4. Turn **left** onto Rockaway Pkwy.

Rockaway Pkwy is just past Amboy St.

If you are on NY-27 and reach E 96th St you've gone a little too far.

Then 0.02 miles — 2.96 total miles

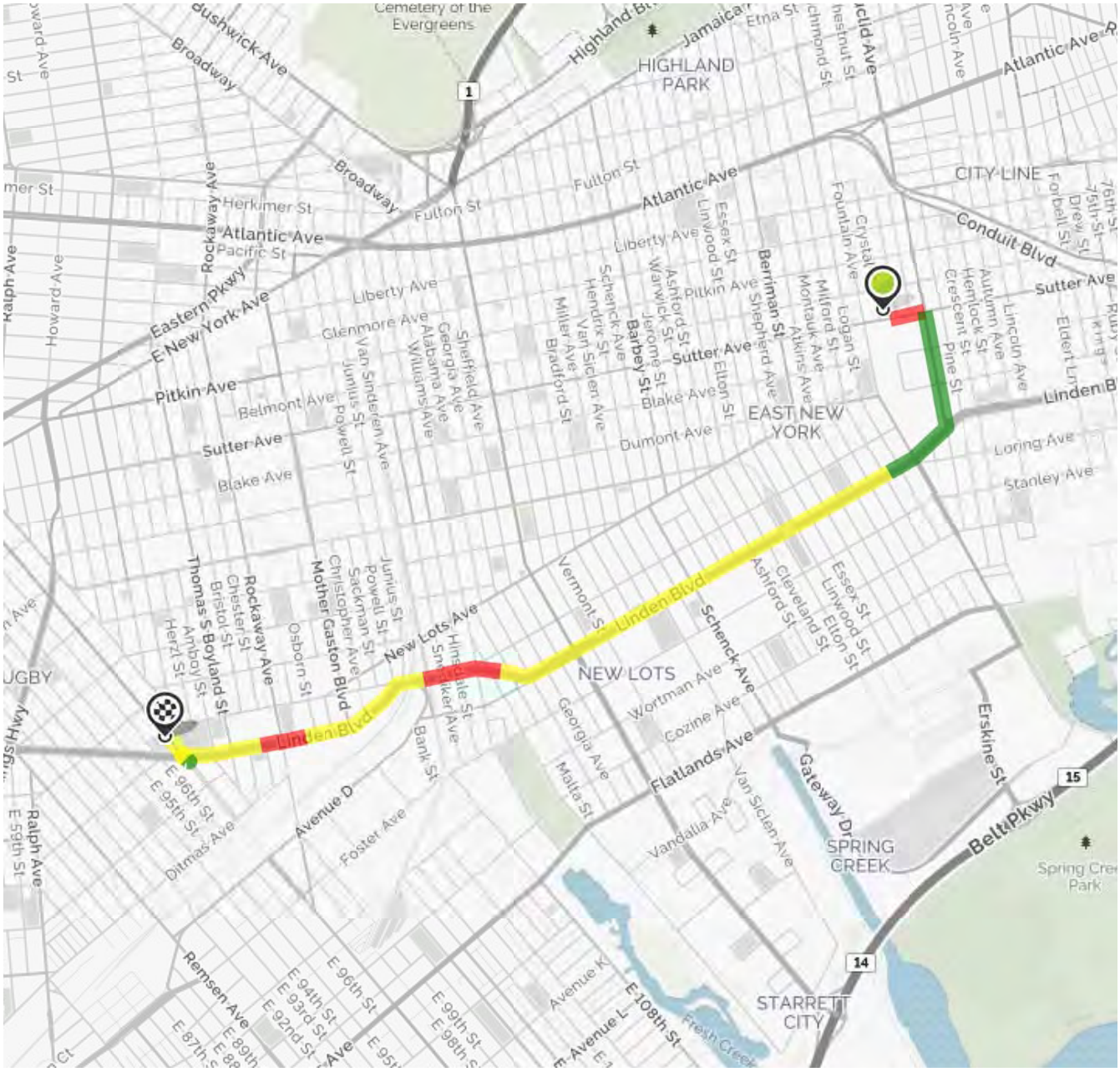
5. Make a **U-turn** at Linden Blvd onto Rockaway Pkwy.

If you reach Avenue B you've gone a little too far.

Then 0.10 miles — 3.07 total miles

6. Brookdale Hospital, 555 Rockaway Pkwy, Brooklyn, NY, 555 ROCKAWAY PKWY is on the **right**.

If you reach Church Ave you've gone about 0.1 miles too far.


Cemetery of the Evergreens
HIGHLAND PARK
Jamaica
Etna St
Atlantic Ave
CITY LINE
Conduit Blvd
Sutter Ave
Linden Blvd
Fulton St
Broadway
Herkimer St
Pacific St
Liberty Ave
Glenmore Ave
Pitkin Ave
Belmont Ave
Blake Ave
Dumont Ave
Loring Ave
Stanley Ave
EAST NEW YORK
Eastern Pkwy
E New York Ave
Rockaway Ave
Howard Ave
Ralph Ave
Van Sinderen Ave
Junius St
Powell St
Sackman St
Christopher Ave
Mother Gaston Blvd
Thomas S Boyland St
Bristol St
Chester St
Amboy St
Herzl St
Osborn St
New Lots Ave
Hinsdale St
Snediker Ave
NEW LOTS
Vermont St
Schenck Ave
Wortman Ave
Cozine Ave
Ashford St
Cleveland St
Linwood St
Elton St
Essex St
Berriman St
Shepherd Ave
Barbey St
Jerome St
Warwick St
Pitkin Ave
Schenck Ave
Hendrix St
Van Siclen Ave
Miller Ave
Bradford St
Sheffield Ave
Georgia Ave
Alabama Ave
Williams Ave
Milford St
Montauk Ave
Atkins Ave
Logan St
Crystal Fountain Ave
Pine St
Crescent St
Hemlock St
Autumn Ave
Lincoln Ave
Elder Ln
Forbell St
Drew St
75th St
76th St
Bank St
Avenue D
Foster Ave
Ditmas Ave
E 96th St
E 95th St
E 59th St
Ralph Ave
Flatlands Ave
Gateway Dr
Georgia Ave
Malta St
Vandalia Ave
Van Siclen Ave
Erskine St
Belt Pkwy
SPRING CREEK
Spring Creek Park
Remsen Ave
E 94th St
E 93rd St
E 92nd St
E 96th St
E 99th St
E 98th St
Avenue K
Avenue L
E 108th St
Fresh Creek
STARRETT CITY
1
15
14