TENEN ENVIRONMENTAL

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New York, NY 10001
(646) 606-2332

March 1, 2021

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7016

Attn: Ronnie Lee

Re: Groundwater and Soil Vapor Investigation Work Plan
Parkchester Crossing – Off-site
1590 White Plains Road
Bronx, New York
NYSDEC Site No. C203079A (Off-site to BCP Site No. C203079)

Dear Ronnie:

This letter work plan supplements our January 21 letter to describe the scope of work proposed to perform an off-site groundwater and soil vapor investigation (SVI) under a new consent order about to be or actually by now finalized between Department counsel and counsel for two alleged responsible parties (each of which owned properties with dry cleaners, as referenced below) to determine whether there has been an off-site impact from the above-referenced property that is enrolled by a "volunteer" in the Brownfield Cleanup Program (BCP).

The BCP Site was remediated in accordance with a New York State Department of Environmental Conservation (NYSDEC)-approved Interim Remedial Measures Work Plan (IRMWP) prepared by Remedial Engineering, P.C. (Remedial Engineering) and Roux Associates, Inc. (Roux) in September 2016 and a NYSDEC-approved Remedial Investigation Report (RIR)/Remedial Action Work Plan (RAWP) prepared by Roux in August 2019. Subsequently, a Final Engineering Report (FER) and Site Management Plan (SMP) were prepared for the Site by Roux Environmental Engineering and Geology, D.P.C. (the successor engineering firm of Remedial Engineering and Roux) in December 2019.

This off-site groundwater and SVI work plan has been prepared in two parts to assess current off-site conditions in groundwater and soil vapor and, if necessary, assess if a soil vapor intrusion condition exists at off-site properties surrounding the Site. This investigation will be performed in accordance with the NYSDEC Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10, May 3, 2010) and the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006, with May 2017 updates).

Background

The BCP Site is located at 1590 White Plains Road in the Borough of the Bronx, New York (BCP Site). The BCP Site is an irregularly shaped parcel, identified as Block 3952, Lots 1, 7, 8, 17 and 23 on the New York City Tax Map, as shown on Figure 1. The Site is situated on an approximately 1.493-acre area bounded by East Tremont Avenue to the north, Guerlain Street to the south, Unionport Road to the east, and White Plains Road to the west.

In May 2013, a Phase I Environmental Site Assessment (ESA) was prepared for the Site by Merritt Environmental Consulting Corp. (Merritt). The Phase I ESA identified the following Recognized Environmental Conditions (RECs) in connection with the Site:

- A gasoline station occupied the 1596 White Plains Road, a.k.a. 1880 East Tremont Avenue (Block 3952, Lot 8) portion of the Site. According to the historical sources, the gasoline station has occupied this location since approximately 1953. Our database review indicated eight (8) underground storage tanks (USTs) registered to this Site with a "closed-removed" status and six (6) USTs registered to the Site with an "in service" status. The former and current usage of the Site as a filling station constitutes a REC.
- According to sources reviewed, a dry cleaner occupied the 1597 Unionport Road portion of the Site during the years 1965-2012. The presence of a dry cleaner utilizing solvents onsite elevates the degree of concern as any improper handling, storage or disposal of these solvents may have impacts the sub-surface conditions of the property. This constitutes a REC.

Tenen also notes that a dry cleaner was historically located at 1584 White Plains Road, based on a review of the city directories.

In August 2014, a Phase II Environmental Site Investigation (ESI) was performed at the BCP Site by D&B Engineers and Architects, P.C. (D&B) to investigate the potential for impacts to soil, groundwater and soil vapor in connection with the RECs identified in the Merritt Phase I ESA. The Phase II ESI identified the presence of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals and pesticides at concentrations exceeding applicable soil cleanup objectives (SCOs) in soil at the Site, likely attributable to historic Site operations and the presence of historic fill. In addition, VOCs, specifically chlorinated solvents and petroleum-related VOCs, were detected in soil vapor and groundwater above the applicable comparison criteria, likely attributable to historic Site operations.

A Remedial Investigation (RI) was conducted by Roux and the results presented in a RIR/RAWP dated August 2019. The results of the RI confirmed the presence of concentrations of VOCs, specifically chlorinated solvents and petroleum-related VOCs, in soil, groundwater and soil vapor at the Site above the applicable comparison criteria.

The BCP Site was remediated in accordance with the September 2016 NYSDEC-approved IRMWP and August 2019 RIR/RAWP. Subsequent to completion of the remedial action, Roux prepared a FER and SMP for the BCP Site in December 2019. A Track 4 cleanup was achieved and residual contamination remains in soil and groundwater; post-remedial soil vapor samples were not collected but residual impacts may remain. A composite cover system was installed across the BCP Site to prevent contact with residual contamination and groundwater is being monitored quarterly in accordance with the SMP. Residual contamination in groundwater and soil vapor that may be migrating off-site will be assessed as part of this work plan.

Summary of Contamination Levels

In the pre-remediation soil vapor sampling, the concentrations of cVOCs, specifically tetrachloroethene (PCE) and trichloroethene (TCE) were detected in the areas of the historic dry cleaners, as shown on Figure 2. Samples SV-15 and RSV-15, collected near the former dry cleaner at 1597 Unionport Road, contained PCE at 15,596 and 5,600 micrograms per cubic meter (ug/m3), respectively, and TCE at 178 and 150 ug/m3, respectively. Sample SV-8 and RSV-10, collected near the former dry cleaner at 1584 White Plains Road, contained PCE at 31,193 and 5,500 ug/m3, respectively, and TCE at 128 and 45 ug/m3, respectively.

No other historic soil vapor samples located near the border of the BCP Site contained PCE above 1,000 ug/m3 or TCE above 60 ug/m3 (the screening levels used in the RIR/RAWP).

Soil vapor samples RSV-14 and SV-18, collected downgradient of RSV-15, contained PCE at 7.8 and 46.8 ug/m3, respectively; TCE was only detected in sample SV-18, at 0.86 ug/m3. Soil vapor sample SV-13, collected downgradient of RSV-10, contained PCE at 65.8 ug/m3 and TCE at 0.43 ug/m3. Other soil vapor samples

collected near the southwest corner of the BCP Site (generally, the downgradient border) contained PCE and TCE at low concentrations.

In one quarter of post-remedial groundwater sampling, the monitoring wells downgradient of the former dry cleaner at 1597 Unionport Road, RMW-5 and RMW-14, contained PCE at 14 and 9 micrograms per liter (ug/L), above the TOGS 1.1.1 Ambient Water Quality Standards (AWQS) of 5 ug/L but lower than pre-remedy concentrations (particularly at well RMW-5). The monitoring well associated with the former dry cleaner at 1584 White Plains Road, RMW-12, did not contain PCE above the AWQS. No other cVOCs were detected above the AWQS in any of the three wells.

Based on a review of the RIR/RAWP and the end-point sample results documented in the FER, there is no evidence of a source of soil contamination to off-site locations.

Scope of Work

The scope of work below is proposed to investigate off-site soil vapor. The scope is phased to first investigate the post-remedial conditions near the two former dry cleaners, which were also the areas of the highest pre-remedy soil vapor concentrations.

Initial phase: Exterior Soil Vapor and Groundwater Samples

- Install two exterior soil vapor points in the western sidewalk of White Plains Road. Both soil vapor points will be installed to approximately three feet below grade (ft-bg) to assess off-site, post-remediation soil vapor conditions. Based on a review of the buildings across White Plains Road, the lowest level appears to be slightly below sidewalk grade;
- Install one exterior soil vapor point in the eastern sidewalk of Archer Road to approximately three ft-bg to assess off-site, post-remediation soil vapor conditions. Similarly, these buildings appear to have the lowest level slightly below sidewalk grade;
- Install two exterior soil vapor points in the southern sidewalk of Guerlain Street to approximately three ft-bg to assess off-site, post-remediation soil vapor conditions. Similarly, these buildings appear to have the lowest level slightly below sidewalk grade.
- Install five permanent groundwater monitoring wells. Groundwater monitoring wells will be co-located with each of five exterior soil vapor points. The groundwater monitoring wells will have five foot screens set three feet into groundwater or on top of bedrock, if encountered, and will have flush-mounted caps.
- Collect exterior soil vapor samples from five newly-installed soil vapor points;
- Gauge and collect groundwater samples from five newly-installed permanent groundwater monitoring wells;
- One ambient air sample will be collected during the exterior soil vapor sampling event;
- Analyze exterior soil vapor and ambient air samples for TO-15 VOCs; and,
- Analyze groundwater samples for Part 375 VOCs by EPA Method 8260C.

Contingent phase: Sub-slab Soil Vapor and Indoor Air Samples

- Contingent upon the results of the exterior soil vapor samples and agreement by NYSDEC and NYSDOH, sub-slab soil vapor points will be installed initially in up to five off-site buildings surrounding the Site, assuming access can be obtained. The sub-slab soil vapor sample probes will be installed within the lowest building level no more than two inches below the building slab. These locations will be co-located with indoor air samples collected from breathing height (three to five feet above the floor);
- One ambient air sample will be collected for each sub-slab soil vapor/indoor air sampling event; and,
- Analyze sub-slab soil vapor, indoor air and ambient air samples for TO-15 VOCs.

Proposed off-site exterior soil vapor samples and contingent sub-slab soil vapor and co-located indoor air sampling locations are shown in the attached Figure 2.

Soil Vapor Point Installation and Soil Vapor Sampling Methodology
(Exterior Soil Vapor and Sub-slab Soil Vapor)

Up to five exterior soil vapor points will be installed in sidewalks surrounding the Site. If the results of the exterior soil vapor samples indicate that the post-remediation condition requires delineation, initially up to five contingent sub-slab soil vapor points will be installed one each in five off-site buildings surrounding the Site. Should additional locations be identified as requiring investigation following the contingent sampling, an updated figure will be provided to NYSDEC, but the same methodology will be used. Exterior and sub-sab soil vapor points will be installed, as necessary, and samples will be collected in general accordance with NYSDOH's SVI Guidance as described below.

Exterior soil vapor points will be installed using hand tools. At each sampling location, access to the subsurface soil will be gained by drilling through the top surface material (concrete) using a drill bit. Upon penetration through the surface material, a disposable sampling probe consisting of a two-inch long perforated vapor intake will be installed to a depth of three ft-bg.

Temporary sub-slab soil vapor points will be installed using a hand-held hammer drill with a concrete drill bit. The drill bit will be extended a maximum two inches below the floor slab for sub-slab soil vapor samples.

At the terminal depth of the soil vapor locations, the sample probe will be attached to ¼-inch diameter Teflon® tubing and extended to the surface. The borehole above the sampling probe to grade will be sealed using an inert sealant to prevent ambient air mixing with the soil vapor. Ambient air will be purged from the boring hole by attaching the surface end of the ¼-inch diameter Teflon® tube to an air valve and then to a vacuum pump. The vacuum pump will remove three volumes of air (volume of the sample probe and tube) prior to sample collection. The flow rate for both purging and sample collection will not exceed 0.2 liters per minute.

The soil vapor samples will be first screened for VOCs using a photoionization detector (PID). A tracer gas (helium) will be used in accordance with the NYSDOH protocols to verify the integrity of the soil vapor probe seal. Helium will be used as the tracer gas and a bucket will serve to keep it in contact with the probe during testing. A portable monitoring device will be used to analyze a sample of soil vapor from the tracer prior to sampling. If the tracer sample results show a significant presence of the tracer gas, the probe seals will be adjusted to prevent infiltration.

A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone and chain of custody.

Exterior soil vapor samples will be collected in laboratory-supplied 2.7-liter Summa canisters using two-hour regulators. Sub-slab soil vapor samples will be collected in laboratory-supplied 6-liter Summa canisters using 24-hour regulators in residential structures. Should commercial spaces be identified at a later date, eight-hour regulators will be used. All samples will be sealed, labeled, and placed in a secure container for delivery to a NYSDOH ELAP-certified analytical laboratory. All exterior and sub-slab soil vapor samples will be analyzed for EPA Method TO-15 VOCs with a Category B deliverable package.

Indoor Air and Ambient Air Sampling Methodology

Initially up to five contingent co-located sub-slab soil vapor and indoor air samples will be collected from off-site buildings surrounding the BCP Site. Indoor air and ambient air samples will be collected in accordance with NYSDOH's SVI Guidance as described below.

The indoor air samples will be co-located with sub-slab soil vapor samples. Both indoor and ambient air samples will be collected from breathing height (three to five feet above the floor) from within each off-site building and in a secure, upwind direction. The sampling flow rate will not exceed 0.2 liters per minute (L/min). Sampling will occur for a duration of 24 hours in residential structures. Should commercial spaces be identified at a later date, eight-hour regulators will be used. A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody protocols.

Samples will be collected during the heating season in laboratory-supplied 6-liter Summa canisters using eight-hour regulators in commercial structures and 24-hour regulators in residential structures and will be sealed, labeled, and placed in a secure container for delivery to a NYSDOH ELAP-certified analytical laboratory. All indoor air and ambient air samples will be analyzed for EPA Method TO-15 VOCs with a Category B deliverable package.

Groundwater Monitoring Well Installation and Groundwater Sampling Methodology

Five newly-installed permanent monitoring wells (MW-1 through MW-5) will be sampled. All sampling equipment will be decontaminated prior to use. Prior to sampling, water levels will be measured using an electronic product-water level indicator. Sample collection will be accomplished using low-flow procedures. Samples will not be collected until pH, temperature, and conductivity measurements stabilize and the turbidity reading is 50 Nephelometric Turbidity Units (NTU) or less, or it stabilizes above 50 NTU.

All monitoring wells will be installed using a Geoprobe direct-push rig and will consist of two-inch inner diameter (ID) PVC casing and riser. For all wells, a five-foot pre-packed PVC screen (0.020-inch slot) will be installed and straddle the groundwater table (two feet above and three feet below). If groundwater is encountered less than three feet above bedrock, then the screen will be set on top of bedrock. For all monitoring wells, a pre-packed sand filter will be included around the screens. The annular area around the well casing will be sealed with bentonite pellets for an interval of two feet. The annular space above the bentonite pellets to one ft-bg will be backfilled with unimpacted drill cuttings or clean sand. The remaining annular space will be sealed with a concrete cap and well apron (expanding cement). A locking well cap will be installed upon completion of the well.

Groundwater well construction logs will be completed for all of the newly constructed wells, including top of casing and screening interval. The monitoring wells will be developed on the day of installation by pumping using dedicated low-density polyethylene (LDPE) tubing. The wells will be developed until at least three well volumes have been evacuated.

Samples will be collected using low-flow techniques in accordance with EPA Region 1 Low-Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (EQASOP-GW 001 Revison 3 dated July 30, 1996 Revised: January 19, 2010). All groundwater samples will be analyzed for Part 375 VOCs by EPA Method 8260C with a Category B deliverable package.

Quality Assurance/Quality Control

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

Health and Safety

All work will be completed in accordance with the Health and Safety Plan (HASP) included as Attachment 1 of this work plan.

Air Monitoring and Daily Reporting

Ground-intrusive sampling activities that would produce large amounts of particulates or volatiles are not planned, therefore, a Community Air Monitoring Plan (CAMP), will not be required. Daily reports will be sent to the NYSDOH and NYSDEC Project Manager via email. Daily reports will include a Site figure depicting Work Zones, activities, representative photos of work performed and wind direction.

Reporting

The findings of the initial phase of the off-site groundwater and soil vapor investigation will be submitted to NYSDEC and NYSDOH. Initially, the results of the exterior groundwater and soil vapor samples, collected to document post-remedial conditions, will be provided for review and discussion, and to support decision making as to the necessity for implementation of the subsequent or contingent sub-slab soil vapor / indoor air sampling within off-site buildings.

Please contact us if you need any additional information.

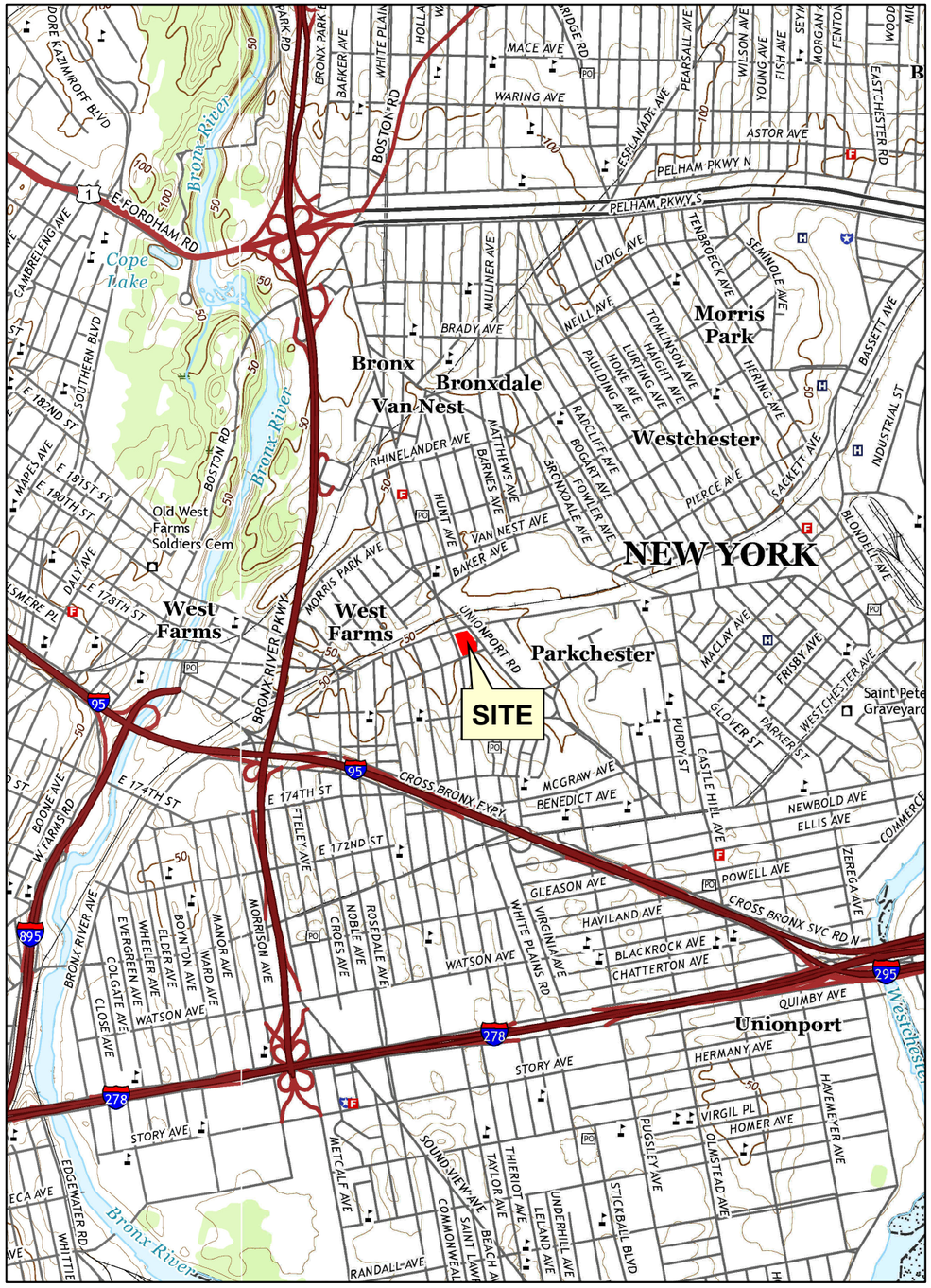
Sincerely,
Tenen Environmental, LLC

Matthew Carroll, PE
Principal / Environmental Engineer

Attachments

Figure 1	BCP Site Location
Figure 2	Proposed Sampling Location Map
Attachment 1	Health and Safety Plan

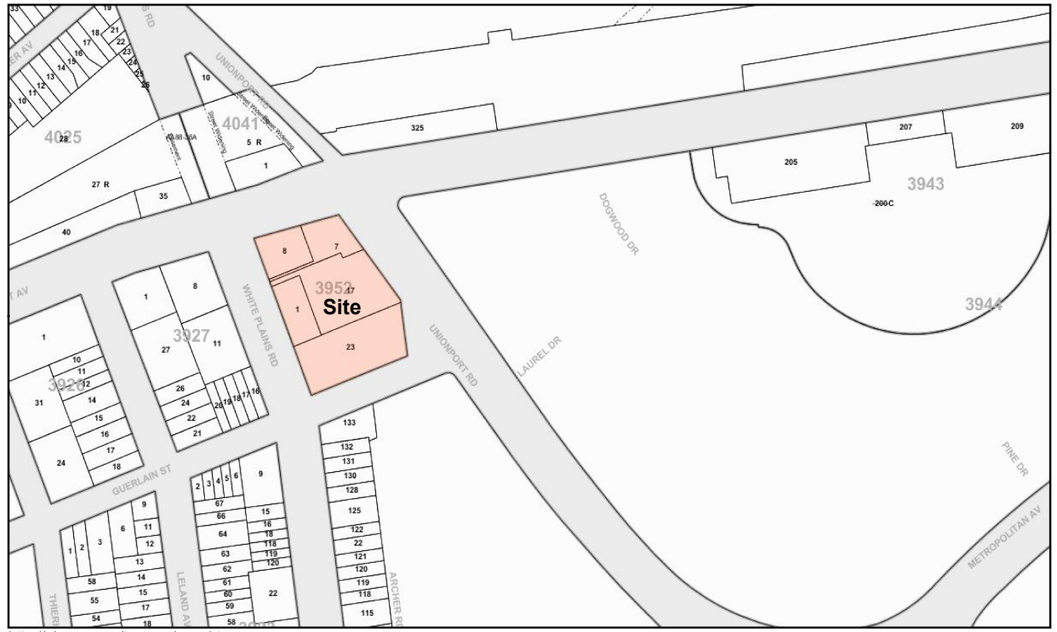
Figures



Basemap: USGS Topographic Map, 7.5 Minute Quadrangle: Central Park, NY, 2016; Flushing, NY, 2016

Site Location

0 1,000 2,000 4,000 Feet



http://gis.nyc.gov/taxmap/map.htm

Department of Finance Digital Tax Map

0 150 300 600 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
NYC Department of City Planning, Information Technology Division

Department of City Planning MapPLUTO - 2020 v6

0 150 300 600 Feet

Site

Parkchester Crossing
1590 White Plains Road
Bronx, New York
Block 3952, Lots 1, 7, 8, 17 & 23

TENEN ENVIRONMENTAL
Tenen Environmental, LLC
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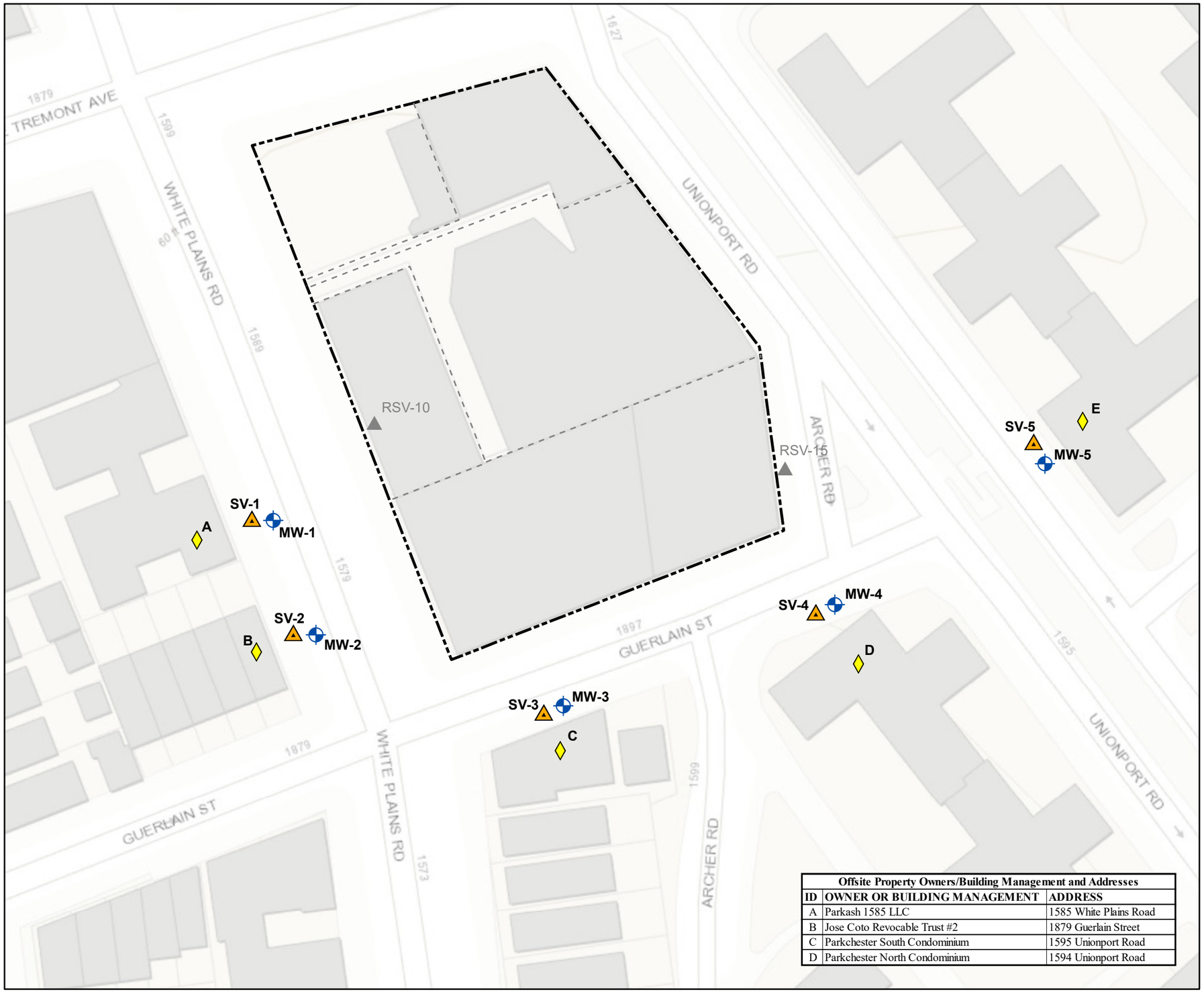
Drawn By	Checked By	Date	Scale
LM	MC	December 2020	As Noted

Drawing Title: **Site Location Map**

Drawing No: **Figure 1**



Offsite Property Owners/Building Management and Addresses		
ID	OWNER OR BUILDING MANAGEMENT	ADDRESS
A	Parkash 1585 LLC	1585 White Plains Road
B	Jose Coto Revocable Trust #2	1879 Guerlain Street
C	Parkchester South Condominium	1595 Unionport Road
D	Parkchester North Condominium	1594 Unionport Road

Legend

- Proposed Groundwater Sample Location
- Proposed Soil Vapor Sample
- Proposed Offsiste Soil Vapor/ Indoor Air Sample
- Former ROUX Soil Vapor Sample Location
- Project Site

Feet
0 30 60 120

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Site
Parkchester Crossing
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Drawn By	Checked By	Date	Scale
LM	MC	February 2021	As Noted

Drawing Title: **Proposed Sample Location Map**

Drawing No: **Figure 2**

Attachment 1
Health and Safety Plan

Health and Safety Plan

for
Parkchester Crossing
Offsite Groundwater and Soil Vapor Investigation Work Plan

1590 White Plain Road
Bronx, NY 10462
Bronx County
NYSDEC BCP No. C203079A (Offsite to BCP No. C203079)

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
ZP Realty LLC
1 Penn Plaza, Suite 4000
New York, New York 10019

Prepared by:
TENEN ENVIRONMENTAL
121 West 27th Street
New York, NY 10001

March 2021

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Figures

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Appendices

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared in conformance with the Occupational Safety and Health Administration (OSHA) standards and guidance that govern site investigation activities, other applicable regulations, and Tenen Environmental LLC (Tenen) health and safety policies and procedures. The purpose of this HASP is the protection of Tenen field personnel and others during the implementation of a Remedial Investigation Work Plan.

The BCP Site, located at 1590 White Plain Road in Bronx, New York, is an irregularly-shaped parcel comprised of Block 3952, Lots 1, 7, 8, 17, and 23 of the New York City Tax map, situated at the intersection of White Plain Road and East Tremont Avenue. The property is currently vacant. The Site was formerly operated as retail, commercial, former gasoline and service station.

1.1 Scope of HASP

This HASP includes safety procedures to be used by Tenen staff during the following activities:

- Installation of soil vapor points;
- Installation of permanent groundwater monitoring wells;
- Collection of soil vapor samples from soil vapor points; and,
- Collection of groundwater samples from permanent groundwater monitoring wells.

Subcontractors will ensure that performance of the work is in compliance with this HASP and applicable laws and regulations.

2.0 PROJECT SAFETY AUTHORITY

The following personnel are responsible for project health and safety under this HASP.

- Project Manager, Alana Carroll
- Health and Safety Officer (HSO), Matthew Carroll

In addition, each individual working at the Site will be responsible for compliance with this HASP and general safe working practices. All Site workers will have the authority to stop work if a potentially hazardous situation or event is observed.

2.1 Designated Personnel

The Project Manager is responsible for the overall operation of the project, including compliance with the HASP and general safe work practices. The Project Manager may also act as the Health and Safety Officer (HSO) for this project.

Tenen will appoint one of its on-site personnel as the on-site HSO. This individual will be responsible for the implementation of the HASP. The HSO will have a 4-year college degree in occupational safety or a related science/engineering field, and at least two (2) years of experience in implementation of air monitoring and hazardous materials sampling programs. The HSO will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards.

The HSO will be present on-site during all field operations involving drilling or other subsurface disturbance, and will be responsible for all health and safety activities and the delegation of duties to the field crew. The HSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO must be absent from the field, a replacement who is familiar with the Construction Health and Safety Plan, air monitoring and personnel protective equipment (PPE) will be designated.

3.0 HAZARD ASSESSMENT AND CONTROL MEASURES

The Site was initially developed sometime prior to 1950 with the southwestern portion of the existing single-story building. Sometime prior to 1988, one-story additions were constructed on the northern and eastern sides of the original structure. The Site operated as a dry cleaning facility for 46 years until its recent closing in 2018. The Site is currently vacant and has remained so since the cessation of operations. The following previous investigations summarize contaminants of concern detected on the Site:

Phase I Environmental Site Assessment, 1590 White Plain Road, Bronx, NY 10462. Merritt Environmental Consulting Corp., May 2013.

In May 2013, a Phase I Environmental Site Assessment (ESA) was prepared for the Site by Merritt Environmental Consulting Corp. (Merritt). The Phase I ESA identified the following Recognized Environmental Conditions (RECs) in connection with the Site:

- A gasoline station occupied the 1596 White Plains Road, a.k.a. 1880 East Tremont Avenue (Block 3952, Lot 8) portion of the Site. According to the historical sources, the gasoline station has occupied this location since approximately 1953. Our database review indicated eight (8) underground storage tanks (USTs) registered to this Site with a "closed-removed" status and six (6) USTs registered to the Site with an "in service" status. The former and current usage of the Site as a filling station constitutes a REC.
- According to sources reviewed, a dry cleaner occupied the 1597 Unionport Road portion of the Site during the years 1965-2012. The presence of a dry cleaner utilizing solvents onsite elevates the degree of concern as any improper handling, storage or disposal of these solvents may have impacts the sub-surface conditions of the property. This constitutes a REC.

Tenen also notes that a dry cleaner was historically located at 1584 White Plains Road, based on a review of the city directories.

Phase II Environmental Site Assessment, 1590 White Plain Road, Bronx, NY 10462. D&B Architects and Engineers, P.C., August 2014.

In August 2014, a Phase II Environmental Site Investigation (ESI) was performed at the BCP Site by D&B Engineers and Architects, P.C. (D&B) to investigate the potential for impacts to soil, groundwater and soil vapor in connection with the RECs identified in the Merritt Phase I ESA. The Phase II ESI identified the presence of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals and pesticides at concentrations exceeding applicable soil cleanup objectives (SCOs) in soil at the Site, likely attributable to historic Site operations and the presence of historic fill. In addition, VOCs, specifically chlorinated solvents and petroleum-related VOCs, were detected in soil vapor and groundwater above the applicable comparison criteria, likely attributable to historic Site operations.

Remedial Investigation Report/Remedial Action Work Plan, 1590 White Plain Road, Bronx, NY 10462. Roux Environmental Engineering and Geology, D.P.C., August 2019.

A Remedial Investigation (RI) and Supplemental RI was performed at the Site by Roux in October and December 2018, respectively, and the results detailed in the August 2019 Remedial Investigation Report (RIR). The RI included the installation of twenty seven onsite soil borings, the collection of 62 soil samples, the installation of four new permanent monitoring wells and seven temporary monitoring wells, the collection of 11 groundwater samples, the installation of 13 vapor points, and the collection of 13 soil

vapor samples, collection of a comprehensive water level gauging round from the new and existing permanent monitoring wells. The results were as follows:

- VOCs, including petroleum-related compounds and some chlorinated compounds, were detected at elevated concentrations in soil vapor. The detected concentrations of VOCs in soil vapor are likely due to the presence of VOCs in Site soils and groundwater, and potentially off-Site sources. Petroleum VOC concentrations in soil, groundwater and soil vapor are elevated in Lot 8, and chlorinated VOCs in groundwater and soil vapor and to a lesser extent in soil, are concentrated around the former on-Site dry cleaners. VOCs were observed in soil above the NYSDEC Unrestricted Use SCOs and Restricted Residential Use SCOs, and/or the protection of groundwater SCOs as a result of the former gas station and one localized shallow tetrachloroethene (PCE) hotspot in Lot 1 (RMW-12). The same VOCs that were detected above the Protection of Groundwater SCOs were also detected in groundwater, in in localized areas of the Site are likely contributing to groundwater impacts.
- SVOCs, exclusively PAHs, were detected at elevated concentrations above NYSDEC Unrestricted Use SCOs and Restricted Residential Use SCOs sporadically in shallow soils across the Site. Only one PAH, Benzo(a)anthracene, was detected above the AWQSGV in one groundwater sample (RMW-4), which is not near the soil exceedances. In addition, it is likely that SVOCs present in the unfiltered groundwater samples were a result of sediment present in the samples and are not representative of dissolved impacts in groundwater. This data indicates that SVOCs in soil are not a significant source of groundwater contamination at the Site.
- Metals were detected in soil at elevated concentrations above NYSDEC SCOs across the Site. Arsenic, Barium, Hexavalent Chromium, Trivalent Chromium, Copper, Lead, Mercury, Nickel and Zinc were detected at concentrations above NYSDEC Unrestricted Use SCOs. Arsenic, barium, and lead were detected at concentrations exceeding NYSDEC Restricted Residential SCOs. Metals contamination is related to the use of urban fill at the Site. Metals were detected at concentrations above NYSDEC Protection of Groundwater SCOs in soil but were not detected in dissolved groundwater indicating that metals in soil are not a source of groundwater contamination at the Site.
- PCBs, pesticides, and herbicides were detected sporadically throughout Site soils. PCBs were detected in soil at concentrations exceeding NYSDEC Unrestricted Use, but not in exceedance of their Restricted Residential Use SCOs and they were not detected in groundwater. Pesticides and herbicides were detected in soil at concentrations exceeding NYSDEC Unrestricted Use, but not in exceedance of their Restricted Residential Use SCOs and they were not detected in groundwater.
- According to water-level data collected during this RI, the elevation of the water table surface at the Site ranges from approximately 47.94 ft North American Vertical Datum of 1988 (NAVD 88) at the northeast portion of the Site to approximately 34.57 NAVD 88 in the southcentral portion of the Site. The groundwater encountered in the overburden at the Site is representative of a perched water condition that is sitting above bedrock. There was no consistent pattern within the water table elevations, so a groundwater flow map was not prepared. Regional groundwater flow within the bedrock is believed to be in a southwesterly direction towards the Bronx River.

3.1 Human Exposure Pathways

The media of concern at the Site include potentially-impacted groundwater and soil vapor. Potential exposure pathways include dermal contact, incidental ingestion and inhalation of vapors. The risk of dermal contact and incidental ingestion will be minimized through general safe work practices, a personal hygiene program and the use of PPE.

3.2 Chemical Hazards

Based on historic uses and previously-completed investigations, the following contaminants of concern may be present at the Site:

Chlorinated Solvents
- PCE
- TCE

Material Safety Data Sheets (MSDSs) for each contaminant of concern are included in Appendix C. All personnel are required to review the MSDSs included in this HASP.

3.3 Physical Hazards

The physical hazards associated with the field activities likely present a greater risk of injury than the chemical constituents at the Site. Activities within the scope of this project shall comply with New York State and Federal OSHA construction safety standards.

Head Trauma
To minimize the potential for head injuries, field personnel will be required to wear National Institutes of Occupational Safety and Health (NIOSH)-approved hard hats during field activities. Hats must be worn properly and not altered in any way that would decrease the degree of protection provided.

Foot Trauma
To avoid foot injuries, field personnel will be required to wear steel-toed safety shoes while field activities are being performed. To afford maximum protection, all safety shoes must meet American National Standards Institute (ANSI) standards.

Eye Trauma
Field personnel will be required to wear eye protection (safety glasses with side shields) while field activities are being performed to prevent eye injuries caused by contact with chemical or physical agents.

Noise Exposure
Field personnel will be required to wear hearing protection (ear plugs or muffs) in high noise areas (noise from heavy equipment) while field activities are being performed.

Buried Utilities and Overhead Power Lines
Boring locations will be cleared by an underground utility locator service. In addition, prior to intrusive activities, the drilling subcontractor will contact the One Call Center to arrange for a utility mark-out, in accordance with New York State requirements. Protection from overhead power lines will be accomplished by maintaining safe distances of at least 15 feet at all times.

Thermal Stress
The effects of ambient temperature can cause physical discomfort, personal injury, and increase the probability of accidents. In addition, heat stress due to lack of body ventilation caused by protective clothing is an important consideration. Heat-related illnesses commonly consist of heat stroke and heat exhaustion.

The symptoms of heat stroke include: sudden onset; change in behavior; confusion; dry, hot and flushed skin; dilated pupils; fast pulse rate; body temperature reaching 105° or more; and/or, deep breathing later

followed by shallow breathing.

The symptoms of heat exhaustion include: weak pulse; general weakness and fatigue; rapid shallow breathing; cold, pale and clammy skin; nausea or headache; profuse perspiration; unconsciousness; and/or, appearance of having fainted.

Heat-stress monitoring will be conducted if air temperatures exceed 70 degrees Fahrenheit. The initial work period will be set at 2 hours. Each worker will check his/her pulse at the wrist for 30 seconds early in each rest period. If the pulse rate exceeds 110 beats per minute, the next work period will be shortened by one-third.

One or more of the following precautions will reduce the risk of heat stress on the Site:

- Provide plenty of liquids to replace lost body fluids; water, electrolytic drinks, or both will be made available to minimize the risk of dehydration and heat stress
- Establish a work schedule that will provide appropriate rest periods
- Establish work regimens consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines
- Provide adequate employee training on the causes of heat stress and preventive measures

In the highly unlikely event of extreme low temperatures, reasonable precautions will be made to avoid risks associated with low temperature exposure.

Traffic

Field activities will occur near public roadways. As a result, vehicular traffic will be a potential hazard during these activities and control of these areas will be established using barricades or traffic cones. Additional staff will be assigned, as warranted, for the sole purpose of coordinating traffic. Personnel will also be required to wear high-visibility traffic vests while working in the vicinity of the public roadways and local requirements for lane closure will be observed as needed. All work in public rights-of-way will be coordinated with local authorities and will adhere to their requirements for working in traffic zones.

Hazardous Weather Conditions

All Site workers will be made aware of hazardous weather conditions, specifically including extreme heat, and will be requested to take the precautions described herein to avoid adverse health risks. All workers are encouraged to take reasonable, common sense precautions to avoid potential injury associated with possible rain or high wind, sleet, snow or freezing.

Slip, Trip and Fall

Areas at the Site may be slippery from mud or water. Care should be taken by all Site workers to avoid slip, trip, and fall hazards. Workers shall not enter areas that do not have adequate lighting. Additional portable lighting will be provided at the discretion of the HSO.

Biological Hazards

Drugs and alcohol are prohibited from the Site. Any on-site personnel violating this requirement will be immediately expelled from the site.

Any worker or oversight personnel with a medical condition that may require attention must inform the HSO of such condition. The HSO will describe appropriate measures to be taken if the individual should become symptomatic.

Due to the Site location in an urban area, it is highly unlikely that poisonous snakes, spiders, plants and

insects will be encountered. However, other animals (dogs, cats, etc.) may be encountered and care should be taken to avoid contact.

4.0 COVID-19 HEALTH AND SAFETY

The following requirements apply to all Tenen employees working on project sites for the duration of the COVID-19 pandemic. These guidelines are based on information provided by the Centers for Disease Control, the Occupational Safety and Health Administration and the New York State "New York Forward" Covid-19 management plans. Information regarding the health status of Tenen employees will be kept confidential, with the exception of required notifications to health authorities. The following are guidelines. **As with any potential workplace hazard, employees should report any concerns related to potential Covid-19 exposure to the Project Manager.**

Communication/Reporting:

Employees should not report to work and should notify the Project Manager immediately in the event of the following:

- You are exhibiting flu-like symptoms (fever, body aches, cough, difficulty breathing). Contact your health care provider and follow their instructions.
- You do not exhibit symptoms but have a sick (i.e., diagnosed with Covid-19 or exhibiting flu-like symptoms) family member at home. Remember that the virus can be spread by asymptomatic individuals.
- You have been exposed to someone who has been diagnosed with Covid-19.

In each of the above cases, inform your Project Manager regarding others who may have been exposed in order to facilitate any necessary notification or contact tracing efforts.

Hygiene

- Wash hands frequently with soap and water for at least 20 seconds or use hand sanitizer with at least 60% alcohol if soap and water are not available. Key times for employees to clean their hands include:
    - Before and after work shifts
    - Before and after work breaks
    - After blowing the nose, coughing, or sneezing
    - After using the restroom
    - Before eating or preparing food
    - After putting on, touching, or removing face coverings
- Avoid touching the eyes, nose, and mouth with unwashed hands.
- Practice good respiratory etiquette, including covering coughs and sneezes.
- To the extent possible, avoid sharing tools and sampling equipment. Shared tools and equipment should be regularly disinfected.

Physical Distancing

- Minimize contact with others, maintaining a distance of at least six feet to the extent possible
- Employees should wear masks over their nose and mouth to prevent spread of the virus; this is especially important when a minimum 6-foot distance cannot be maintained.

- Maintain the 6-foot distance to the extent possible during sampling efforts and pickup and delivery of sampling equipment and containers.
- Keep job site meetings to a minimum and of short duration; limit the number of people involved and maintain social distance.

5.0 AIR MONITORING

The New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP), included as Appendix 1A of DER-10, will be implemented during all ground-intrusive remedial activities associated with chlorinated solvent-impacted groundwater. Continuous monitoring will be implemented during all soil handling activities and will be recorded at a 15-minute basis.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a 15-minute basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring should be performed using equipment appropriate for the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.
4. All 15-minute readings must be recorded and be available for New York City Department of Environmental Protection (NYCDEP) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a 15-minute basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed

150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.
3. All readings must be recorded and be available for NYCDEP personnel to review.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks is based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, "General Description and Discussion of the Levels of Protection and Protective Gear" and the Centers for CDC COVID-19 "Guidelines on How to Protect Yourselves and Others".

Tenen field personnel and other site personnel will wear Modified Level D-1 personal protective equipment. During activities such as drilling, well installation, or sampling, where there is a chance of contact with contaminated materials, Modified Level D-2 equipment will be worn. The protection will be upgraded to Level C if warranted by the results of the air monitoring. A six-foot minimum distance between individuals (both workers and non-workers) will be maintained at all times. A description of the personnel protective equipment for Levels D and C is provided below.

Modified Level D-1
Respiratory Protection: Cloth face covering
Protective Clothing: Hard hat, steel-toed shoes, long pants, nitrile gloves

Modified Level D-2
Respiratory Protection: Cloth face covering
Protective Clothing: Hard hat, steel-toed shoes, coveralls/tyvek, nitrile gloves

Level C
Respiratory Protection: Air purifying respirator with organic vapor cartridges and filters.
Protective Clothing: Same as modified Level D

7.0 EXPOSURE MONITORING

7.1 Hazardous Materials

Selective monitoring of workers in the exclusion area may be conducted, as determined by the HSO, if sources of hazardous materials are identified. Personal monitoring may be conducted in the breathing zone at the discretion of the Project Manager or HSO. All monitoring will comply with the CDCs Guidance on Social Distancing.

7.2 COVID-19

For any employee that may have come into contact with a person who has COVID-19, a 14-day quarantine will be imposed for that individual and any employee that individual was in contact with.

8.0 SITE ACCESS

The Site is currently vacant. Access to the Site during the remedial action will be controlled by the Project Manager or HSO. Access to the off-site work areas will be cordoned off. Unauthorized personnel will not be allowed access to the Site or off-site work areas during the investigation.

9.0 WORK AREAS

During any activities involving drilling or other subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, clarify the type of protective equipment needed, and provide an area for decontamination.

The Exclusion Zone is defined as the area where potentially contaminated materials are generated as the result of drilling, sampling, or similar activities. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located adjacent to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, a field phone, fire extinguisher and/or first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all Site workers will assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern (i.e., areas with exposed soil) to prevent unnecessary access.

10.0 DECONTAMINATION PROCEDURES

Personnel Decontamination
Personnel decontamination (decon), if deemed necessary by the HSO, will take place in the designated decontamination area delineated for each sampling location. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Tyvek removal;
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

Equipment Decontamination
Sampling equipment, such as split-spoons and bailers, will be decontaminated in accordance with U.S. Environmental Protection Agency methodologies, as described in the work plan. Because site soil is considered essentially non-hazardous, there is no need to decontaminate vehicles used for transporting equipment and personnel over the Site.

Disposal of Materials
Purged well water, water used to decontaminate any equipment and well cuttings will be containerized and disposed off-site in accordance with federal, state and local regulations.

11.0 GENERAL SAFE WORK PRACTICES

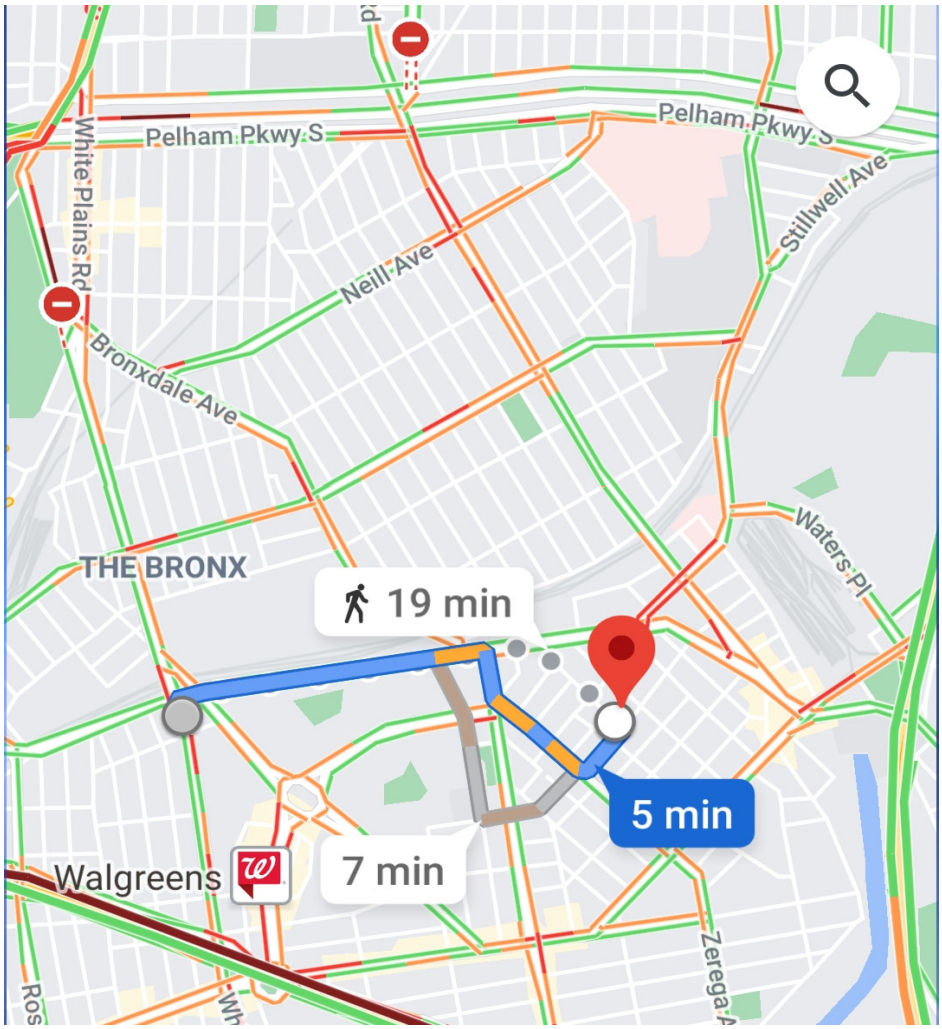
To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the HSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- Removal of potential contamination from PPE and equipment by blowing, shaking or any means that may disperse materials into the air is prohibited.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.
- Personnel will be cautioned to inform each other of symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract and heat stress.
- No excessive facial hair that interferes with a satisfactory fit of the face-piece of the respirator to the face will be allowed on personnel required to wear respiratory protective equipment.
- On-site personnel will be thoroughly briefed about the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods.

12.0 EMERGENCY PROCEDURES

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and will have someone call for an ambulance, if needed. If the nature of the injury is not serious—i.e., the person can be moved without expert emergency medical personnel—onsite personnel should drive him to a hospital. **The nearest emergency room is at Mount Sinai Medical Center located at 2475 St. Raymond Avenue, Bronx, NY 10461. The phone number is (718) 430-7300.** The route to the hospital is shown and detailed on the next page.

12.1 Route to Hospital



Driving directions to **Mount Sinai Medical Center** from **1590 White Plains Road, Bronx, NY 10462:**

1. Head north on White Plains Rd towards East Tremont Avenue.
2. Turn right onto East Tremont Avenue and continue for 0.6 miles.
3. Turn right onto Castle Hill Avenue and continue for 453 feet.
4. Turn left onto Zerega Avenue and continue for 0.2 miles.
5. Turn left onto St. Raymond Avenue and continue for 0.1 miles.
6. Turn left onto Seddon Street. The emergency room entrance will be on the right.

12.2 Emergency Contacts

There will be an on-site field phone. Emergency and contact telephone numbers are listed below:

Table 1 – Emergency Contacts

Ambulance	911

Emergency Room	(914) 885-2525
NYSDEC Spill Hotline	(800) 457-7362
Tenen PM, Alana Carroll	(917) 428-2094
On-site Field Phone, Ashley Platt	(908) 892-1354

13.0 TRAINING

All personnel performing the field activities described in this HASP will have received the initial safety training required by 29 CFR, 1910.120. Current refresher training status also will be required for all personnel engaged in field activities.

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All field personnel must attend a training program covering the following areas:

- potential hazards that may be encountered;
- the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- the purpose and limitations of safety equipment; and
- protocols to enable field personnel to safely avoid or escape from emergencies.

Each member of the field crew will be instructed in the above objectives before he/she goes onto the site. The HSO will be responsible for conducting the training program.

14.0 MEDICAL SURVEILLANCE

All Tenen and subcontractor personnel performing field work involving drilling or other subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). The medical examination for Tenen employees will, at a minimum, be provided annually and upon termination of hazardous waste site work.

Appendix A

Acknowledgement of HASP

ACKNOWLEDGMENT OF HASP

Below is an affidavit that must be signed by all Tenen Environmental employees who enter the site. A copy of the HASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I have read the Construction Health and Safety Plan (HASP) for the Parkchester Crossing Site in the Bronx, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____

Appendix B

Injury Reporting Form (OSHA Form 300)

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

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

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ______________________

City ______________ State ______________

Identify the person			Describe the case			Classify the case — CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness: (M)					
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., Welder*)	(D) Date of injury or onset of illness	(E) Where the event occurred (*e.g., Loading dock north end*)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., Second degree burns on right forearm from acetylene torch*)	(G) Death	(H) Days away from work	(I) Remained at Work: Job transfer or restriction	(J) Remained at Work: Other record-able cases	(K) Away from work	(L) On job transfer or restriction	(1) Injury	(2) Skin disorder	(3) Respiratory condition	(4) Poisoning	(5) Hearing loss	(6) All other illnesses
			/ month/day			☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐	☐
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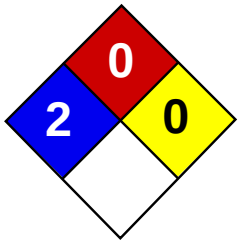
					Page totals	___	___	___	___	___	___	___	___	___	___	___	___
												Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Appendix C

Material Safety Data Sheets (MSDS)
(on cd)



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.

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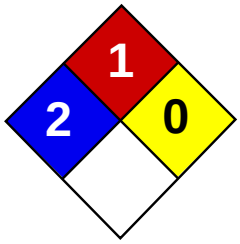

Material Safety Data Sheet
Trichloroethylene MSDS

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.

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