

FORMER QUICK AND CLEAN CLEANERS
Site # 130198

ADDENDUM
TO
REMEDIAL INVESTIGATION WORK PLAN
for
(Part-375 testing and Emerging Contaminants)

PREPARED FOR:
380 ROCKAWAY TURNPIKE REALTY CORPORATION
36 LAWRENCE AVENUE
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FINAL

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Q.E.P. Certification

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PROFESSIONAL ENGINEER CERTIFICATION

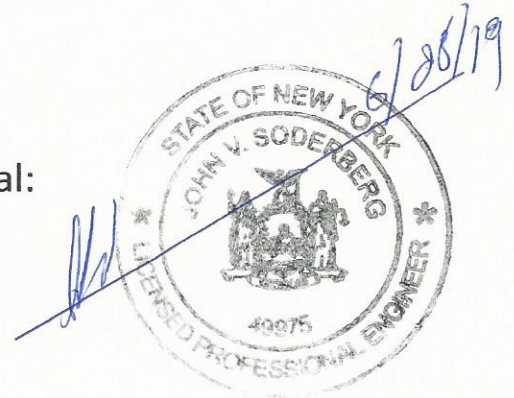
I, John V. Soderberg, PE, certify that I am currently a NYS registered professional engineer [as defined in 6 NYCRR Part 375] , and that this Supplemental Remedial Investigation Work Plan (SRIWP) was prepared in accordance with all applicable statutes and regulations and is in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Signature: _____



John V. Soderberg, P.E.

Seal: _____



Date: June 28, 2019

License number: 049975

1.0 Introduction

The following report is an addendum to the previously executed Remedial Investigation Work Plan prepared by John V. Soderberg, P.E. on behalf of 380 Rockaway Turnpike Corporation located at 380 Rockaway Turnpike, Cedarhurst, Nassau County, New York. The site is listed in the New York State Superfund Program. The main objective of this Plan is to complete site characterization testing to include the full target compound list.

The Site is the location of the former Quick and Clean Cleaners, an on-site dry-cleaning service which operated on the premises from at least 1980 to 1991. Investigations performed by the Nassau County Department of Health (NCDOH) in 1980 and 1991 found that tetrachloroethene (PCE) had been released at the Site in discharge water and/or condensate (vapors).

The Site was assigned a “P” (potential) listing on the Inactive Hazardous Waste Site Registry by the New York Department of Environmental Conservation (NYSDEC) in 2009. The NYSDEC conducted a site characterization in July-August 2001 (SCR 8/10) and upgraded the registry listing to a Class 2 site in August 2011.

The purpose of the Plan is to collect the full target compound list (except for VOC data already collected) in order to finalize the site characterization and remedial investigation phase of the project. Once this data is approved, a Remedial Action Plan will be submitted in order issue a Record of Decision (ROD).

1.1 Site Location and Description

The address for the subject property is 380 Rockaway Turnpike, Cedarhurst, NY. The subject property is designated as Section 39, Block 344, Lots 216 and 220 by the Nassau County Department of Assessment. The subject property is located within the Incorporated Village of Cedarhurst, Town of Hempstead, Nassau County, NY as shown in Figure-1. The lot has 123 feet of frontage on Rockaway Turnpike and is approximately 100 feet deep for a combined area of 0.318 acres (13,853 ft²).

The subject site is developed with a 3,984ft² 1-story masonry building, built in 1962 for commercial (retail) use. Based on current zoning and the location of the property, it is likely to remain in commercial-retail use.

The elevation of the property ranges from approximately 10 to 13 feet above National Geodetic Vertical Datum (NGVD). The topography in the vicinity of the site generally slopes from southeast to northwest. The depth to groundwater beneath the site, as determined from field measurements, is approximately 4.5 to 5.0 feet below grade surface (bgs). Groundwater flow cannot be determined from regional water table elevation maps and has been reported as ranging

from north to southwest at the adjacent property to the north (former Cumberland Farms Service Station). Despite this wide range of anticipated flow the actual direction of groundwater flow is presumably to the northwest. This notion is based upon previously conducted investigation data indicating a northwesterly groundwater flow due to the nature of the findings northwest of the Site and/or source area.

The area surrounding the Site consists of retail “strip stores” and service stations along the east side of Rockaway Turnpike with single-family residential homes located adjacent to the east. Adjacent properties to the north include a former Cumberland Farms Service Station (CFSS) and an active Shell station. Adjacent properties to the south include a Sunoco, Getty and Gulf service stations. In total the subject property is flanked north and south by four (4) active and one (1) former service station. The west side of Rockaway Turnpike is characterized by larger shopping centers with industrial buildings/warehouses, major oil storage facilities (MOSF) and the Town of Hempstead incinerator plant adjacent to the west.

1.2 Site History

The environmental history of the subject lots was summarized in the SCR dated August 2010 as prepared by Environmental Assessment and Remediation (EAR) under contract to the NYSDEC. This summary consisted of a chronology of events based solely on NCDOH files. According to the SCR the NCDOH identified approximate PCE concentrations of 67,000 in a sample of “industrial wastewater discharge” at the Site on 3/26/80. In 1991 NCDOH reported PCE concentrations of 1.3 million ug/kg in shallow soil (<2 ft) adjacent to a vapor discharge pipe in the rear of the building. This soil was successfully removed in 1992 by the operator under NCDOH oversight and the case was closed by NCDOH on 3/30/92. In 2009 the NYSDEC classified the site with a “P” designation for potential listing on the Inactive Hazardous Waste Site Registry.

1.3 Summary of Site Characterization Report

The field investigation portion of the SCR was conducted at the site from December 8, 2009 through March 25, 2010 and consisted of the collection and analysis of 7 soil samples from 7 boring locations, 28 groundwater samples from 10 on-site locations, 39 groundwater samples from 9 off-site locations and 6 soil gas samples from 4 on-site and 2 off-site locations. All soil and groundwater samples were collected with GeoProbe®-type direct push equipment and tooling.

According to logs contained in the SCR, soil samples were collected for the first 8 feet through a 4 ft macro-core sampler using the single-tube method and then using a 4 ft large bore sampler for the remainder of the boring to a maximum of 20 ft. On-site groundwater sampling performed in December 2009 were collected through a 2 ft mill slotted rod which was driven to multiple depths ranging from 10 to 70 feet with samples

collected in 10 foot intervals. Off-site samples collected in March 2010 utilized a 2 ft wire wrap discrete sampler. Purge volumes varied considerably ranging from 0 to 0.5 gallons per sample for the mill slot sampler to 0.10 to 3 gallons for the wire wrap sampler.

The results of this investigation did not identify any chlorinated compounds above unrestricted soil clean up objectives (SCOs) in any of the soil samples collected. However, petroleum VOCs including ethylbenzene, toluene and xylene were reported in 5 of 7 soil samples at concentrations significantly above unrestricted and groundwater protection SCOs. Total petroleum VOCs in soil ranged from 2,550 ug/kg at location EP7 (12-14 ft) to 107,000 ug/kg at EP5 (12-14 ft). EP5 is located near the south property line adjacent to the Sunoco service station.

On-site groundwater samples reported elevated concentrations of both chlorinated VOCs (CVOCs) and petroleum VOCs (PVOCs) at every sampling location. With the exception of EP7 the highest concentrations of both CVOCs and PVOCs were reported in the shallowest samples. EP7 reported the highest detections of both CVOCs and PVOCs in the 70-72 ft interval and had the highest PVOC concentrations reported with a total of 185,426 ug/L.

CVOC detections in the shallow intervals ranged from low concentrations (<20 ug/L) at EP5 (20-22 ft) to 14,830 ug/L at EP9 (10-12 ft). In addition to EP9, the highest CVOC concentrations were reported at locations MW7, EP8 (10-12 ft) and EP3 (10-12 ft). On-site CVOC totals were comprised almost entirely of cis-dichloroethene (c-DCE) and vinyl chloride (VC). The highest tetrachloroethene (PCE) and trichloroethene (TCE) concentrations were reported as 595 and 217 ug/L, respectively, in EP8 (20-22 ft). On-site CVOC concentrations were generally highest at the rear (east) and north side of the building.

PVOC concentrations in shallow samples ranged from 2,907 ug/L at location EP1 (20-22 ft) to 30,821 ug/L at EP3 (10-12 ft). In almost all cases PVOC concentrations were considerably higher than the CVOC concentrations. The anomalously high CVOC and PVOC concentrations reported at EP7 (70-72 ft) were not explained in the SCR and are likely attributed to deficiencies in the method of sampling.

Off-site CVOC concentrations were highest in samples from the 30-32 ft interval and ranged from 51 ug/L at location EP10 (west of the subject site) to 21,149 ug/L at location EP15. Off-site CVOC concentrations were comprised for the most part of PCE with only small amounts of TCE and the other parameters. Off-site PVOC detections were generally low and ranged from non-detect to 162 ug/L with the highest detections reported in the 50-52 interval.

CVOC detections in soil gas ranged from 11 ug/m³ to 5,717 ug/m³ with the highest concentrations occurring in SP2 and SP5 located at the north property line. The main constituent in the soil gas at these locations was cis-DCE.

1.4 Site Geology / Hydrogeology

According to boring logs included in the SCR, subsurface materials at the site consist of medium to coarse sand and gravel for the upper 10 feet followed by fine to medium sand to 18 feet below grade. A 1 to 2 ft layer of silt and clay was reported at some locations. Soils deeper than 20 feet were not characterized though silt and clay zones were suspected at 34 feet to 52 feet based on limited groundwater recharge and clogging of the groundwater sampling tools with silt and clay. The boring log from location EP7 shows that this condition continued to a final depth of 72 feet. The depth to groundwater was not measured at the site during the site characterization though it is reported in the drill logs at a depth of 11 feet below the surface. However, this is inconsistent with water level measurements made in monitoring wells at the adjacent property to the north that report the depth to water ranging from 3.61 to 4.89 feet. The groundwater flow direction has not been determined at the site and historic measurements made on the adjacent property to the north indicate a variable direction from north to southwest.

1.5 Conceptual Site Model (CSM)

The source of the on-site CVOC contamination has been identified as a former shallow PCE impacted soil area at the rear of the building near the southeast corner of the property. Based on NCDOH reports and follow-up investigations the source area consisted of a 12 ft x 12 ft area which extended 3 to 3.5 feet deep. The area was exposed and covered at the surface with a layer of gravel. Precipitation recharging through this impacted soil would become contaminated with PCE transporting it to the shallow water table as a dissolved component and forming a contaminant plume. The plume would then migrate in the direction of groundwater flow.

The presence of high concentrations of petroleum (gasoline) constituents in soil and groundwater along the south property line and near the southeast corner indicates past migration from the known gasoline spill at the adjacent Sunoco S/S to the south.

According to the modeling figures, PCE is almost exclusively present off-site with almost no transformation products present. This may indicate a second source at an off-site location or the fact that transformation products of PCE tend to lag at the rear of the plume with PCE being detected at the lead or toe of the plume. PCE a DNAPL tends to initiate the formation of the plume by traveling vertical to depth while moving with the flow of groundwater, which in this case appears to be northwest.

CVOCs have been documented on the former CFSS property to the north including the far northwest corner of the property. This will be confirmed through the conduct of future investigatory activities which will propose multi-depth sampling to the north, west and southwest of the CFSS. The CFSS was known to include an auto repair shop with shallow recharge structures present across the property. PCE is also historically and

extensively used in automobile brake cleaning and engine degreasing products. It is therefore possible that there may be other sources of PCE responsible for the off-site groundwater contamination reported in the SCR.

In the absence of some induced vertical transport condition such as that created by a pumping well, there does not appear to be any mechanism to account for contaminant migration to the deeper zones of the aquifer. The fact that both CVOCs and PVOCs were found at depths combined with the description of silts, clays and limited recharge of groundwater to sampling equipment points, the possibility exists that PVOC and CVOC contamination may have been transported to deeper depths via sample tooling. In sampling groundwater through highly heterogeneous zones and formations of low permeability, leakage can occur around the borehole and through the threaded connections of the rods themselves, which can transport contamination vertically. An additional boring sampled to a depth of 72' bgs, located up gradient from the source area (south of former cleaners), will help determine the quantity of PVOC contamination found at this depth, if any at all. Since petroleum constituents are considered to be LNAPL's it is highly unlikely that petroleum impacts to groundwater at 72' bgs are conclusive. If in fact a petroleum related plume is present at this depth the performance of an up gradient boring to a depth of 72' bgs should provide conclusive evidence as to whether or not the on-site petroleum related impacts occurred naturally via vertical migration. More information regarding additional up gradient sampling locations is discussed later in the report.

2.0 Supplemental Sampling Work Plan

The purpose of the following plan is to complete site characterization sampling in order obtain data on the full suite of chemicals as defined in DER-10 2.4 (d). Sampling will also be conducted at select locations to analyze for emerging contaminants including: PFAS chemicals and 1, 4 Dioxane.

Soil sampling will be conducted for emerging contaminants (PFAS - 21 list and 1,4 Dioxane) in order to complete **analyzation** of these emerging contaminants in all media, as this testing was already previously conducted for groundwater. Soil and groundwater will be collected and submitted for testing of the following parameters: SVOC BNA+10; PCBs via EPA 8082A; Pesticides via EPA method 8081B; and TAL metals. The initial soil and groundwater sampling conducted during site characterization included the required VOC analysis. Please read below for further information on sample procurement procedure, protocol and analytical requirements.

2.1 Soil Sampling Procedure

Soil sampling will be conducted with the use of a stainless steel hand auger from two to six inches (2"-24") below the vegetation layer and/or site cover (asphalt layer). Samples will be field screened for VOCs with a PID meter and samples will be obtained via EPA test method 537 (low level) sampling procedure. This procedure will be adhered to for

sampling analysis of PFAS chemicals. Please refer to Attachment-A for more detail on the proposed soil sampling procedure for PFAS chemicals. Soil collected for 1, 4 Dioxane analysis will be simply placed in clean laboratory glassware acceptable for this analysis.

Soil cores will also be collected from 2"-24" below the site cover and analyzed for SVOC BNA+10; PCBs via EPA 8082A; Pesticides via EPA method 8081B; and TAL metals. Samples will be collected in the same manner as discussed above and/or with the use of a track mounted 6610 Geoprobe equipped with the duel tube (DT22) sampling system. Discrete samples are collected in five foot (5') PVC liners and screened in 2.5' intervals with a PID meter prior to sample collection in laboratory approved glassware. The locations of the proposed soil samples are depicted on Figure-2.

2.2 Groundwater Sampling Procedure

Groundwater samples will be collected from existing monitoring wells MW-1-MW-4. This will be achieved by lowering new poly tubing through the well casing to the bottom of the slotted screen with purging and sampling using a peristaltic pump with a low flow rate (less than 100 ml/minute). During sampling procurement the following procedures will be followed:

All groundwater sampling activities will be recorded in the project dedicated field book. This will include a description of:

- ▶ Date and time of sample collection
- ▶ Sample location
- ▶ Purging time, duration and volume (3-5 times well volume)
- ▶ Sample appearance
- ▶ Stabilization of pH, conductivity and/or temperature

Groundwater sampling will be conducted in order to analyze for : SVOC's BNA+10; PCBs via EPA 8082A; Pesticides via EPA method 8081B; and TAL metals. Details on the lab analysis, data reporting requirements and third party data validation is provided in the following sections.

2.3 Laboratory Analysis and Sample Collection

A New York State Category-B deliverable package will be requested for third party data validation (DUSR) purposes. Samples will be submitted to the laboratory for a standard turnaround time, which is estimated to be two (2)- four (4) working weeks.*note extra time may be needed in order to retrieve PFAS/ 1, 4 Dioxane data* Samples will be transported under strict chain of custody to an ELAP New York State certified laboratory for analysis. Lab data will also be submitted in Electronic Data Deliverable (EDD) format. The required

trip blanks, method blanks and matrix spike/ matrix spike duplicates will be collected as per the DER-10 sampling protocol. Quality Assurance and Quality Control (QA/QC) protocols established during the RI will be adhered to during the conduct of this Plan. Please refer to Attachment-B for additional lab guidance for analysis of PFAS chemicals.

3.0 Health and Safety Plan

The Health and Safety Plan (HASP) approved for the Remedial Investigation will be utilized for work conducted under this Plan. Activities performed under the HASP will comply with applicable parts of OSHA Regulations, primarily 29 CFR Parts 1910 and 1926. Modifications to the HASP may be made with the approval of the BEI Site Safety Officer (SSO) and/or Project Manager (PM).

4.0 Community Air Monitoring Plan

The Community Air Monitoring Plan (CAMP) provides measures for protection for on/off-site workers and the downwind community (i.e., off-site receptors including residences, businesses, and on-site commercial workers) from potential airborne contaminant releases resulting from ground intrusive activities. The action levels specified require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the sampling work will not spread contamination off-site through the air. The primary concerns during the work are: odors from VOCs. The CAMP for this investigation is provided as Attachment - C.

5.0 Reporting

Following completion of the sampling work and receipt of the analytical data, BEI will prepare the results to be included with the Monthly Progress Report (MPR) issued for the site each month and reporting will include:

- Analytical data in tabular form comparing results to part 375-6 SCO and NYSDEC TOGs groundwater standards
- 3rd party validated laboratory analytical data
- Figure depicting sampling locations
- CAMP data logged during boring/sampling activities
- Conclusion based on the results compared to regulatory standards

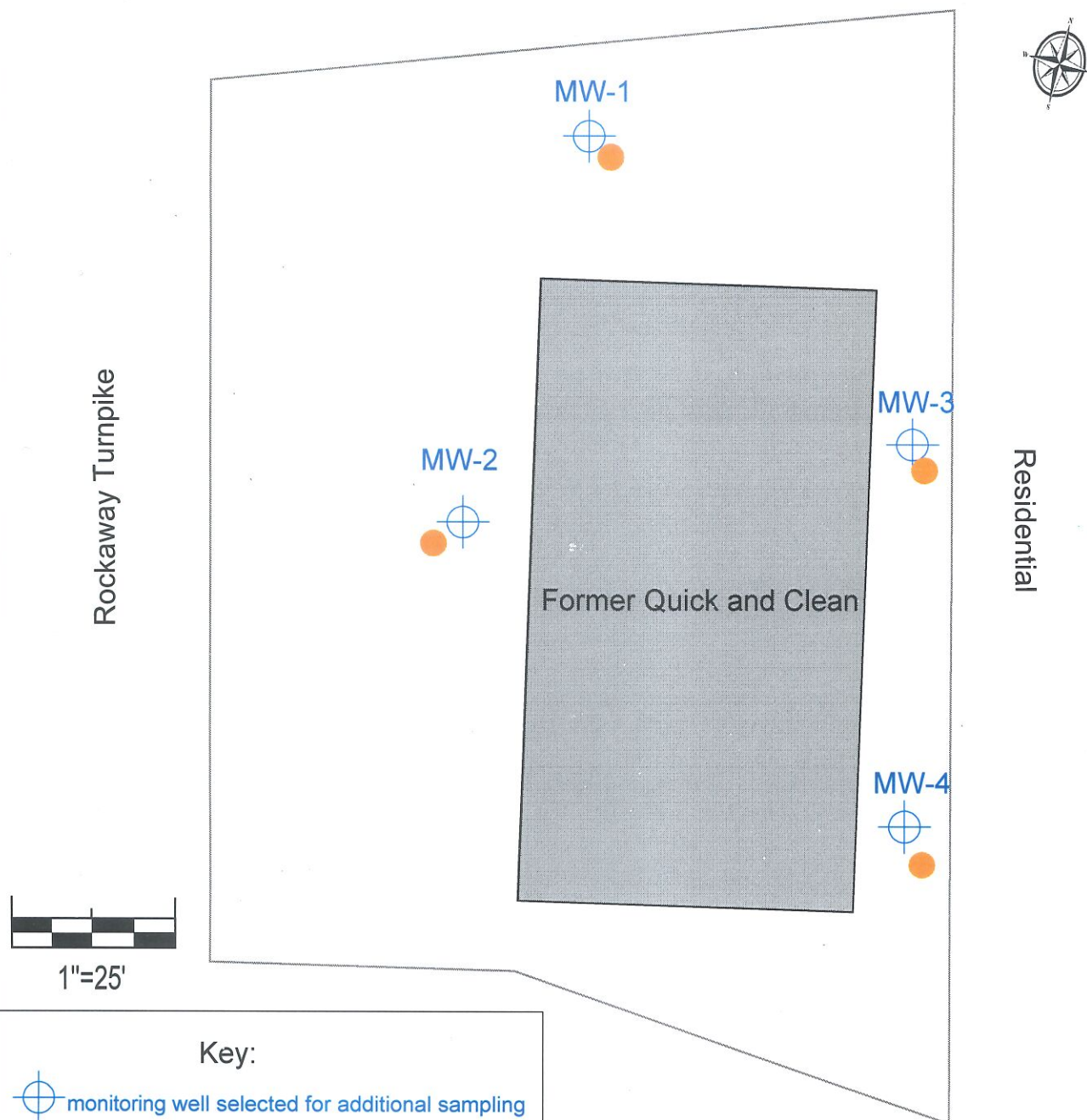
6.0 Project Schedule

The anticipated work is expected to take place during the next quarterly sampling event at the site which is currently scheduled for July 2019. Upon approval of this Plan arrangements will be made in order to conduct the sampling event during the next anticipated quarterly event.

FIGURES

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Former Cumberland Farms



Key:

 monitoring well selected for additional sampling


 Soil Sample Location (PFAS; 1, 4 Dioxane plus: SOVCs, PCBs, Pest and TAL metals)

Figure-2
Proposed Sampling
Locations

Former Quick and Clean Cleaners
380 Rockaway Turnpike
Cedarhurst, NY

John V. Soderberg P.E
PO Box 263
Stony Brook, NY 11790

ATTACHMENTS



Attachment-A
Soil Sampling Procedure for PFAS chemicals

Collection of Shallow Soil Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) Protocol

General

The objective of this protocol is to give general guidance for the collection of soil samples for PFC analysis. The sampling procedure used must be consistent with the NYSDEC March 1991 SAMPLING GUIDELINES AND PROTOCOLS http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf with the following materials limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFOA and other PFCs by Modified (Low Level) via the modified (low level) EPA Test Method **537**. Based on four laboratories, the PFC reporting limits range from 0.1 to 3 micrograms per kilogram. One 8 ounce high density polyethylene (HDPE) container is required for each sample. Pre-cleaned sample containers, coolers, sample labels and a chain of custody form will be provided by the laboratory.

Sampling Location and Survey

Shallow soil sampling will generally be confined to surface or near-surface soils and/or sediments with hand equipment. For screening purposes, sampling of this type should be conducted in potential depositional areas. Sample locations shall be located and recorded.

Equipment

At this time acceptable materials for sampling include: stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene. Additional materials may be acceptable if proven not to contain PFCs. All sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. A list of acceptable equipment is provided below, but other equipment may be considered appropriate at a later date.

- stainless steel spoon
- stainless steel bowl
- carbon steel hand auger without any coatings

Equipment Decontamination

Standard two step decontamination using detergent and clean water rinse will be performed for equipment that does come in contact with PFC materials.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases a clean stainless steel spoon should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) shall then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a hand auger. When the desired subsurface depth is reached, a pre-cleaned hand auger shall be used to obtain the sample.

When the soil sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized.

Sample Identification and Logging

A label shall be attached to each sample container with an identification consistent with the format indicated below. Each sample shall be included on the chain of custody (COC).

- Each sample shall be labelled as Street#, Street Name, date, Sample S#, Depth Interval (e.g. 2MainSt-3-30-16-S1-0-2).
- Each duplicate shall be labelled as a blind duplicate identified as "date, DUP, #" (e.g. 3-30-16-DUP1).

Quality Assurance/Quality Control

- Immediately place samples in cooler maintained at $4 \pm 2^{\circ}$ Celsius.
- Collect one field duplicate for every sample batch, not to exceed 20 samples. The duplicate shall consist of an additional sample at a given location.
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, not to exceed 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC.
- Request appropriate data deliverable (Category A or B) and an electronic data deliverable.

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, duplicate sample, visual description of the material and any other observations or notes determined to be appropriate.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler must wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials must be avoided. All clothing worn by sampling personnel must have been laundered multiple times.



Attachment-B
PFAS analysis lab guidance

Sampling for 1,4-Dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DEC's Part 375 Remedial Programs

Objective

The Department of Environmental Conservation (DEC) is requiring sampling of all environmental media and subsequent analysis for the emerging contaminants 1,4-Dioxane and PFAS as part of all remedial programs implemented under 6 NYCRR Part 375, as further described in the guidance below.

Sample Planning

The number of samples required for emerging contaminant analyses is to be the same number of samples where "full TAL/TCL sampling" would typically be required in an investigation or remedial action compliance program.

Sampling of all media for ECs is required at all sites coming into or already in an investigative phase of any DER program. In other words, if the sampling outlined in the guidance hasn't already been done or isn't part of an existing work plan to be sampled for in the future, it will be necessary to go back out and perform the sampling prior to approving a SC report or issuing a decision document.

PFAS and 1,4-dioxane shall be incorporated into the investigation of potentially affected media, including soil, groundwater, surface water, and sediment as an addition to the standard "full TAL/TCL sampling." Biota sampling may be necessary based upon the potential for biota to be affected as determined pursuant to a Fish and Wildlife Impact analysis. Soil vapor sampling for PFAS and 1,4-dioxane is not required.

Upon an emerging contaminant being identified as a contaminant of concern (COC) for a site, those compounds must be assessed as part of the remedy selection process in accordance with Part 375 and DER-10 and included as part of the monitoring program upon entering the site management phase.

Soil imported to a site for use in a soil cap, soil cover, or as backfill must be sampled for 1,4-dioxane and PFAS contamination in general conformance with DER-10, section 5.4(e). Assessment of the soil data will be made on a site-specific basis to determine appropriateness for use.

The work plan should explicitly describe analysis and reporting requirements, including laboratory analytical procedures for modified methods discussed below.

Analysis and Reporting

Labs should provide a full category B deliverable, and a DUSR should be prepared by an independent 3rd party data validator. QA/QC samples should be collected as required in DER-10, Section 2.3(c). The electronic data submission should meet the requirements provided at:

<https://www.dec.ny.gov/chemical/62440.html>.

PFAS analysis and reporting: DEC has developed a *PFAS Analyte List* (below) for remedial programs. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any compounds, the DEC project manager, in consultation with the DEC remedial program chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site.

Currently, ELAP does not offer certification for PFAS compounds in matrices other than finished drinking water. However, laboratories analyzing environmental samples (e.g., soil, sediments, and groundwater) are required by DER to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537 or ISO 25101. Labs must also adhere to the requirements and criteria set forth in the [Laboratory Guidance for Analysis of PFAS in Non-Potable Water and Solids](#).

Modified EPA Method 537 is the preferred method to use for environmental samples due to its ability to achieve very low detection limits. Reporting limits for PFAS in groundwater and soil are to be 2 ng/L (ppt) and 1 ug/kg (ppb), respectively. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve these reporting limits for the entire list of 21 PFAS, site-specific decisions will need to be made by the DEC project manager in consultation with the DEC remedial program chemist. Note: Reporting limits for PFOA and PFOS in groundwater should not exceed 2 ng/L.

Additional laboratory methods for analysis of PFAS may be warranted at a site. These methods include Synthetic Precipitation Leaching Procedure (SPLP) by EPA Method 1312 and Total Oxidizable Precursor Assay (TOP Assay).

SPLP is a technique for determining the potential for chemicals in soil to leach to groundwater and may be helpful in determining the need for addressing PFAS-containing soils or other solid material as part of the remedy. SPLP sampling need not be considered if there are no elevated PFAS levels in groundwater. If elevated levels of PFAS are detected in water, and PFAS are also seen in soil, then an SPLP test should be considered to better understand the relationship between the PFAS in the two media.

The TOP Assay can assist in determining the potential PFAS risk at a site. For example, some polyfluoroalkyl substances may transform to form perfluoroalkyl substances, resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from the site. To conceptualize the amount and type of oxidizable perfluoroalkyl substances which could be liberated in the environment, a "TOP Assay" analysis can be performed, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized.

PFAS-containing materials can be made up of per- and polyfluoroalkyl substances that are not analyzable by routine analytical methodology (LC-MS/MS). The TOP assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by current analytical methodology. Please note that analysis of highly contaminated samples, such as those from an AFFF site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. Please consult with a DEC remedial program chemist for assistance interpreting the results.

1,4-Dioxane analysis and reporting: The reporting limit for 1,4-dioxane in groundwater should be no higher than 0.35 µg/L (ppb) and no higher than 0.1 mg/kg (ppm) in soil. Although ELAP offers certification for both EPA Method 8260 SIM and EPA Method 8270 SIM in waters, DER is advising the use of Method 8270 SIM because it provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane in soil, which already has an established SCO.

Refinement of sample analyses

As with other contaminants that are analyzed for at a site, the emerging contaminant analyte list may be refined for future sampling events based on investigative findings. Initially, however, sampling using this PFAS Analyte List and 1,4-dioxane is needed to understand the nature of contamination.

PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluorooctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Attachment-C
Community Air Monitoring Plan (CAMP)

**NEW YORK STATE
INACTIVE HAZARDOUS WASTE SITE PROGRAM
New York State Superfund Program**

**COMMUNITY AIR MONITORING PLAN
(CAMP)**

**FORMER QUICK AND CLEAN CLEANERS SITE
SITE NO. 130198
380 ROCKAWAY TURNPIKE
CEDARHURST, NY**

PREPARED BY:

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1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the boring and sampling activities to be performed under the Supplemental Sampling Work Plan at the Former Quick and Clean Cleaners Site. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from boring and sampling activities at the site.

Compliance with this CAMP is required during all ground intrusive activities that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include, but are not limited to; boring, soil and groundwater sampling activities. This CAMP has been prepared to ensure that investigation activities do not adversely affect passers by, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of investigation-related contaminants to off-site areas.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air;
- New York State Department of Environmental Conservation (DER-10 Appendix-1a and 1b) Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

Chlorinated volatile organic compounds (VOCs) and petroleum VOCs are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during remediation activities is through real-time VOC and air particulate (dust) monitoring.

2.1 Meteorological Data

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

2.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. When the boring area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals at the downwind location.

Fugitive respirable dust will be monitored using a MiniRae Model PDM-3 aerosol monitor (orequivalent). Air will be monitored for VOCs with a portable Ionscience 3000 photoionization detector (PID), or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan.

3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure 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:

- 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.
- 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.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report will be completed.

3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remediation activities,

then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- Collection of purge water in covered containers;
- storage of excess samples and soils in drums or covering with plastic

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during boring activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM₁₀) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter (µg/m³). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 µg/m³ above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- If the downwind PM-10 particulate level is 100 µg/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 µg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m³ above the upwind level, work must be stopped and an evaluation of activities initiated. Work can resume provided that dust suppression measures (as described in Section 2.3.1 below) and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report will be completed.

4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than 100 $\mu\text{g}/\text{m}^3$ at any time during boring activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- Placement of soils in drums or covering stockpiles with plastic;
- Misting of the boring area with a fine water spray from a hand-held spray bottle

Work may continue with dust suppression techniques provided that downwind PM_{10} levels are not more than 150 $\mu\text{g}/\text{m}^3$ greater than the upwind levels.

There may also be situations where the dust is generated by boring activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below 150 $\mu\text{g}/\text{m}^3$, or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

5.0 DATA QUALITY ASSURANCE

5.1 Calibration

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

5.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

5.3 Data Review

The SSO will interpret all monitoring data based upon the established criteria and his/her professional judgment. The SSO shall review the data with the PM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the PM.

6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.