ENGINEER'S REPORT

REMEDIAL INVESTIGATION WORK PLAN: RE-EVALUATION OF ON-SITE CONTAMINANTS

for

AMERICAN CLEANERS, INC.
360 Route 211 East
Middletown, NY 10940

NYSDEC Site Number V-00461-3

June, 2012

Prepared by:

Jansen Engineering, PLLC
72 Colburn Drive
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and

Mid-Hudson Geosciences
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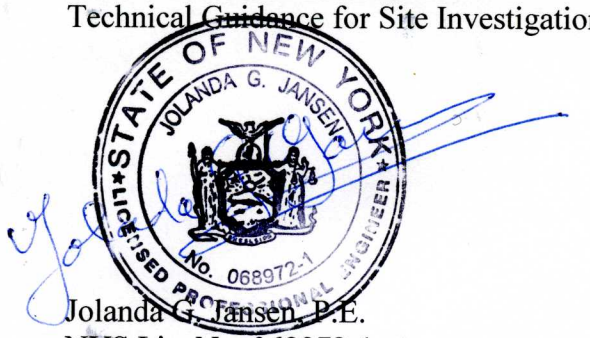
I, Jolanda G. Jansen certify that I am currently a NYS registered professional engineer and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



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June 5, 2012

Paul Patel, P.E.
RCRA Project Engineer
New York State Department of Environmental Remediation
625 Broadway
Albany, NY 12233-7252

Subject: American Cleaners – Middletown, New York
NYSDEC Site Number V-00461-3

Dear Mr. Patel;

As agreed during our conference call on Friday, June 1, 2012, attached is a Remedial Investigation Work Plan for the above site.

On May 16, 2012 soil vapor extraction pilot test was conducted in preparation for installing Phase I of the Soil Vapor Extraction system as described in the Remedial Action Workplan dated February 22, 2012 prepared by Robert Zimmer, P.E. of Geovation Engineering, P.C. The purpose of the pilot test was to confirm that the radius of influence for the proposed Soil Vapor Extraction Well is similar to the 10-foot value assumed in the Workplan. The pilot test was inconclusive and needs to be repeated prior to installing any wells or equipment.

Because recent PID readings at the site were much lower than the results shown on Figure 3 of the Remedial Action Workplan, based on data from 2003 and 2005, it was decided to take 11 soil samples at a depth of 3 feet to see if the soil data also varied significantly from Figure 2 of the Remedial Action Workplan based on data collected in 2001 and 2003.

The results of these tests were significantly lower than the data collected in 2001 and 2003, triggering the preparation of the attached Remedial Investigation Work Plan which may result in a modification to Phase I of the Remedial Action Workplan.

A separate Pilot Testing Workplan will be prepared to support the process of going forward on Phase II of the original Workplan.

Sincerely,

JANSEN ENGINEERING, PLLC

Jolanda G. Jansen, P.E.

Cc: Erez Halevah, American Cleaners

Table of Contents

1.0 Introduction and Purpose

Jansen Engineering, in collaboration with Mid-Hudson Geosciences, has performed a vapor extraction pilot test in preparation for installation of a Soil Vapor Extraction (SVE) system to treat impacted soil positioned above the water table. Phase I was to consist of a preliminary installation in the northern portion of the site and Phase II was to consist of a SVE system beneath the existing building.

On the same day that the pilot test was conducted (May 16, 2012), soil samples were taken in the Phase I portion of the site. From those soil samples, the volatile organic concentrations were considerably lower than reported from sampling in 2001 and 2003 upon which the design of the Remedial action plan was based.

It is necessary to re-evaluate the site to ensure that the Soil Vapor Extraction system is installed in the correct location. Additional soil samples will be analyzed to validate the results of the soil samples taken on May 16, 2012 as well as soil samples in locations that showed the greatest concentrations of PCE on which the current workplan isb ased. Additionally Soil Gas and groundwater will be sampled to create a representative data set to update results that are a number of years old.

2.0 Site Description, History and Previous Investigations

The following sections summarize the physical description of the site, the history of the building use, and previous environmental investigations and reports for the site.

■ 2.1 Site Description

American Cleaners (AC) of Middletown is located in the Town of Wallkill, about 0.4 miles east of the Middletown City Boundary at 360 Route 211E at the Caldor-Lloyds Mall. The Section Block and Lot (SBL) number designated for the Caldor Mall property is Section 50, Block 2, Lot 2. The American Cleaners building is located on the Caldor-Lloyds Mall in the northwest corner of the Mall property and is approximately one acre in size. The property is improved with a single story building, which is approximately 5,000 square feet with an attached storage shed. The Caldor-Lloyds Mall lies on land with a slope to the north toward Route 211. Neighboring properties include MHV Credit Union to the northeast within the Caldor Mall and Cheeseburger Paradise, and a former Video Store, (now vacant) located toward the northwest. Recently (2011), the MHV Credit Union constructed and moved into a new building to the northeast of American Cleaners leaving the old building to the north vacant.

The AC building was constructed in 1982 and was designed for commercial dry cleaning. The design for dry-cleaning services was planned with a customer counter across the front of the store and five 4-foot by 4-foot wide trenches running from the front of the store to the rear. Cleaning, washing, drying, steaming and pressing equipment is placed around the perimeter of the store. The trenches are designed to

provide maximum hanging capacity on three tiers of clothes rods running from front to back. The clothes-hanger rods can be reached by the employees to store and retrieve customers' garments.

A single heating oil underground storage tank (UST) is present at this site. In 1999 the UST, which is located at the back of the building was replaced with a new tank closer to the north end of the building. A site investigation and post-excavation sampling indicated the presence of petroleum contamination, resulting in a spill reported to NYSDEC Region 3 (Spill No. 9912516).

The building is in continuous active use as a dry cleaning facility and complies with air monitoring requirements of inside air as needed to protect the health and safety of the employees and customers.

■ 2.2 Site History

In 1982, the property owner, Mr. Halevah designed and constructed this one-story building, specifically for operation of a dry-cleaning establishment. From 1982 to date, the building has been in continuous operation for dry-cleaning, customer drop-off, and customer pick-up. The chemical of concern, Tetrachloroethylene (also known as tetrachloroethene, perchlorethylene, "perc" or "PCE"), has been used at the site since 1982. Unintentional and unregulated releases of PCE began in 1982 when PCE-saturated filters were placed in the dumpster outside the back of the building for disposal with trash and garbage. The dry cleaning processing equipment was updated periodically on the following schedule:

1982-1992 First Generation Equipment
1992-1997 Third Generation Equipment
1997-Present Fourth Generation Equipment

In 1982, the PCE used in dry-cleaning operations was delivered in 55-gallon drums. The PCE was pumped from the drums into the "washers." Sometime in the 1980s, delivery of PCE changed to delivery by truck with a hose transferring PCE from the truck to the drycleaning machines. Truck delivery of PCE is similar to that of fuel oil and the driver sets up the hose and monitors the operation from the truck. On one delivery occasion, the hose nozzle broke and an unknown quantity of PCE was spilled on the asphalt near the backdoor of the building. The spilled PCE flowed downslope on the parking lot and pooled at the northern curb of the parking lot about 35 feet away from and parallel to the north wall of the building.

The use of PCE was approximately 75 to 100 gallons per week from 1982 until 1997. Since 1997, American Cleaners at Middletown has used less than 200 gallons of PCE per year because "fourth-generation" technology has greatly reduced the use. At some time, the PCE delivery method changed from tank trucks back to 55-gallon drums, likely coincident with the installation of "fourth-generation" equipment in 1997.

■ 2.3 Previous Investigations

Initial investigations in 1999 were conducted at the site by HRP while replacing the heating oil UST. The presence of PCE was reported in site groundwater, and shortly after the tank replacement, Anson Environmental conducted a study of the extent of PCE contamination. The names and dates of the HRP, Anson Environmental, subsequent Berninger, Mid-Hudson Geosciences, and Geovation Engineering reports are listed in chronological order below:

- Phase I Environmental Site Assessment for Caldor Shopping Center, by HRP Associates (October 1999, 3 monitoring wells during UST removal)
- Phase II Environmental Investigation Report by Anson Environmental (April 18, 2001, 9 soil borings and 4 monitoring wells)
- Environmental Investigation, American Cleaners, Caldor/Lloyd Mall Plaza, Route 211, Middletown, NY (Anson Environmental Ltd, April 18, 2001)
- Site-Specific Health and Safety Plan (Berninger, September 2002)
- Voluntary Investigation Work Plan (Berninger, March 2003)
- Voluntary Cleanup Program Interim Report (Berninger, Nov 2003)
- Voluntary Cleanup Program Report (Berninger, April 2006)
- Supplemental Investigation Work Plan (Berninger, May 2008)
- Proposed Supplemental Investigation Work Plan (Berninger, Sep. 2008)
- Remedial Investigation Report (Mid-Hudson Geosciences, Feb. 2010)
- Remedial Action Selection Report (Mid-Hudson Geosciences, June 2010)
- Remedial Action Workplan (Geovation Engineering, PC, February 2012) (hereafter referred to as “RQWP (2/12)”)

To date, the investigative work has consisted of collection of soil samples, groundwater samples and soil gas samples around the American Cleaners building and in the parking lots between American Cleaners and the Cheeseburger Paradise Restaurant and between American Cleaners and the MHV Credit Union Building. Ambient air samples and sub-slab gas samples were collected at the HMV Credit Union Bank, the Cheeseburger Paradise Restaurant and the vacant Video Store Building.

In March of 2012, the NYS DEC DER issued a proposed decision document for American Cleaners Operable Unit Number: 01 (onsite remediation) indicating that soil vapor extraction system will be the remedy for cleanup of soils and will be installed in two phases. Initiation of Phase I began by conducting a vapor extraction pilot test and taking Photoionization Detector (PID) readings of soil samples to detect the presence of VOCs in units of parts per million (ppm). Finding all PID readings at 0.0 ppm and testing with a known VOC source, the PID meter was determined to be working correctly. The absence of VOcs in the soil samples brought about soil sampling event on May 16 and subsequently the current re-evaluation of site contaminant conditions.

3.0 Work Plan Objective and Rationale

While attempting to conduct a pilot test for Vapor Extraction on the northwest side of the building on May 16, 2012, in the interval of 1.5 to 6.5 feet (in the vadose zone) soils

exhibited tightness and did not transmit measurable air flow, when a vacuum was applied. Photoionization Detector (PID) measurements of fresh Geoprobe™ core samples were all "0.0 ppm." As a result, a decision was made to spend the remainder of the time with the Geoprobe™ taking soil samples, scanning them with the PID and putting them in laboratory glassware and storing them in a cooler with ice paks for sending to York Analytical Laboratories. The objective of the change in plans was to determine if the soil contains Tetrachloroethylene (PCE) in locations on the map showing the PCE plume in soils shown on Figure 2 (Remedial Action Work Plan, February 2012). Eleven soil samples and two blanks (distilled water in equipment and trip blanks) were held in refrigeration and the lab courier picked up the 11 soil samples and 2 blanks with the chain of custody on May 17 and took them to York Analytical Laboratories, Inc. in Stratford, CT.

The laboratory report of USEPA method 8260B analyses was obtained on May 25 and the results summarized in Table 1 and Figure 1. With respect to the chemical of concern PCE, four samples were reported as ND (not detected), two samples were J flagged (below reporting limit and above method detection limit), and the other five samples had measurable concentrations of 9.7, 22, 23, 62, and 230 ug/kg (ppb). When compared with the Part 375 soil cleanup standard of 1300 ppb PCE for unrestricted use, all of the samples are either not detected or at least one order of magnitude below the standard. As shown on Figure 1, these samples were taken across and along the plume shown on Figure 2 (RAWP, 2/12).

Given the new soil data, a vapor extraction system may not be needed in the soils as previously thought based on old soil samples (2001, 2003, 2009 shown in Table 1 and Figure 2 (RAWP, 2/12). However, all of the soil sampling did not cover the entire plume area and for this reason, some additional testing of soil is recommended. It is possible that the SVE system location may be moved to remediate soil on a different part of the property based on new data collected as part of this investigation.

In addition to investigating the soils described shown in the Phase I remediation area (RAWP, 2/12, Figure 6), this re-evaluation work plan includes soil and soil gas sampling at two soil gas outliers under blacktop in the parking lot, sampling of five downgradient monitoring wells, and soil and soil gas sampling under the American Cleaners building slab. A soil gas outlier in the AC driveway near the cross road will also be tested with a soil sample to establish whether a PCE source is in the soil at that location. Also limited groundwater testing is recommended to establish a record of PCE and breakdown product concentrations in downgradient monitoring wells over time since last sampling was in January of 2010. Also the soils and soil gas under the building will be sampled to plan whatever remediation may be required under the building.

4.0 Scope of Work

Note the original figures from the RAWP and the RIR are included here to identify locations of sampling points (specifically RAWP (2/12) Figures 2 and 3 and RIR (4/10/10) Figure 5-5).

Given the new soil data (Table 1 and Figure 1), a SVE system may not be needed in the areas where soils were sampled, as previously thought based on old soil samples (2001, 2003, 2009 shown in Table 2 and Figure 2 (RAWP, 2/12). However, all of the soil sampling did not cover the entire plume area and for this reason, some additional testing of soil is recommended. Because the May 16 soil sampling was not done in accordance with an approved work plan, although strict quality assurance procedures were followed, two confirmatory soil samples will be taken within one foot of two of the May 16 locations (Figure 1). Two confirmatory samples will be taken at locations of samples #8 with the highest PCE concentration (230 ug/kg) and #5 with PCE undetected. Two soil gas outliers in the AC parking lot will also be tested with a soil sample to establish whether a PCE source is in the soil at that location. A soil sample from beneath the building slab is proposed to obtain information on the current status of PCE concentrations in the soil beneath the building (Figure 2). Three soil gas samples are needed to ascertain if previous levels of soil gas have changed in three “hot spots,” under the building slab and in the outlier in the driveway (Figure 3). Also limited groundwater testing is recommended to establish a record of PCE and breakdown product concentrations in five downgradient monitoring wells over time since last sampling was in January of 2010 (Figure 5-5).

Types of samples to be collected are summarized on Table 2, showing the number of soil samples, groundwater samples, and soil gas samples compared to the previous concentrations detected at or near the same location. Since one investigative objective is to observe how concentrations of contaminants have changed over time, all of the sampling will be in locations where samples have been obtained in the past. For soil and soil gas samples, it may not be possible or appropriate to go into the exact same borehole to obtain a sample because soil was disturbed there during the previous sampling event; for that reason every attempt will be made to sample within about one foot of the previous location. For groundwater, all samples will be taken from monitoring wells, so the location of samples will be taken from the same monitoring well using the same sampling technique used previously. Table 3 summarizes the rationale for each sampling location for soil, soil gas, and groundwater. Information on US EPA analytical methods and QA/QC sampling is provided also in Table 3.

■ 4.1 Site Utility Mark-Out

Prior to any subsurface investigation, a site utility mark-out is ordered by the drilling contractor, in this case, Todd Syska. Some of the area was marked out for the May 16 pilot test and soil sampling, but the areas in the parking lot away from the building have not been marked-out yet. Such a mark-out will be completed prior to our work in other parking lot areas away from the left rear corner of the building.

■ 4.2 Air Monitoring

As specified in the Community Air Monitoring Plan (Appendix 2), a continuous monitoring station will be set up with the dust monitor and photoionization detector (PID). The monitoring instruments will be calibrated each morning prior to the start of work and recorded in the project notebook. The MIE Miniram Model PDM-3 (dust

monitor) is calibrated to zero milligrams per cubic meter. The RAE Systems MiniRAE 2000 PGM-7600 (PID) is calibrated with 100 ppm Isobutylene gas.

■ 4.3 Soil Sampling

Soil samples (Tables 2 and 3) shall be obtained from beneath the blacktop and also under the building. Locations of the May 16, 2012 soil samples are shown on Figure 1 with concentrations and sampling depth. Two locations (#5 and #8) are marked by triangles on Figure 1 for confirmatory soil sampling. Four locations for new soil samples are marked with triangles on Figure 2 (RAWP, 2/2).

In the parking lot, two soil sampling locations are shown on Figure 3 (RAWP, 2/12) because those samples are proposed to investigate the origin of high soil gas readings shown on the same figure. One of the outliers is located about 50 feet east of the building and the other about 200 feet east near the shopping cross road known as “Lloyds Lane” (the road between Cheeseburger Paradise and American Cleaners). Both soil and soil gas samples will be taken in these two locations. The soil sample will indicate if PCE is present in the natural soils at these locations and the soil gas sample will indicate if PCE is present in the gravel just below the blacktop. These two outliers may be due to PCE vapors migrating under the blacktop through the gravel base or through utility trenches.

On Figure 2, another soil sampling location is shown within the outline of the building and is proposed to sample below the building slab and associated gravel, removing a sample from native soils below the gravel. A soil gas sample will also be taken at the SSSV-1 location shown on Figure 3 (RAWP, 2/12).

Once obtained, the soil samples are placed in the 2 ounce clear glass jars with screw top lids provided by York Analytical Laboratories. The sample jars are labeled and documented on the chain of sustody. The full jars are then placed in a sample cooler with ice paks to keep the samples cold until the courier arrives to collect the samples for the laboratory with the chain of custody. For each day of soil sampling two sample blanks will be prepared in 40 milliliter clear glass volatile organic analysis vials provided by York Analytical Laboratory with dilute HCl preservative. The trip blank is distilled water, which accompanies the samples and returns to the Laboratory. The equipment blank is distilled water which is washed over the field equipment and placed in clear 40 ml VOA vials and stored in the cooler for pickup by the laboratory. In this case the field equipment is a stainless steel trowel used to scoop the sample from the sampling sleeve and place it in the jar. Two vials are used for each blank.

The soil samples will be analyzed for volatile organic compounds (VOCs) using US EPA Method SW-845-8260B and the distilled water blanks are also analyzed by the comparable method for the same list of VOCs.

● 4.3.1 Soil Sampling Under Blacktop

Soil samples from beneath the blacktop will be obtained using a Geoprobe™. The probe unit will drive a steel cylinder lined with a plastic sampling sleeve from just below the blacktop to a depth of four feet below ground surface. The steel cylinder is brought to the surface and the plastic sampling tube containing the sample is pulled out of the cylinder. A special cutting tool is used to open the plastic sleeve. The sleeve is covered with saran wrap or aluminum foil and the PID is used to scan the fresh soil sample and obtain a volatile organic reading in parts per million (ppm). The soil samples are taken from a depth of about three feet. The uncertainty of the exact depth of origin arises from the potential compaction of soils and sometimes the cylinder is driven slightly more than four feet. Sometimes only so many inches of soil are recovered in the 45-inch plastic sampling sleeve. Sometimes the sleeve is crammed full and up to three inches of additional sample is found in the drive point of the sampler.

● 4.3.2 Soil Sampling Under Building Slab

For the soil samples from beneath the slab within the AC Building, a 2.5-inch diameter hole will be drilled through the concrete to the top of the gravel under the slab. The location will be near the previous sample identified as BEI-10. The location of the sampling hole will be as near as possible to that sample allowing for potential use of the hole for a future vapor remediation point within the infrastructure. A 4-foot soil sampling tool will be used to obtain a sample from approximately 3 to 4 feet below the floor level, below the gravel layer, and above the water table. Rather than gravel fill, compacted natural soil is the soil to be sampled.

■ 4.4 Groundwater Sampling

On Figure 5.5 (RIR, 04/10/10), concentrations of PCE and breakdown products are shown next to each monitoring well from the January 2010 sampling event. Five monitoring wells in downgradient locations have been selected for sampling and are circled to indicate sampling (Figure 5-5). Groundwater samples (Tables 2 and 3) will be obtained from the monitoring wells using the US EPA Low Stress (Low Flow) Purging and Sampling Procedure for Collection of Ground Water Samples from Monitoring Wells (US EPA Region 1, July 30, 1996, Revision). A peristaltic pump and dedicated or new tubing will be used to purge each well prior to sampling. The method produces a limited amount of purge water while achieving equilibrium of water quality parameters by repeated measurements and a very low pumping rate, thereby assuring a fresh sample of groundwater from the surrounding formation. The following steps describe the method:

- At 3-5 minute intervals, depth to water is measured with a water level indicator
- Rate of flow and volume of water pumped is measured with a calibrated 1000-milliliter cylinder and a watch with second hand;
- Pumping rate of flow is established at 0.1 to 0.4 liters per minute using a variable speed peristaltic pump with dedicated ¼ inch tubing, pre-measured for each well;
- For the same time interval, water quality parameters are measured including pH,

conductivity, turbidity, dissolved oxygen, temperature, and oxidation reduction potential. During the purging process, stabilization of field indicator parameters includes less than the following percentage change over three sets of successive measurements made with the Horiba:

Turbidity	10%
Dissolved Oxygen	10%
Specific Conductance	3%
Temperature	3%
PH	+ / - 0.1 units
ORP / Eh	+/- 10 millivolts.

- After about 20 minutes, when the water quality parameters usually stabilize, samples are collected in 40-milliliter glass vials with HCl preservative.
- After measuring those water quality parameters, the purge water is saved for disposal.
- Quality Assurance samples are collected as follows: one trip blank originating from York Laboratories, one equipment blank passed through a length of clean ¼-in vinyl tubing, matrix spike and matrix spike duplicate samples.
- All samples are shipped with ice paks and chain of custody to York Analytical Laboratories for analysis by US EPA Method 8260B for the full list of analytes. The NYSDEC ASP Category B data package will be requested.
- Water Levels are measured and recorded after the completion of sampling.

■ 4.5 Soil Gas Sampling: Under Blacktop and Under Building Slab

Soil Gas sampling (Tables 2 and 3) will occur outdoors near two previous outlier soil gas locations in the parking lot shown on Figure 3 (SG-25 and SG-11) and a soil gas sample obtained from under the building slab also shown on Figure 3 (SSV-1).

The method for soil gas sampling is generally the same for indoors and outdoors. The differences are that the sample is being taken through a different medium, that is the concrete slab floor in the building and the blacktop driveway outdoors. The gas sample is obtained using a device known as a Summa Canister. The prepared canister is provided by the laboratory with instructions on how to setup to take the sample. The Summa Canister is prepared as an evacuated stainless steel pressure vessel of known volume (usually 6 liters) with a regulating valve and a stainless steel inlet line. A sampling hole is drilled through the horizontal barrier (concrete or blacktop) and a probe is inserted to ascertain if the media below the barrier is dry or wet, solid or granular. Dry granular material is the most desirable sampling condition. The canister does have a 2-micromillimeter sintered stainless steel inline filter to remove fine particulate matter sucked in by the canister when activated. A section of clear tygon tubing is connected to the canister inlet line and sealed into the hole penetrating the barrier. Non-hardening electricians putty is usually used for the seal because it can be molded to form a tight seal, can be removed at the end of the test, and the putty does not emit VOCs..

Canisters setup for a one hour test will be obtained from York Analytical Laboratory. When the inlet line is sealed in place, the adjustable micro-metering valve will be set to

the lab-specified setting for the one hour sampling period. At the end of the sampling period, the valve is closed and the inlet line disconnected. The labeled canister is returned to the lab with the chain of custody.

Analysis of the volatile organic compounds in the gas sample will be achieved with US EPA Method TO-14. This method is chosen instead of TO-15 because contaminant concentrations are unknown and high concentrations can overwhelm and damage the equipment if method TO-15 is used. The laboratory detection limit for EPA Method TO-14 is 0.2 ppb, an appropriate level for this investigation.

Outdoor samples will be collected during the daytime. Traffic cones and caution tape will be placed around the sampling locations in the driveway and personnel will wear orange or green safety vests. Indoor samples will be collected while the plant is not operating since the sampling will occur in a busy work area.

The target of soil gas sampling under the building will be the gravel under the slab and in a similar location gravel under the blacktop is the sampling medium. The soil gas in the parking lot outliers seems likely to have traveled to those locations through near surface gravel or utility trenches. The soil gas under the building could be from a spill and migration under the building.

■ 4.6 Slug Testing to Measure Hydraulic Conductivity

Slug testing will be conducted in monitoring wells to measure hydraulic conductivity of the natural formation sediments surrounding the screened interval of the wells. Hydraulic conductivity is useful in this investigation to use as a tool to estimate velocity of groundwater movement and also as a guide to estimating pneumatic conductivity of the natural soils at the site. The velocity of groundwater is useful in estimating the migration of the PCE plume in groundwater to downgradient locations. The pneumatic conductivity is useful in design of a vapor extraction systems to predict radius of influence of a vacuum extraction system.

Slug testing will be conducted in each of five monitoring wells at the site. At least two tests will be conducting on each well. Because most of the wells are one-inch inner diameter, rising head tests will be conducted. A “slug” of a known volume of water will be introduced into a well and a transducer in the bottom of the well will record the instantaneous rise in water level followed by recovery of the water level to static conditions. Once equilibrium is reached, another test can be performed. In larger diameter wells (2-inch and 4-inch), a metal slug of known volume will be inserted into the well for a rising head test. After the water level in the well has reached equilibrium, the slug will be withdrawn creating a falling head test. Rise and fall of the water level in the well is recorded on a transducer place in the bottom of the well. A graphic analytical technique will be used to estimate hydraulic conductivity for each of the tests. Spreadsheets are available for input and calculations using several different equations depending on aquifer and well conditions. Common methods of evaluation of slug test data include: Horslev (1951), Bouwer and Rice (1976) and Cooper *et al* (1967).

■ 4.7 Quality Assurance (QAPP)

This RIWP is for a series of soil samples, soil gas samples, and groundwater samples at previously tested locations to update the knowledge base of the site with respect to potential changes in concentrations of PCE and associated contaminants at the American Cleaners Middletown site. Slug testing will also be conducted to measure the hydraulic conductivity in the saturated zone below the water table.

Resumes for project manager, Katheine J. Beinkafner, Ph.D., CPG; project engineer, Jolanda G. Jansen, P.E.; and Geoprobe™ owner-operator Todd Syska are included in Appendix 3: Investigation Personnel. See the bottom of page 1 in the Health and Safety Plan for more information on organization.

Field sampling procedures are described in section 4.4 for soil sampling, soil gas sampling in section 4.5, and for groundwater sampling in section 4.6. Decontamination procedures are minimal and require cleaning of the Geoprobe parts in contact with soil, use of new tubing with the peristaltic pump, and new sterile scoops or spoons used in collection of the soil samples. Data Quality Usability information is provided in section 5.0 Data Validation.

For the each day of soil sampling, the QA/QC samples will consist of one field blank and one trip blank. In addition to the groundwater samples for each monitoring well, QA/QC samples will include trip blank, equipment blank, one Matrix Spike (MS) sample, and one Matrix Spike Duplicate (MSD) sample. The MS and MSD samples will be collected from the most productive well as determined during monitoring well development. One field blank and one trip blank will also be sent to the lab with the groundwater samples.

The soil and groundwater samples will be collected in containers supplied by the laboratory including blanks and QA/QC samples will be placed on ice in a cooler with the chain of custody, sealed and sent to the lab.

The US EPA analytical method SW 846 8260B will be used by the ELAP-certified laboratory to analyze for volatile organic compounds plus methyl tertiary butyl ether (MTBE). The level of detection as listed by previous work by York Analytical Laboratories, Inc. is listed as “RL” which is defined in previous reports of groundwater analysis for this site as

1. The “RL” is the REPORTING LIMIT and is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. This REPORTING LIMIT is based upon the lowest standard utilized for calibration where applicable.

From examination of previous reports, the RL is equal to 5 ug/L. Occasionally, it is higher, probably due to interference of analytes. In this case the Reporting Limit is equal to the SCG for class GA groundwater of 5ug/L. All concentrations below 5 ug/L are flagged with the “J” indicator.

For the soil gas sampling, Summa Canisters will be provided by York Analytical Laboratories, Inc. The US EPA Method TO-14 will be used to analyze for volatile

organic compounds. As mentioned above, the laboratory detection limit for EPA Method TO-14 is 0.2 ppb.

■ 4.8 Measurement of Sampling Locations for Maps

For reports and comparison with previous work, all sampling locations will be recorded in the field notebook as measurements of feet and inches from the nearest landmark shown on air photos or building plans. Measurements will be on a rectangular grid corresponding to previous figures in earlier reports.

■ 4.9 Management of Investigation Derived Waste (IDW)

Two types of waste may be derived from the activities outlined in this work plan: soil from borings and purge water from well development and sampling.

● 4.9.1 Waste Soil

The Geoprobe™ soil cores with no PID readings above background can be used as fill within the borehole of origin. Soil with PID readings above background will be placed in a bucket and analyzed for VOC content. Samples reported by the lab as “ND” for PCE or concentrations below the soil SGC, will be the criteria for using the soil represented by the sample as fill.

Soil analyses with results for PCE greater than the SCG for soil will require additional tests for ignitability, corrosivity, reactivity, and toxicity character leachate procedure (TCLP). If the soil material does not have these hazardous characteristics, then it can be left on-site as fill. If the soil is characterized as hazardous waste by those 4 tests, it will have to be transported by a hauler permitted in accordance with 6 NYRCC Part 364 and the waste shipment must be accompanied by a manifest in accordance with 6 NYRCC Part 372.

While acquiring a soil sample from beneath concrete slab in the building, a manual soil boring tool will be used to bring up gravel first and then proceed deeper to obtain a sample of natural soil. The soil sample will be obtained from below the gravel and above the water table. All materials removed from the hole and not used as sample for the laboratory will be placed back into the hole and the hole will be sealed.

● 4.9.2 Waste Water

If less than 27 gallons of purge water is collected, it can be stored securely on-site in labeled containers. Review of the laboratory VOC results for the groundwater sampling event are used to determine the classification and disposal of the waste water. If the groundwater is clean or PCE is below the SCG, it can be discharged to the stormwater drainage system. If PCE levels are above the SCG, the water will be brought into the plant and placed in the PCE evaporative disposal unit. Documentation of the disposal will be prepared and signed by the plant owner Mr. Erez Halevah. All sampling results and disposal method will be reported in a supplemental RIR.

5.0 Data Validation

A NYSDOH environmental laboratory approved program (ELAP)-approved laboratory will provide NYS DEC Category B analytical data. The soil and groundwater samples will be analyzed for Volatile Organic Compounds (VOCs) plus MTBE with US EPA Method SW 846 8260B as listed in the DEC Analytical Services Protocol (ASP, July 2005). The data will be sent to a Data Validation subcontractor to prepare a Data Usability Summary Report (DUSR). Such report will identify and discuss any pertinent data limitations for use of the data. The DUSR will be included in the final Remedial Investigation Report (RIR).

6.0 Health and Safety Protocols

Health and safety protocols include two elements: a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP). Both plans are attached as Appendices 1 and 2, respectively. Both plans are site-specific and activity-specific for this RIWP. Safety and air monitoring locations will be established at each drilling location when the Geoprobe™ is in place for each monitoring well. Tailgate health and safety meetings will be held at the beginning of each workday.

7.0 Reporting

A Supplemental Remedial Investigation Report (SRIR) will be revised and updated with the information and data from this work plan. The resulting data will be used to establish the need and location of remedial systems.

8.0 Schedule

The schedule for this investigative work will be in expedited mode so that the data can be used to proceed with the remedial action commensurate with the findings. All project members are well aware of the need to have installed a successful remedy by August first, 2012. The collection of outdoor soil samples is dependent upon the availability of Todd Syska and his Geoprobe ™. Also the Summa Canisters will be requested from York Analytical Laboratory for use as soon as practicable. As soon as this plan is approved we will be contacting Paul Patel to establish times for field work.

9.0 References

Bouwer, H. and R.C. Rice, 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water Resources Research. Vol 12, No 3, pp 423-428.

Cooper, H.H., Jr, J.D. Bredehoeft, and I.S. Papadopulos, 1967, Response of finite-diameter well to an instantaneous charge of water, Water Resources Research, Vol 3, No 1, pp 263-269.

FINAL DER-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION, May 3, 2010, New York State Department of Environmental Conservation, Division of Environmental Remediation.

Horslev, M.J. 1951, Time lag and soil permeability in groundwater observations, USArmy Corps of Engineers, Waterways Experiment Station Bulletin 36, Vicksburg, MS, 50 p.

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUND WATER SAMPLES FROM MONITORING WELLS, July 30, 1996 Revision 2, U.S. ENVIRONMENTAL PROTECTION AGENCY REGION I.

Table 1

Summary of Soil Sampling Results at American Cleaners Middletown

Soil Sampling was conducted by Katherine Beinkafner (owner of Mid-Hudson Geosciences) and Todd Syska (Geoprobe Owner & Operator) on May 16, 2012

Laboratory Analyses of 11 Soil Samples and two Distilled Water Blanks (Trip Blank and Field Blank) were Conducted by

York Analytical Laboratories, 120 Research Drive, Stratford, CT 06615 and reported in 12ED631 FINAL 05 24 2012 1642.PDF

The following table compiled by Mid-Hudson Gesociences lists the occurrence of Volatile Organic Compounds in the Soil and Blank Samples

No entry in the matrix indicates the analyte was not detected or recorded as ND in the Lab Report.

Analyte Name	SOIL SAMPLES												Blanks		
	ACMS1	ACMS2	ACMS3	ACMS4	ACMS5	ACMS6	ACMS7	ACMS8	ACMS9	ACMS10	ACMS11	units, etc	TRIP	FIELD	units
depth below surface	3-3.2 ft	3-3.2 ft	3-3.2 ft	4-4.5 ft	3-3.2 ft	3-3.2 ft	3-3.2 ft	3-3.2 ft	3-3.2 ft	3-3.2 ft	3-3.2 ft				
1,2,4-Trimethylbenzene	3.6 J	7.3	3.4 J	6.4	1.9 J	1.5 J	11	20	1.3 J	1.2 J	1.1 J	ug/kg dry 0.68 5.9 1			
1,3,5-Trimethylbenzene	1.1 J	2.6 J	1.2 J	1.2 J			3.9 J	7.0 J				ug/kg dry 0.47 5.9 1			
2-Butanone	6.0 J	21	16	9.5 J	4.3 J	13						ug/kg dry 0.47 5.9 1			
Acetone	66 B	110 B	100 B	97 B	93 B	110 B	52 B	97 B	45 B	56 B	45 B	ug/kg dry 4.0 12 1	12 B	15 B	ug/L
Ethyl Benzene	1.1 J	2.3 J	1.2 J	2.0 J			3.3 J	6.5 J				ug/kg dry 0.45 5.9			
Methylene chloride	44 B	50 B	43 B	43 B	42 B	45 B	49 B	100 B	39 B	26 B	42 B	ug/kg dry 1.4 12	11 B	10B	ug/L
n-Propylbenzene		1.4 J		1.2 J			2.3 J					ug/kg dry 0.80 6.4 1			
o-Xylene	2.1 J	3.9 J	2.1 J	3.8 J	1.2 J	0.96 J	6.1	12	0.95 J	0.94 J	ND	ug/kg dry 0.64 5.9 1			
p- & m- Xylenes	5.7 J	11 J	5.7 J	10 J	2.9 J	2.6 J	17	33	2.2 J	2.2 J	20.0 J	ug/kg dry 0.71 12 1			
Xylenes, Total	7.7 J	15 J	7.9 J	14 J	4.1 J	3.6 J	23	45	3.1 J	3.1 J	2.0 J	ug/kg dry 1.3 18 1			
Tetrachloroethylene			**3.6 J**	**1.4 J**			**62**	**230**	**9.7**	**22**	**23**	**ug/kg dry 0.64 5.7 1**			
cis-1,2-Dichloroethylene								6.6 J				ug/kg dry 2.5 12 2			
Toluene	1.1 J	2.0 J	1.2 J	1.5 J			2.6 J	5.2 J				ug/kg dry 0.30 5.9 1			
Trichloroethylene								4.2 J			1.4J	ug/kg dry 1.5 12 2			

Notes:

Laboratory Method: US EPA SW846-8260B, VOC list: 8260, Sample Preparation Method: 5035B.

Laboratory flags: Letters to the right of analyte conc Analyte is found in the associated analysis batch blank. For volatiles, methylene chloride and acetone are common lab contaminants.

The flag "B" means analyte was detected in associated batch blank. For volatiles, methylene chloride and acetone are common laboratory contaminants.

Data users should consider anything <10x the blank value as artifact.

The flag "J" means analyte detected below reporting limit, but greater than method detection limit (MDL)

Therefore such results are considered estimated concentrations.

Soil results are recorded in micrograms per kilogram or ug/kg or equivalent to parts per billion.

Blank (water) results are recorded in micrograms per Liter or ug/L or equivalent to parts per billiion.

The NYS DEC soil cleanup objective listed in Subpart 375-6: Remedial Program Soil Cleanup Objectives, table 375-6.8 (a) Unrestricted Use Soil Cleanup Objectives

The NYS DEC soil cleanup objective in 375-6.8 (a) are presented in units of parts per million. Specifically for tetrachloroethylene, the SCO is 1.3 ppm or 1300 ppb.

The chemical of concern at American Cleaners Middletown, NY site is the dry cleaning solvent known by the following names: tetrachloroethene, tetrachloroethylene, perchloroethylene, PCE, and PERC. To be certain we are referring to the same chemical, often the unique Chemical Abstracts Service Number (CAS identification number) is used: 127- 18-4.

The CAS number is used on all Laboratory Reports.

Table 2

Proposed Soil, Groundwater and Soil Gas Sampling

Remedial Investigation Work Plan

Re-evaluation of site to determine whether or not additional remedial action is required

American Cleaners, Middletown, NY

NYS DEC DER Voluntary Cleanup Program Site No. V-00461-3

Prepared by Mid-Hudson Geosciences and Jansen Engineering, June 3, 2012

1. Proposed Soil Sampling at former locations using US EPA Method SW-846-8260B

Map	Sampling Date	Sample Identification	Sample Depth	PCE (ug/kg) Concentration	Comment	Proposed Soil Sample Identification	Proposed Soil Sample Depth
RAWP, 2/12, Fig 2	06/18/03	BEI-3	2 ft	18		ACMS 12	2 ft
RAWP, 2/12, Fig 2	06/18/03	BEI-3	10 ft	1900	Below water table	none	none
RAWP, 2/12, Fig 2	03/01	B-5	unknown	1420		ACMS 13	3 ft
RAWP, 2/12, Fig 2	03/01	B-9	unknown	3296		ACMS 14	3 ft
This Report, Fig 1	5/16/2012	#5	3 ft	ND		ACMS 15	3 ft
This Report, Fig 1	5/16/2012	#8	3 ft	230		ACMS 16	3 ft

2. At former Soil Gas Sampling location, Proposed Soil Sampling using US EPA Method SW-846-8260B

Note: Soil gas first to get best undisturbed sample, followed by soil sampling

Soil Gas Laboratory Method will be US EPA Method TO-14

SOIL GAS SAMPLING Map	Sampling Date	Sample Identification	Sample Depth	PCE (ug/m3) Concentration	Comment	Proposed Soil Sample Identification	Proposed Soil Sample Depth
RAWP, 2/12, Fig 3	6/03	SG-11	unknown	460		ACMSG 11	3 ft
RAWP, 2/12, Fig 3	11/17/05	SG-25	unknown	120,000		ACMSG 25	3 ft
SOIL SAMPLING **US EPA Method SW-846-8260B**						Proposed	Proposed
Map	Sampling Date	Sample Identification	Sample Depth	PCE (ug/m3) Concentration	Comment	Soil Sample Identification	Soil Sample Depth
RAWP, 2/12, Fig 3	6/03	SG-11	unknown	460		ACMS 17	3 ft
RAWP, 2/12, Fig 3	11/17/05	SG-25	unknown	120,000		ACMS 18	3 ft

3. Proposed Sampling Under the Building from within the building

Note: Soil gas first to get best undisturbed sample, followed by soil sampling

Soil Gas Laboratory Method will be US EPA Method TO-14

SOIL GAS SAMPLING Map	Sampling Date	Sample Identification	Sample Depth	PCE (ug/m3) Concentration	Comment	Proposed Soil Gas Samp Identification	Proposed Soil Sample Depth
RAWP, 2/12, Fig 3	11/18/05	SSSV-1	unknown	20,000	Summa Canister>>	SSSV-2	below slab
SOIL SAMPLING **US EPA Method SW-846-8260B**						Proposed	Proposed
Map	Sampling Date	Sample Identification	Sample Depth	PCE (ug/kg) Concentration	Comment	Soil Sample Identification	Soil Sample Depth
RAWP, 2/12, Fig 2	07/16/03	BEI-10	5-6 ft	78,000	possibly below WT	ACMS 19	3 ft

4. Proposed Groundwater Sampling at former locations using US EPA Low Flow Method & Lab Method SW-845-8260B

GROUNDWATER SAMPLING Map	Sampling Date	Sample Identification	PCE (ug/L) Concentration	TCE (ug/L) Concentration	disDCE (ug/L) Concentration	VC (ug/L) Concentration	Proposed Groundwater Sampling
RIR 04/10/10, Fig5-5	06/18/03	T7	ND	ND	1J	ND	Yes
RIR 04/10/10, Fig5-5	06/18/03	MW28	270	24	25	ND	Yes
RIR 04/10/10 Fig5-5	03/01	T5	47	4J	24	ND	Yes
RIR 04/10/10 Fig5-5	03/01	MW26	2600	64	64	2	Yes
RIR 04/10/10 Fig5-5	03/01	MW25	910	19	22	ND	Yes

Note: New groundwater samples will be identified by their monitoring well number.

Table 3

Sampling Locations, Rationale, Analytical Method, and QA Quantification

Remedial Investigation Work Plan

Re-evaluation of site to determine whether or not additional remedial action is required

American Cleaners, Middletown, NY

NYS DEC DER Voluntary Cleanup Program Site No. V-99461-3

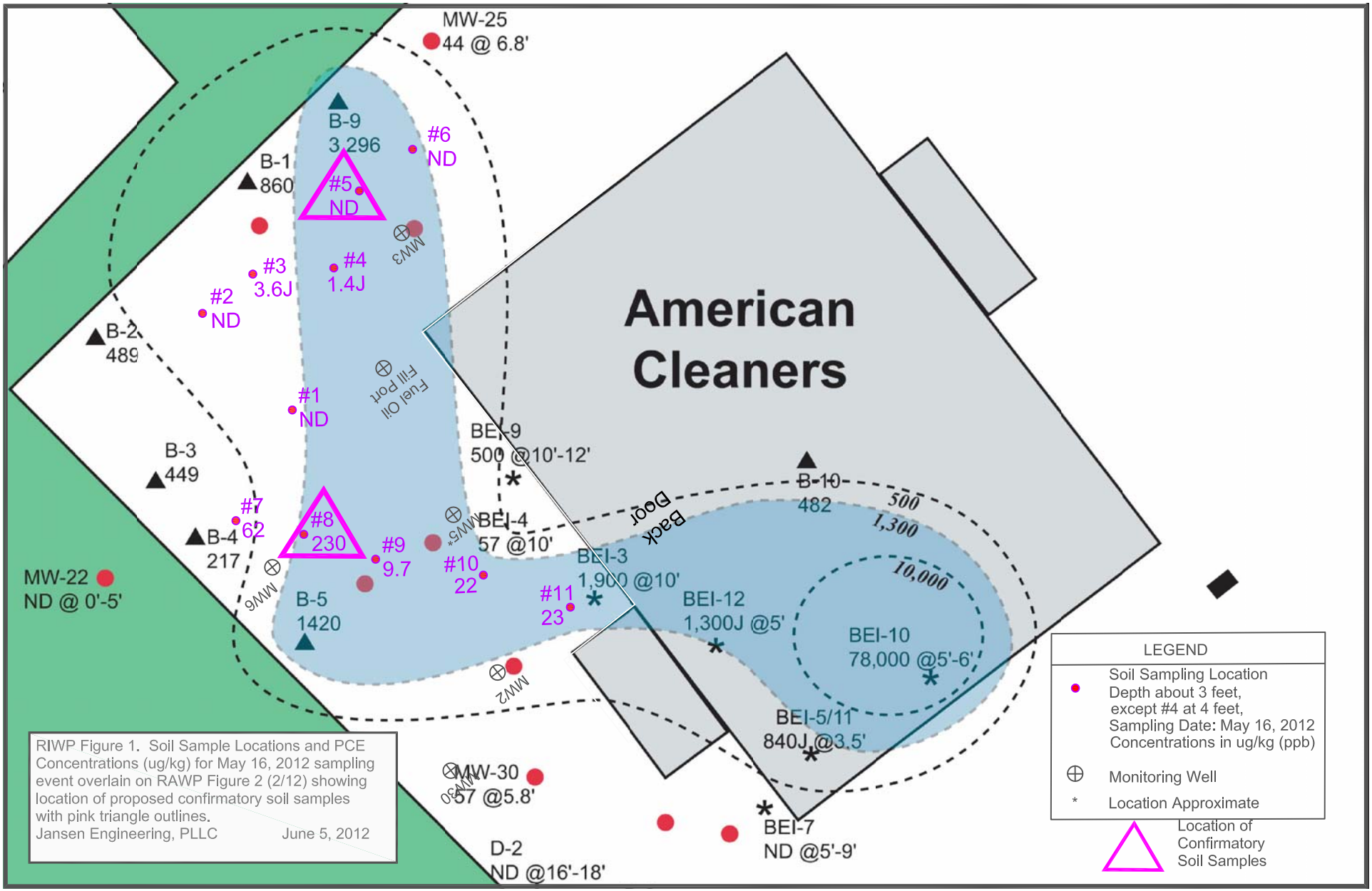
Prepared by Mid-Hudson Geosciences and Jansen Engineering, June 3, 2012

Soil Sample Identification	Sample Dep[th (feet)	Soil Sample Location	Rationale for Location	Number of Samples	VOCs EPA 8260B
ACMS 12	3	Blacktop	Check status of BEI-3 (6/18/03)	1	√
ACMS 13	3	Blacktop	Check status of B-5 (03/01) conditions	1	√
ACMS 14	3	Blacktop	Check status of B-9 (03/01) conditions	1	√
ACMS 15	3	Blacktop	Confirm status of ACMS#5 (5/16/12)	1	√
ACMS 16	3	Blacktop	Confirm status of ACMS#8 (5/16/12)	1	√
ACMS 17	3	Blacktop	Find PCE concentrations in Soil at SG-11	1	√
ACMS 18	3	Blacktop	Find PCE concentrations in Soil at SG-25	1	√
ACMS 19	3	Building	Check status of BEI-10 (7/16/12) in un-saturated conditions	1	√

Soil Gas Sample Identification	Sample Depth (feet)	Soil Gas Sample Location	Rationale for Location	Number of Samples	VOCs EPA TO-14
ACMSG 11	0.5-1	Blacktop	Check status of SG-11 (6/03)	1	√
ACMSG 25	0.5-1	Blacktop	Check status of SG-25 (11/17/05)	1	√
SSSV-2	1-2?	Building	Check status of SSSV-1 (11/18/05)	1	√

Groundwater Monitorling Well Identification	Screen Interval (feet)	Monitoring Well Location	Rationale for Location	Number of Samples	VOCs EPA 8260B
T7	8-18	downgradient	Check contaminant status since 01/2010	1	√
MW28	9.5-14.5	downgradient	Check contaminant status since 01/2010	1	√
T5	10-20	downgradient	Check contaminant status since 01/2010	1	√
MW26	4-14	downgradient	Check contaminant status since 01/2010	1	√
MW25	5.5-15.5	downgradient	Check contaminant status since 01/2010	1	√

SAMPLE QUALITY ASSURANCE QUANTIFICATION			
Parameter	Soil Samples	Soil Gas Samples	Groundwater
Maximum number of Samples	8	3	7
Number of Equipment Blanks	1/day	N/A	1/day
Number of trip Blanks	1/day	N/A	1/day
Number of Duplicate Samples	0	0	0
Number of Matrix Spike Samples	0	0	1
Number of Matrix Spike Duplicates	0	0	1
Sample Preservation	zero head space cool at 4 ^{o}F	Return to Lab ASAP	zero head space cool at 4^{o}C
Sample Container Volume	2 oz	6 liter	40 ml
Sample Container Type	glass jar, screw lid	Summa Canister	glass vial
Sample Holding Time	14 days	30 days	14 days
Sample Storage in Field	cooler with ice paks	N/A	Cooler with ice paks
Transport to Laboratory	Cooler w fresh ice paks	N/A	Cooler w fresh ice paks


MW-25
44 @ 6.8'
B-9
3,296
#6
ND
B-1
860
#5
ND
MW3
#3
3.6J
#4
1.4J
#2
ND
B-2
489
Fuel Oil
Fill Port
#1
ND
American
Cleaners
BEI-9
500 @10'-12'
B-3
449
B-10
482
500
1,300
10,000
Back
Door
#7
62
#8
230
#9
9.7
MW5*
BEI-4
57 @10'
#10
22
B-4
217
MW-22
ND @ 0'-5'
MW6
BEI-3
1,900 @10'
#11
23
B-5
1420
BEI-12
1,300J @5'
BEI-10
78,000 @5'-6'
MW2
BEI-5/11
840J @3.5'
MW-30
MW30
57 @5.8'
BEI-7
ND @5'-9'
D-2
ND @16'-18'
LEGEND
Soil Sampling Location
Depth about 3 feet,
except #4 at 4 feet,
Sampling Date: May 16, 2012
Concentrations in ug/kg (ppb)
Monitoring Well
* Location Approximate
Location of
Confirmatory
Soil Samples
RIWP Figure 1. Soil Sample Locations and PCE Concentrations (ug/kg) for May 16, 2012 sampling event overlain on RAWP Figure 2 (2/12) showing location of proposed confirmatory soil samples with pink triangle outlines.
Jansen Engineering, PLLC June 5, 2012

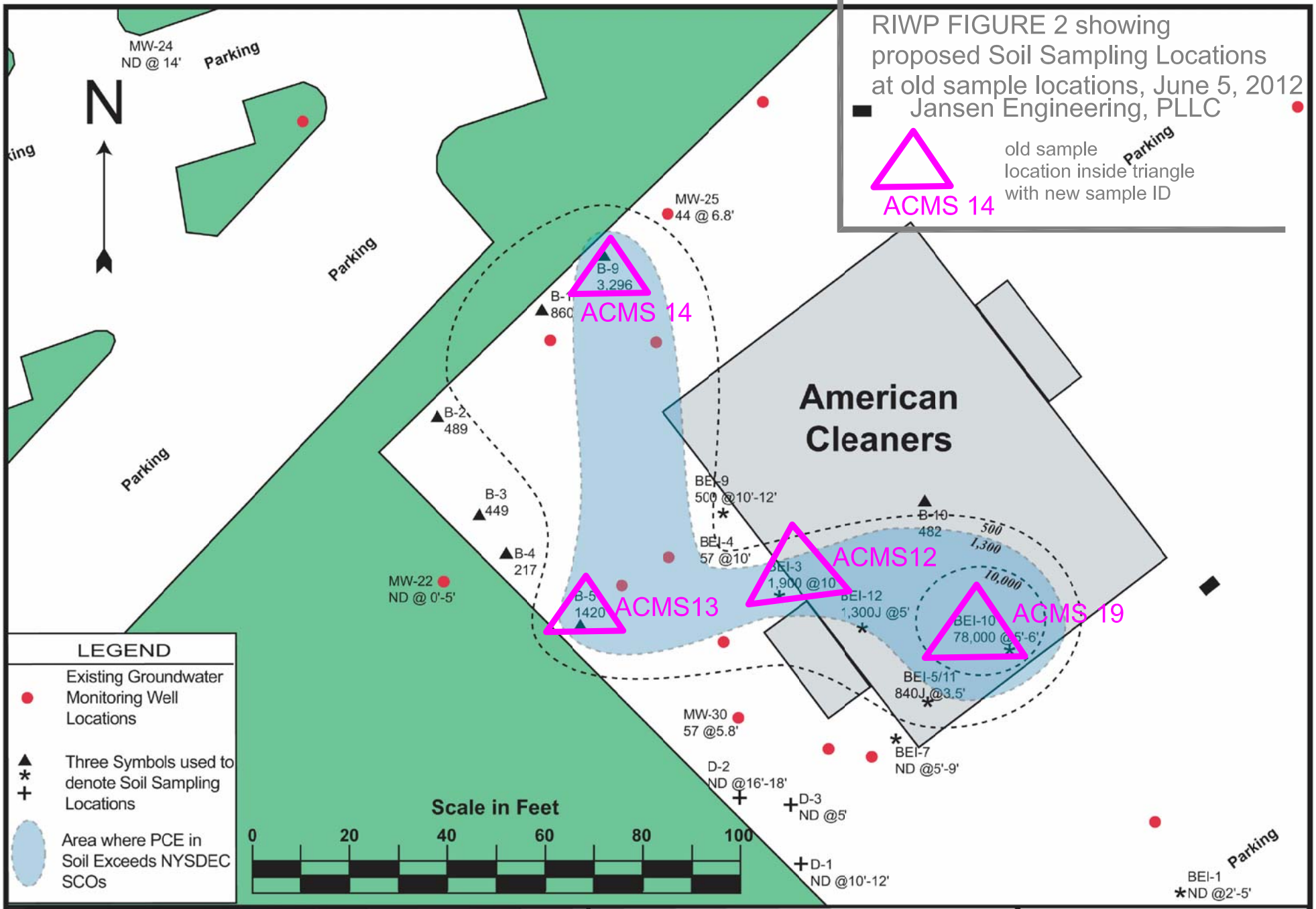


Figure 2
Contour Map of PCE in Soil (ppb)

American Cleaners at Caldor Lloyds Mall
340 Route 211 East, Middletown, NY 10940
NYSDEC DER VCP V-00461, Nov 2011

Geovation Engineering, P.C.
2016 Route 284
Slate Hill, NY 10921

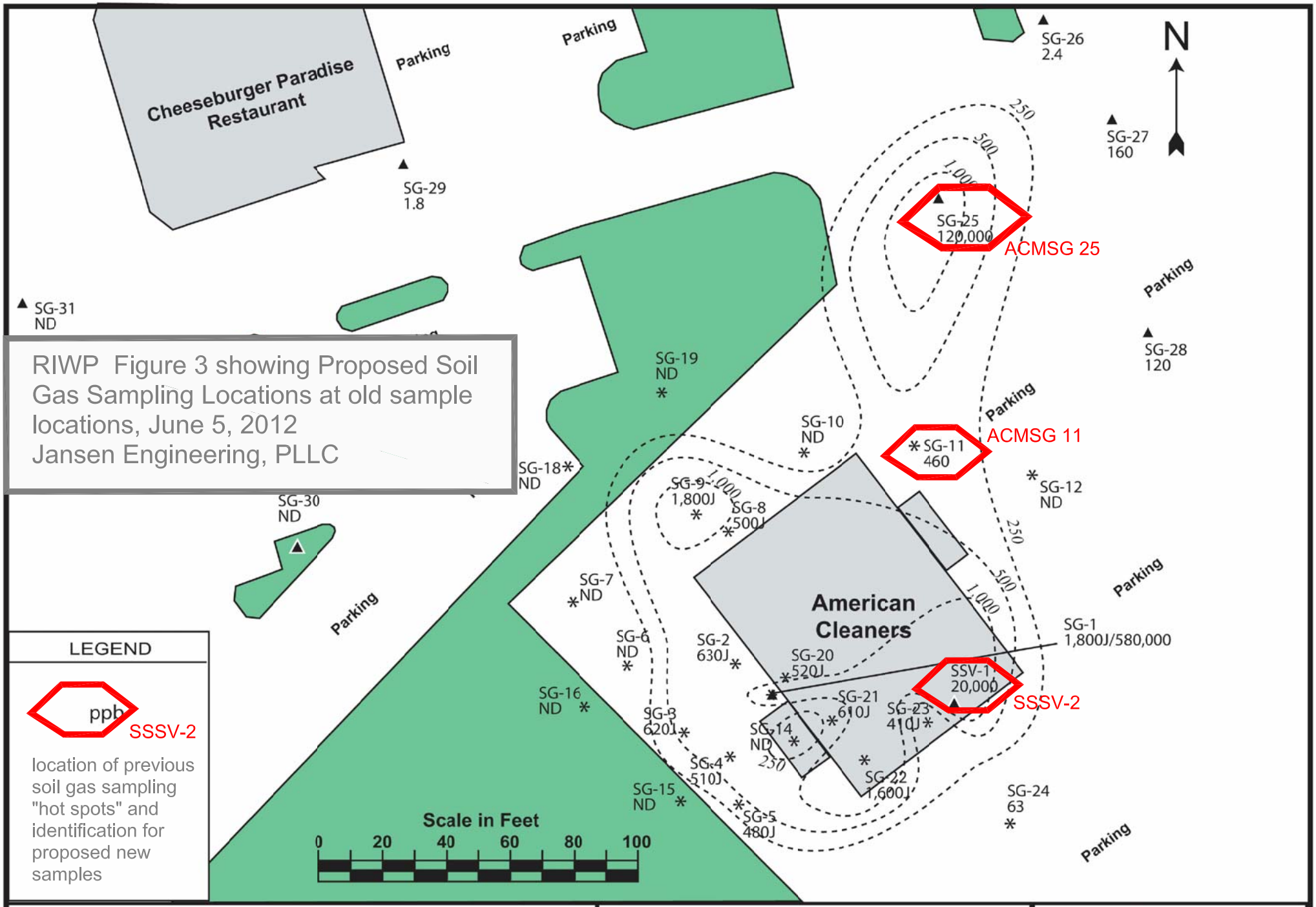
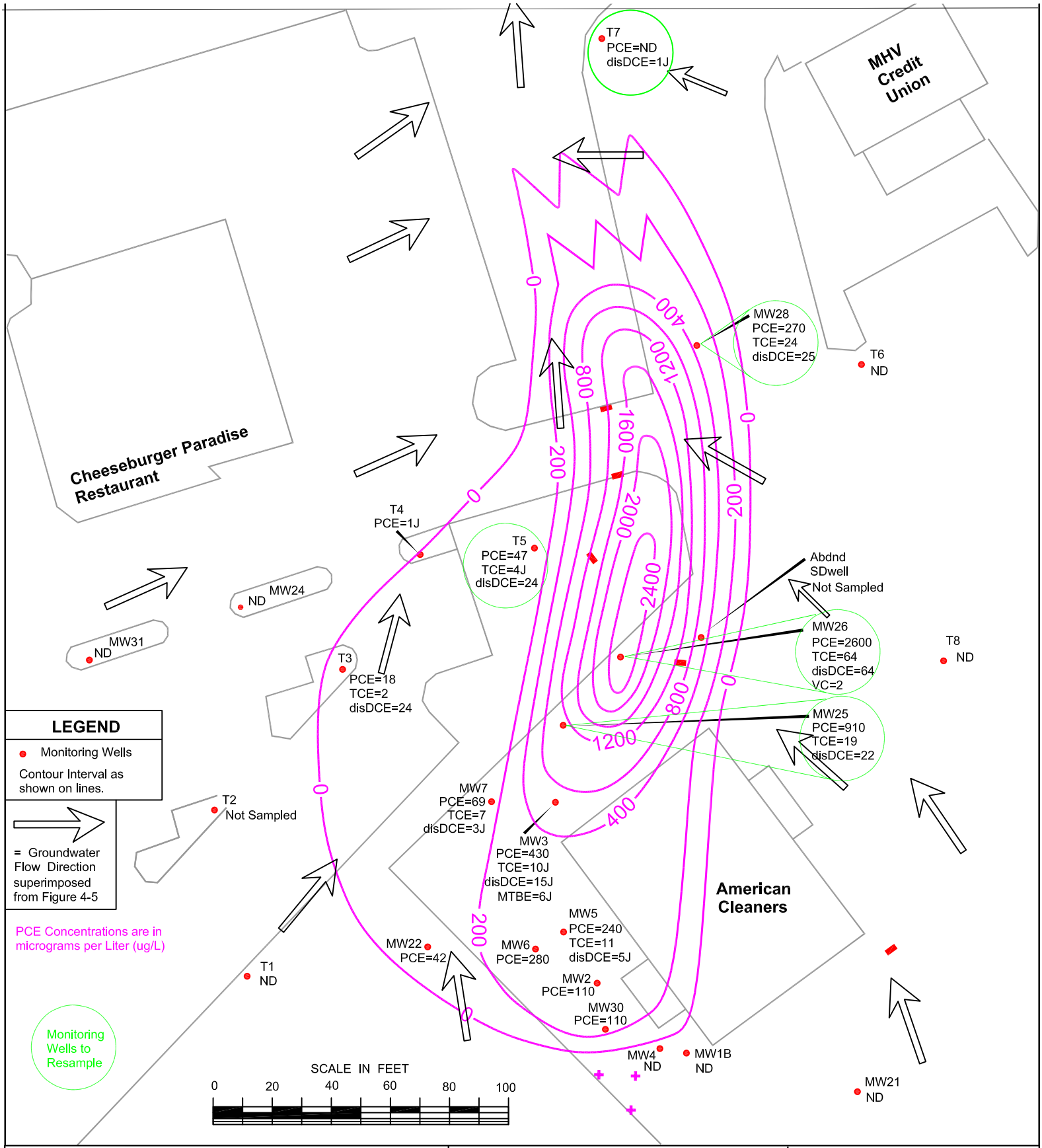


Figure 3
Contour Map of PCE in Soil Gas (ug/m3)

American Cleaners at Caldor Lloyds Mall
340 Route 211 East, Middletown, NY 10940
NYSDEC DER VCP V-00461, Nov 2011

GEOVATION
Geovation Engineering, P.C.
2016 Route 284
Slate Hill, NY 10921



RIWP Figure 5.5 (from RIR, 2/10) Showing Groundwater Monitoring Wells to Resample overlain on 1/10 Lab Data.
Jansen Engineering, PLLC **June 5, 2012**

American Cleaners at Caldor Lloyds Mall
340 Route 211 East, Middletown, NY 10940
NYSDEC DER VCP V-00461-3, Feb 2010

Mid-Hudson Geosciences
Katherine J. Beinkafner, PhD, CPG #6611
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Clintondale, NY 12515-0332
(845) 883-5866
rockdoctor@optonline.net

For Remedial Investigation Work Plan Re-Evaluation: Soil Sampling, Groundwater Sampling, Slug Testing, Soil Gas Testing, and Vapor Extraction System Installation at New York State Department of Environmental Conservation,
Hazardous Waste Voluntary Cleanup Site No. V-00461-3
American Cleaners Store, 360 Route 211 East, Middletown, NY10940 Orange County, NY

A. SITE DESCRIPTION

Site: American Cleaners Store, Dry Cleaning and Customer Service
Date of Plan: November 08, 2009
Location: East Side of Route 211, in separate building at the southern end of Caldor Plaza or Shopping Center, East of MHV Federal Credit Union, accessed from the Plaza Entry and across a parking area
Hazards: Tetrachloroethene (PCE or Perc) was used in the dry cleaning process, A spill occurred in the parking area behind (south) of the building and waste PCE was placed in the dumpsters behind the building prior to hazardous waste control. PCE has migrated downward into the unconsolidated overburden sediments beneath the parking lot and under the building. PCE vapors have been detected beneath the building and beneath the pavement in downgradient locations. Dissolved PCE has been detected in groundwater sampled from Monitoring Wells around the building and downgradient toward Route 211. Ambient air gas sampling with Summa Canisters has shown no indoor air, outdoor air or subslab vapors contaminated with PCE above NYS DOH standards in the AC Building, the MHV Federal Credit Union, Cheeseburger Paradise Restaurant, nor the Vacant Video Store. Oil and gasoline spills were reported at the former Lloyds supermarket and gas station and auto service store to the south. The Lloyd buildings were demolished and spill remediation activities have not been investigated, nor impacts on AC evaluated.
Topography: The building lies at an elevation of approximately 560 feet above sea level on a slight slope to the north downward toward Route 211. Route 211 lies at an elevation approximately 520 feet. The MHV Federal Credit Union is northeast of AC at an elevation of approximately 550 feet and Cheeseburger Paradise is at a similar elevation to the northwest. The main building of the Caldor Plaza or Caldor Shopping Center lies on top of a ridge at an elevation of approximately 580 feet and elongated
Weather Conditions: Due to the hillside location and open fetch from the north and west, weather tends to be more windy than on lower ground. Prevailing winds are generally from the west or northwest.
Additional Information: American Cleaners continues to function as a dry cleaning operation with standard use of regulated solvents and standard operating procedures, which reduce human exposure and spillage of materials.

B. **CLEANUP OBJECTIVES** – The objective of this investigation is to define the extent and nature of tetrachloroethene contamination in soils and groundwater in the subsurface overburden materials surrounding the building.

C. **ONSITE ORGANIZATION AND COORDINATION** – The following personnel are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

Health and Safety Officer ……. Katherine J Beinkafner, PhD, CPG
Project Engineer …… Jolanda G. Jansen, P.E.
Driller …….. Todd Syska
American Cleaners Owner and Site Manager …… Erez Halevah
NYSDEC Oversite and Project Manager ……..…Paul Patel, P.E.

All site visitors will also be given an introduction to the Health and Safety plan and relevant site procedures.
All personnel arriving or departing the site should log in and out with the Katherine Beinkafner or Erez Halevah. All activities on site must be cleared through the Katherine or Erez.

D. ONSITE CONTROL

The Health & Safety Officer has been designated to coordinate access control and security on site. Because hazardous or toxic waste is beneath the ground surface, the work zone will be defined by traffic cones, which define a safe perimeter. No one should enter the work zone without the acknowledgement of the driller or project manager. A hot zone will be defined if a need arises. The decontamination zone will be a special area where drill equipment is cleaned or safety gear is changed. If indeed, hazardous or toxic waste is detected through monitoring, the safety zones will immediately be established by the Health & Safety Officer.

A safe perimeter will be established with orange traffic cones and yellow or orange caution tape and will move with the drill rig from drill location to drill location. No unauthorized person should be within this area.
The onsite Command Post will be at the American Cleaner's front door if an emergency arises or at the back of the former Credit Union if the front door is unsafe. The staging area for drilling or other site operations will be on the north side of the building near the front so that people inside can see the equipment and workers outside.
The prevailing wind conditions are from the north and northwest, so the command post is upwind from the Work Zone, except in the case of drilling one upgradient well and work near the dumpsters.

E. HAZARD EVALUATION

The following substance(s) are known or suspected to be on site. The primary hazards of each are identified.

Substances Involved	Concentrations (If Known)	Primary Hazards
Tetrachloroethene	ND to 7800 ug/L in groundwater ND to 580,000 ug/m^3 in Soil Gas	

The following additional hazards are expected on site: uneven parking lot and paved areas, often wet areas or ice in winter, pot holes, weeds and overgrowth off the pavement.

Hazardous Substance Fact Sheet for tetrachloroethene is attached.

F. PERSONAL PROTECTIVE EQUIPMENT

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas or tasks:

Location	Job Function	Level of Protection
Work Zone	Drilling, Sampling	D until higher levels needed.
Contamination	N/A	A B C D Other
Reduction Zone	N/A	A B C D Other

Specific protective equipment for each level of protection is as follows:

Level A	Fully encapsulating suit, SCBA (disposable coveralls)
Level B	Splash gear (type), SCBA
Level C	Splash gear (type), Full-face canister respirator
Level D	**Hard Hats, Gloves, Safety Steel-toe Boots, Safety Glasses, Long sleeve shirts, long work pants.**

The following protective clothing materials are required for the involved substance(s):

Substance (Chemical Name)	Material (material name, e.g. Viton)
none at this time	none at this time

If air-purifying respirators are authorized, (filtering medium) is the appropriate canister for use with the involved substances and concentrations. A competent individual has determined that all criteria for using this type of respiratory protection have been met. Appropriate canister type will be filled in if dust, hazardous gas or vapors are detected on site.

No changes to the specified levels of protection shall be made without the approval of the site safety officer and the project team leader.

G. ONSITE WORK PLANS

The work party and any substitutes will be listed on the Signature Page of this Health and Safety Plan.

H. COMMUNICATION PROCEDURES

All other onsite communications will use voice commands.
Personnel in the Work Zone should remain in constant contact with or within sight of the Project Team Leader. Any failure of communication or accident or emergency requires an evaluation of whether personnel should leave the Work Zone.

Continuing Intermittent Horn BEEPING is the emergency signal to indicate that all personnel should leave the Work Zone and meet at the Command Post.

The following standard hand signals will be used in case of failure voice communications:

Hand gripping throat ---------- Out of air, can't breathe
Grip partner's wrist or ---------- Leave area immediately
both hands around waist
Hands on top of head ---------- Need assistance
Thumbs up ---------- OK, I am all right, I understand
Thumbs down ---------- No, negative

I. DECONTAMINATION PROCEDURES

Personnel and equipment in contact with contaminated soil or groundwater upon leaving the Work Zone shall be thoroughly decontaminated. The standard level "C" decontamination protocol shall be used with the following decontamination stations (if needed):

Emergency decontamination will include the following stations (if needed):

Equipment Drop
Outer Garment, Boots, and Gloves Wash and Rinse
Outer Boot and Glove Removal
Canister or Mask Change
Boot, Gloves and Outer Garment Removal
Face Plate Removal
Field Wash

The following decontamination equipment is required:

Buckets with Brushes
Gallons of Distilled or Bottled Water
Detergent
Benches
Plastic on Ground & Plastic Bags for Disposable items
Spare Canisters for Respirators

Detergent and water will be used as the decontamination solution.

J. SITE-SPECIFIC SAFETY AND HEALTH PLAN

1. The Site Safety Officer and is directly responsible to the Project Team Leader for safety recommendations on site.
2. Emergency Medical Care

Emergency Medical Service: Immediate Medical Care
111 Maltese Drive
Middletown, NY
(845) 342-4774

Hospital with Emergency Room: Orange Regional Medical Center
County Route 67, 707 East Main Street (See map to Hospital)
Middletown, NY 10940
(845) 333-1000

Ambulance Service: Regional EMS (845) 343-2345
Or Mobile Life Support (845) 343-1212

The following First-aid equipment is on site:
First-aid kit
Emergency eyewash
Emergency shower spray

List of emergency phone numbers:

Agency/Facility	Phone #	Contact
Police	845 343-3151	City of Middletown Police
Fire	845 343-7131	Silver Lake Volunteer Fire Co. 26 Maltese Dr, Middletown
Hospital	845 333-1000	Orange Regional Medical Ctr
Ambulance	845 343-2345	Regional EMS
	845 343-1212	Mobile Life Support

3. Environmental Monitoring (see attached Contingency Plan)

The following environmental monitoring instruments shall be used on site (cross out if not applicable) at the specified intervals.

Meter		Monitoring Frequency
Combustible Gas Indicator	-	excavation and fresh exposures
HNU/Microtip (VOCs)	-	excavation and fresh exposures

The following will be monitored if a relevant contingency plan is invoked:

Oxygen Monitor	-	continuous / hourly / daily / other
Colorimetric Tubes	-	continuous / hourly / daily / other
Air Temperature/Thermometer	-	continuous / hourly / daily / other
Radioactivity Meter	-	continuous / hourly / daily / other

4. Emergency Procedures (should be modified as required for incident)
The following standard emergency procedures will be used by onsite personnel. The Site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury in the Work Zone: Upon notification of an injury in the Exclusion Zone, the designated emergency signal, continuing horn beeping shall be sounded. All site personnel shall assemble at the Command Post. The rescue team will enter the Work Zone (if required) to remove the injured person to safety. The Site Safety Officer and Project Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement. The onsite EMT shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). No persons shall reenter the Work Zone until the cause of the injury is determined.

Personnel Injury in the Support Zone: Upon notification of any injury in the Support Zone, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with the onsite EMT initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal, continuing intermittent horn beeping shall be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal continuing intermittent horn beeping shall be sounded and all site personnel assembled at the Command Post. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal Protective Equipment Failure: If any site worker experiences a failure or alteration or protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Work Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Project Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operation on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Work Zone until the situation is evaluated and appropriate actions taken.

5. PERSONAL MONITORING

The following personal monitoring will be in effect on site.
Personal exposure sampling: Total VOCs will be measured with an hnu DL-101 or photovac microtip HL-2000 or HL-3000 or MiniRAE- 2000 at the well bore or monitoring wells or soil sampling locations to assess the safety of the breathing zone.

Medical monitoring: The expected air temperature will be (50°F). If it is determined that heat stress monitoring is required (mandatory if over 70°F) the following procedures shall be followed: monitoring body temperature, respiration rate, pulse rate. If a level of personal Protection higher than C is required, continuous outdoor temperature monitoring will be a standard operating procedure and will be described in the revision of this Plan.

Health and Safety Plan Acknowledgement and Agreement Page

I acknowledge I have reviewed a copy of this Health and Safety Plan for American Cleaners Middletown Site, understand it, and agree to comply with its provisions.

►Health and Safety Officer _____
Name Company
_____/_____/_____
Date Signature EMT? CPR? FirstAid?FirstResponder?

► _____
Position Name Company
_____/_____/_____
Date Signature EMT? CPR? FirstAid?FirstResponder?

► _____
Position Name Company
_____/_____/_____
Date Signature EMT? CPR? irstAid?FirstResponder?

► _____
Position Name Company
_____/_____/_____
Date Signature EMT? CPR? FirstAid?FirstResponder?

► _____
Position Name Company
_____/_____/_____
Date Signature EMT? CPR? FirstAid?FirstResponder?

List of emergency phone numbers:

Agency/Facility	Phone #	Contact
Police	845 343-3151	City of Middletown Police
Fire	845 343-7131	Silver Lake Volunteer Fire Co. 26 Maltese Dr, Middletown
Hospital	845 333-1000	Orange Regional Medical Ctr
Ambulance	845 343-2345	Regional EMS
	845 343-1212	Mobile Life Support

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE
CAS # 127-18-4

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

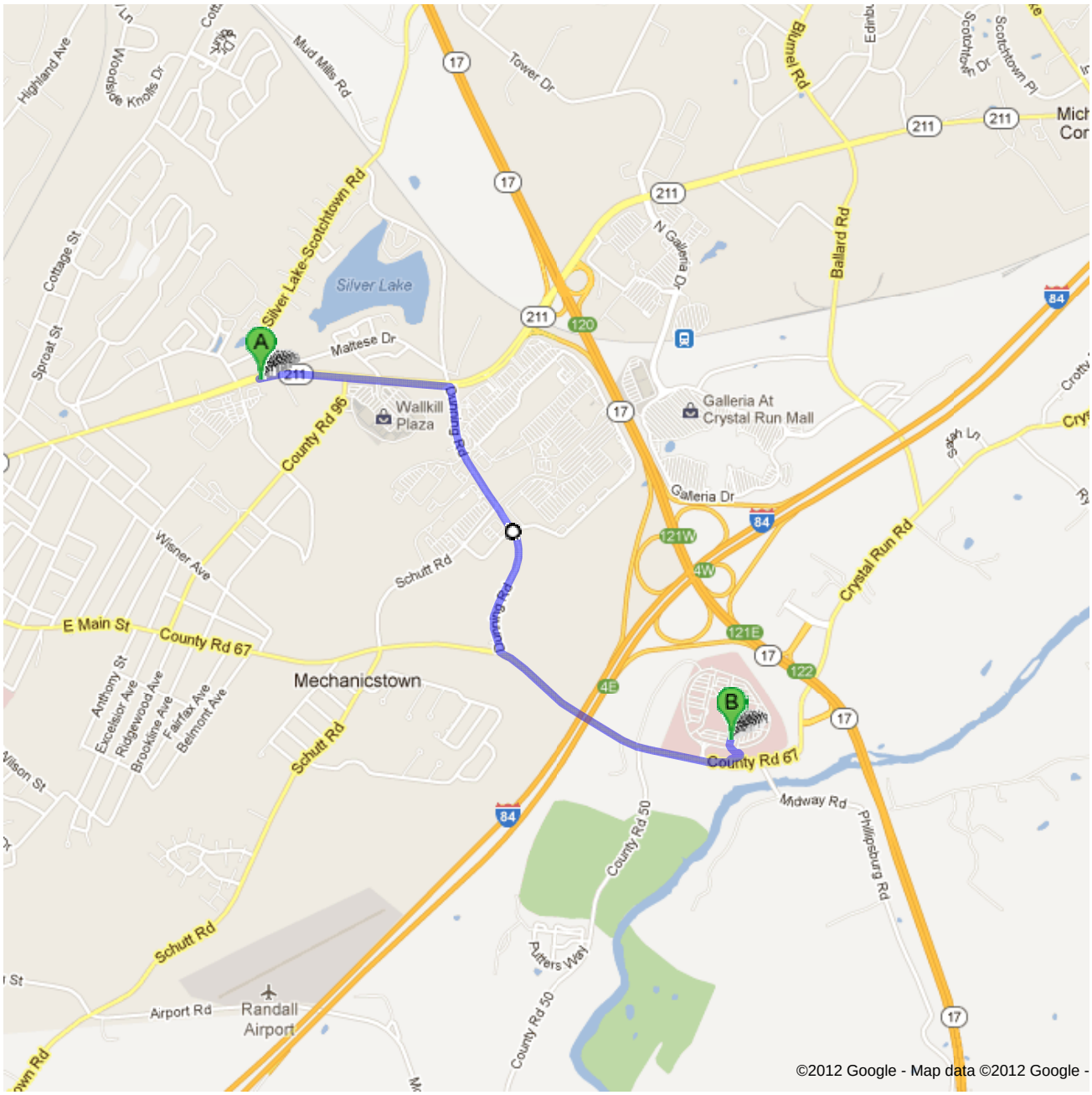
References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Google

Directions to Orange Regional Medical Center
707 E Main St, Middletown, New York 10940 - (
845) 333-1000
2.2 mi – about **7 mins**



360 New York 211, Middletown, NY 10940

1.	Head **east** on **NY-211 E** toward **Silver Lake Scotchtown Rd** About 1 min	go 0.5 mi total 0.5 mi
2.	Turn right onto **County Rd 92/Dunning Rd** About 3 mins	go 0.8 mi total 1.4 mi
3.	Turn left onto **County Rd 67/E Main St** About 2 mins	go 0.8 mi total 2.1 mi
4.	Turn left	go 0.1 mi total 2.2 mi

Orange Regional Medical Center
707 E Main St, Middletown, New York 10940 - (845) 333-1000

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

Appendix 2:
Community Air Monitoring Plan, June 5, 2012, page 1 of 3
For Interim Remedial Measure, On-site: Soil Sampling, Groundwater Sampling, Slug Testing, Soil Gas Testing, and Vapor Extraction System Installation at
New York State Department of Environmental Conservation,
Hazardous Waste Voluntary Cleanup Site No. V-00461-3
American Cleaners Store, 360 Route 211 East, Middletown, NY10940 Orange County

Community air monitoring consists of two types of monitoring: continuous and periodic. Specific meters are required to monitor air. A photo-ionization detector (PID) is used to measure VOCs in air and a particulate meter is used to monitor dust. NYSDOH and NYSDEC provide specific guidelines to respond to monitoring measurements.

Continuous Monitoring will be conducted for the ground intrusive activities identified in the RIWP such as advancement of soil borings and installation of monitoring wells. Since these tasks will be performed outdoors in a public parking lot, continuous monitoring will be conducted 5 to 150 feet downwind of the boring / well locations avoiding any exhaust from machinery. A data recording Hnu (photo-ionization) meter will be used to monitor the VOCs in the air. Particulate dust will be monitored with a DataRAM™. The equipment will be calibrated at least once each day or in accordance with manufacturers' recommendations.

Periodic monitoring for VOCs will be conducted during the non-intrusive tasks of well development and collection of groundwater samples from monitoring wells. Readings will be taken with the Hnu meter when the cap of the monitoring well is first opened to determine if VOCs have accumulated above the water table inside the well casing. Readings will be obtained while the purge water is accumulating in the graduated cylinder to ascertain if VOCs are degassing from the pump discharge water.

The following two sections are from the generic CAMP in Appendix 1A in the back of the DER-10 manual (November 2009). They describe what actions to take based on monitoring results reaching specific measurement levels.

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 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.

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 shutdown.

4. 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.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring 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/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving 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/m^3 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/m^3 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

For Interim Remedial Measure, On-site: Soil Sampling, Groundwater Sampling, Slug Testing, Soil Gas Testing, and Vapor Extraction System Installation at
New York State Department of Environmental Conservation,
Hazardous Waste Voluntary Cleanup Site No. V-00461-3
American Cleaners Store, 360 Route 211 East, Middletown, NY10940 Orange County
particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Appendix 3: Investigation Personnel June 5, 2012 **page 1**

For ,Soil Sampling, Soil Gas Sampling, Groundwater Sampling, Slug Testing and Remedial Activities at
New York State Department of Environmental Conservation,
Hazardous Waste Voluntary Cleanup Site No. V-00461-3
American Cleaners Store, 360 Route 211 East, Middletown, NY 10940
Town of Wallkill, County of Orange, State of New York

Field Work Identified in the RIWP will be conducted by

Project Engineer:	Jolanda G. Jansen, P.E.
Consulting Hydrogeologist & Health and Safety Officer	Katherine J. Beinkafner, Ph.D. CPG
Geoprobe Driller & Geologist	Todd J. Syska

Their qualifications are provided in the resumes following this cover page.

Other Personnel& Contact Information

American Cleaners Site Owner ……Erez Halevah
Cell (845) 551-1133
Office (845) 343-0111

NYSDEC Oversight & Project Manager …. …. Paul Patel, P.E.
Phone (518) 402-8801

RESUME

Jolanda G. Jansen, P.E. 72 Colburn Drive, Poughkeepsie, NY 12603

Education

Bachelor of Civil Engineering, University of Canterbury, Christchurch, New Zealand, 1975
Juris Doctor, Pace University School of Law, 2010

Engineering Liscense

New York State #068972-1, 1992

Professional Experience

Owner, 2009 – present, **Jansen Engineering, PLLC**
Key Projects: Sustainability Master Plan, Camphill Village, Columbia County
Project Manager, 2007 – 2008, **Hudson Valley Development Group, LLC**
Key Projects: 26 Home Cluster Subdivision with Central Sewer
4-story School to Condo Conversion
Project Manager, 2001 – 2007, **Spectra Engineering, P.C.**
Key Projects: Vassar College Student Housing, Site Plan
150 unit townhouse complex, WWTF and Site Plan
Bright Horizons Children's Center, Site Plan
Subdivisions throughout Dutchess and Ulster County
Project Manager, 1996 – 2001, **Hayward and Pakan Associates**
Key Projects: Buddhist Monastery Master Plan
Seventh Day Adventist Camp, WWTF
Staff Engineer, 1994 – 1996, **Morris Associates**
Assistant Engineer, 1987 – 1994, **Hayward and Pakan Associates**
Assistant Surveyor, 1986 – 1987, **Kemble Surveying**

Special Skills & Training

40-hour Safety at Hazardous Materials Sites
Annual 8-hour Refresher Courses
AutoCAD, bilingual Dutch

Community Service

Coordinator, 2002 – 2009, **Hudson Valley Smart Growth Alliance**

Coordinated conferences on the following topics: SEQRA & Green Building, Sustainable Energy Infrastructure, Magnetizing Downtowns, Planning for Biodiversity; Building Green; Smart Growth – Smart Jobs; Transit Oriented Development; Wind Power; Transfer of Development Rights; Cost of Sprawl; Decentralized Wastewater Systems; Strengthening our Hamlets, Villages and Cities; Affordable Housing and Smart Growth Successes.

Public Speaking

Sustainability Knowledge Exchange with the Netherlands, 2009

Carbon Neutral Community Planning in the Netherlands, 2008

Reducing the Carbon Footprint of Used-Water Treatment, 2008

Innovative Wastewater Treatment in Dutchess County, 2007

References

Available upon request

RESUME
KATHERINE J. BEINKAFNER, Ph.D., CPG
Geologist/Hydrogeologist

Mid-Hudson Geosciences
1003 Route 44/55; P.O.Box 332
Clintondale, NY 12515-0332

rockdoctor@optonline.net
Telephone and FAX (845) 883-5866
Cell: (845) 464-3622

EXPERTISE:
Investigation & Remediation of Subsurface Contaminants
Groundwater, Hydrology, Karst, and Wetland Studies
Environmental Regulatory Compliance, HazMat
QA, Senior Review, Expert Testimony
Surface and Borehole Geophysics
Computer Modeling of Groundwater Systems
Risk Assessment of Subsurface Contaminants

EMPLOYMENT EXPERIENCE:

1998-Present	Owner, Consultant	Mid-Hudson Geosciences
1997-1998	Sr. Hydrogeologist	Ballard Engineering, PC, New City, NY
Fall 1996	Adjunct Professor	Ramapo College, Mahwah, NJ
1991-1993	Sr. Hydrogeologist	EA Engineering, Newburgh, NY
1989-1991	Sr. Hydrogeologist	Dames & Moore, Pearl River, NY
Fall 1987	Adjunct Professor Groundwater-Hydrology	Rutgers, The State University of New Jersey, Newark Newark, NJ
1986-1987	Senior Consulting Hydrogeologist	Milton Chazen Engineering Associates Poughkeepsie, NY
1984-1986	Senior Reservoir Geologist	Lawrence-Allison West, Operations Contractor for Naval Petroleum Reserve #3, Casper, WY
1985	Dipmeter Consultant	Terrasciences, Inc., Lakewood, CO
1980-1984	Senior Development Geologist	Sohio Petroleum Company San Francisco, CA
1979	Summer Geologist	ARCO Oil and Gas Company Midland, TX
1979	Consulting Petroleum Geologist	Kirby Exploration Co. Houston, TX
1975	Adjunct Teaching Geologist	College of St. Rose Albany, NY
1972-1979	Scientist (Oil & Gas Geology)	Geological Survey, New York State Museum & Science Service, State Education Dept. Albany, NY 12234
1969-1972	Junior Scientist (Oil & Gas Geology)	Geological Survey (same as above)
1966-1968	Physics Teacher	F. D. Roosevelt H. S., Hyde Park, NY

EDUCATION:

1961-1965	S.U.N.Y. at New Paltz New Paltz, NY 12560	B.A. (Geology) M.A. (Geology)
1965-1966	Rensselaer Polytechnic Institute Troy, NY 12180	Geophysics
1968-1969	University of Pennsylvania Philadelphia, PA 19104	M.S. (Physics)
1977-1980	Syracuse University Syracuse, NY 13210	Ph.D. (Geology)

PUBLICATIONS:

Beinkafner, K.J., 2000, Increasing Water Resources with a Horizontal Well, Illinois Mountain, Highland Water District, Highland, NY: National Groundwater Association Eastern Focus Conference, Newburgh, NY October 5, 2000, 10:40 AM

UNPUBLISHED REPORTS:

Geologic Interpretation of Dipmeter Logs," joint author with Andy Bengtson, SOHIO Petroleum Company, San Francisco, 1984.

"Log Analysis for (Petroleum) Wells Using Computer Hardware and Software, based on Terra Sciences log analysis and mapping software, Lawrence Allison West, 1985.

UNPUBLISHED REPORTS (continued):

"Quantitative Geologic Model, Northern Second Wall Creek Reservoir," Lawrence Allison West, Casper, Wyoming, 1986.

"Radionuclide Transport to Human Access Locations, Transport Mechanism – groundwater and surface water (for Illionis LLRWSF License Application)," Dames and Moore, 1991.

"Subsurface Investigation Report, Town of New Paltz Landfill, Ulster County, New York," 1991.

"Sharkey Landfill Remedial Design, Groundwater Flow Model," Burns and Roe Industrial Services Co., 1991.

"Hydrogeologic Study of Wallkill Public Water Supply Watershed and Aquifer (Critical Environmental Area)," Mid-Hudson Geosciences, 1992.

"Ecological Risk Assessment of Benzene and Barium, Liquid Disposal Inc. Site, Michigan." EA Engineering, 1993.

"Complying with Hazardous Waste Laws and Requirements in New York State" notes for two-day short course sponsored by NYS DOT Bureau of Environmental Analysis and Mid-Hudson Geosciences, 1993&4.

"Hydrogeologic Investigation: Van Etten Mobil Station, Liberty, New York." Mid-Hudson Geosciences, 1994.

"Closure Investigation Report for Youmans Flats Landfill in Harriman State Park: Geologic, Hydrogeologic, Gas Venting, and Vector Study," 2 Volumes. Mid-Hudson Geosciences, 1995.

"Groundwater Resources in the Town of Gardiner, Ulster County,New York." Mid-Hudson Geosciences, 1995.

"Designing, Conducting and Analyzing Aquifer Tests Applicable to New York State's Hydro-Geologic Conditions" Mid-Hudson Geosciences in conjunction with Hydrogeologic, Inc. and HKS Environmental, Inc. 1997, 4-day NYS DEC training course.

"Hydrogeologic Investigation of Underground Fuel Oil Tank at Highland High School, 320 Pancake Hollow Road, Highland, NY, NYSDEC Spill No. 97-06013", 1998.

"Hydrogeology of Leipold Field, Ellenville Central School District, Edwards Place, Ellenville," 1998.

"Investigation Summary and Remedial Plan Site No. 18 NYCDOT Nott Avenue Garage, Addendum No. 1" for NYC Dept. of Design & Construction, Ballard Engineering PC, March 20, 1998.

"Investigation Summary and Remedial Plan Site No. 13 NYCDOT Brookville Yard," for NYC Dept. of Design and Construction, Ballard Engineering PC, April 12, 1998.

"Investigation Summary and Remedial Plan Site No. 11 NYCDOT Flatlands Garage Addendum No. 1" for NYC Dept. of Design & Construction, Ballard Engineering PC, February 4, 1998.

"Final Site Investigation Report for Irvington Waterfront Park …Village of Irvington, Westchester County, NY" (NYS DEC Brownfields Program)Chapters on Physical Characteristics of the Site, Nature and Extent of Contamination, Contaminant Fate and Transport, and Exposure Assessment, Ecosystems Strategies, Inc. March 18, 1998.

"Report: Phase I: Exploration and Assessment for Development of Groundwater Resources on Illinois Mountain Watershed Property, Highland Water District, Highland, NY" Mid-Hudson Geosciences, December 1, 1999.

"Report: 72-Hour Pumping Test, Sunset Ridge Subdivision, Phillipsburg Road, Town of Goshen, Orange County", NY for Clients of Lanc & Tully Engineers by Mid-Hudson Geosciences, July 29, 2002.

"Shawangunk Recharge Area and Groundwater Management Plan" for New York-New Jersey Trail Conference by Mid-Hudson Geosciences, September 2002.

"Report: Aquifer Protection Study, Town of Hurley, Ulster County, NY" for Environmental Conservation Commission, Town of Hurley, Ulster County, December 2003, revised June 2004.

"Pumping Test Report for High Meadow School, Stone Ridge, NY" prepared for James L. Reynolds, Architect and Barry Medenbach, PE, Stone Ridge, NY October 28, 2004.

Letter Reports: "Hydrogeologic Analysis of Operation of Proposed Septic System Project," "Hydrogeologic Analysis of Rainstorm and Operation of Proposed Septic System Project," "Hydrogeologic Analysis of Water Table Variation During Monitoring Period, " and "Method of Calculating Hydraulic Conductivity from Slug Testing, Addendum to Hydrogeologic Analysis of Operation of Proposed Septic System, Project: Plaza South, Newtown," CT for PW Scott, PE of Brewster,NY, April through October 2005.

Several Papers RE: "Calculations and Actions for Pesticide Remediation in Former Orchards, now Residential Subdivisions in Orange County:" Greiner and Wildflower Vista Subdivisions, BCM Development in Town of Newburgh, Palladino and Double R Subdivisions, as a subcontractor to William L. Going & Associates, Pine Bush, NY, 2004-2005.

"Review of FEIS (November 18, 2004) and DEIS (July 28, 2004) for Proposed Mushroom Production and Processing Facility by Yukiguni Maitake Manufacturing Corporation of America in the Town of Mamakating" and "Review of DEIS (July 28, 2004) for Proposed Mushroom …" and associated testimony at Planning Board Hearings for Bashakill Area Assocation (BKAA), Wurtsboro, NY, April through October 2005.

UNPUBLISHED REPORTS (continued):

Additional Reports prepared for BKAA RE; Yukiguni Maitake Mushroom Plant:
"Evaluation and Assessment of Design of a Process Wastewater Infiltration System" May 009
"Groundwater Mounding Analysis beneath the Process Wastewater Infiltration Basin" August 2009.
"Special Conditions Associated with NYSDEC Issuance of Yukiguni Maitake Permits" Sept. 2009.

"Report: Aquifer Protection Study, Town of Marbletown, Ulster County, NY," for Environmental Conservation Commission, Town of Marbletown, Stone Ridge, NY, September 2005.

Report: "Geologic Assessment of Hudson Landing Site, Kingston, NY", Recommending stormwater management practices to protect groundwater from potential contamination by flow into karst pathways, Ecosystems Strategies, Inc. November 2007.

Reports concerning proposed Ulster Manor Project in Town of Ulster: "Comments for the Ulster Manor FEIS RE: Soils and Geology including evidence of Karst Features on site, Surface water, Wetlands and Groundwater Resources, July 2008. "Comments on 'Dworkin's Letter 11/8/08" RE: Ulster Manor indicating confirmation of Karst Features on site and needed mitigation measures, Ecosystems Strategies, Inc. December 2008.

Reports submitted to US EPA for Industrial Hazardous Waste Site: Former General Switch, Middletown, NY (as subcontractor to Ecosystems Strategies, Inc.): "Well Installation and Remedial Selection Report" (October 2007). "Evaluation of Cone of Depression and Capture Zone for Bedrock Well" July 2010. Short Term Pumping Test to Evaluate Use of Overburden Well" March 2011.

Report: "Review of Draft Environmental Impact Statement (DEIS) for Warwick Views Subdivision, submitted by Warwick Views, LLC to Town of Warwick Planning Board" March 2010.

Additional Reports Prepared in conjunction with Paul A. Rubin dba HydroQuest: "Karst Hydrology #1" June 2010, "Karst Hydrology #2" August 2010, "Revision of DEIS and Public Review Recommended" January 2010.

PROFESSIONAL AFFILIATIONS:

American Association of Petroleum Geologists
American Institute of Professional Geologists
Geological Society of America
National Ground Water Association
Hudson Mohawk Professional Geologists Association

PROFESSIONAL HONORS:

Fellow of Geological Society of America

PROFESSIONAL CERTIFICATION:

Petroleum Geologist Number 2683 by American Association of Petroleum Geologists
Professional Geological Scientist Number 6611 by American Institute of Professional Geologists

HAZARDOUS WASTE TRAINING

29CFR 1910.120(e)(2)	40-hour Safety at Hazardous Materials Sites- Hands-On Workshop
29CFR 1910.120(e)(8)	OSHA 8-Hour Hazardous Materials Site Safety – Refresher Course
29CFR 1910.120(e)(4)	Supervisors of Hazardous Waste Operations – 8 Hours

Todd J. Syska

106 Spruce lane, Clinton Corners, NY 12514
(845) 266-8322

PROFESSIONAL HISTORY

More than thirty years of progressively increasing responsibilities and diversified experience in project management, community and government relations, environmental remediation, and water system development.

EDUCATION

BA Magna Cum Laude, Geology/ Geography, State University of New York at New Paltz

PROFESSIONAL CERTIFICATIONS

NYS Water Well Contractor

NYS Pump Installer, Large and Small

Connecticut non-potable water well contractor

FAA Certified Airline Transport Pilot

FAA Certified Flight Instructor, Instruments and Airplanes

NYS Certification in Secondary Education: Science, Mathematics, and Computer Science

ADDITIONAL TRAINING

29CFR 1910.12-8 General Safety Training

29CFR 1910.120 Supervisor Training

29CFR1910.132 PPE Training

29CFR1910.132 Chain Saw Safety Training

29CFR1910.134 Respiratory Protection Training

29 CFR 1910.146 Confined Space Training

29CFR 1926 Subpart I, Powder Actuated Tools

29CFR 1926.502 Fall Protection

Advanced Landfill Design and Closure

Landfill Liner and Cover Systems Construction and Related Quality Assurance and Quality Control Specialty Training, NYSDEC/EPA

Sherwin Williams Advanced Coatings Application and Quality Assurance, Polyurea

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EMPLOYMENT HISTORY

June 1994 to Present: Self Employed, President Todd J. Syska Inc.
Consultant to Engineers and professionals in the fields of environmental remediation and water system development.

June 1986 - June 1994: The Chazen Companies, Poughkeepsie, NY
Perform environmental site assessments. Responsible for the development of water, wastewater, and industrial waste treatment facilities. Design and permit landfills and municipal waste transfer and recycling centers. Provide computer support to the company and the scientific community.

July 1984 - June 1986: West Park Union Free School District
Established an instructional computer program where none had existed previously. Wrote and designed high school level curriculum. Taught computer application and programming to high school level students. Analyzed the computer needs of the administration and bookkeeping departments, specified hardware and software for use, and provided training and technical support to administrative and secretarial personnel.