



CLIENTS | PEOPLE | PERFORMANCE

October 7, 2011

Ms. Karen Cahill
NYSDEC
615 Erie Boulevard West
Syracuse, NY 13204

Re: Soil Vapor and Groundwater Sampling Workplan
Therm, Inc., Ithaca, New York
File No. 8612339.5

Dear Ms. Cahill:

We have prepared a two-phase workplan for subsurface investigation on behalf of Therm, Inc. Therm's technical team includes GHD, EnviroGroup, and Upstate Laboratories. To more clearly define the duties of each team member, we have attached the soil vapor sampling workplan (prepared by EnviroGroup) to this workplan for groundwater sampling. Therm has agreed to perform this work at the request of NYSDEC. Although Therm does not acknowledge responsibility for identified TCE and PCE anomalies, we are proceeding (in good faith and in response to NYSDEC requests) with certain focused investigations to further substantiate our positions.

For ease of communication, you may consider Wayne McFarland, P.E. as a single point of contact for the work associated with these workplans.

This document presents a groundwater sampling workplan for six (6) groundwater monitoring wells located on and near the Therm Inc. manufacturing facilities on Hudson Street Extension in Ithaca, New York. The objective of the sampling is to evaluate groundwater for volatile organic compounds (VOCs). The wells were last sampled in 1994; and Therm has been requested to provide another round of groundwater samples for comparison. Of the original ten (10) monitoring wells installed by Therm in the early 1990's, only five (5) are currently accessible, as shown in the attached table. On August 5, 2011, we measured the well depths for all five accessible wells, as shown on the attached table. Compared to the well logs and measured depths from 1994, it appears that less than 8 inches of silt has accumulated in each well. Wells MW-2B and MW-4B show measured depths which are 2 inches deeper than reported in 1994, but this may be due to well drillers rounding the total well depth in 1994. Based on these observations, the groundwater monitoring wells are suitable for sampling.

Sample locations are shown on the attached Figure 1. Groundwater samples will be collected from existing monitoring wells MW-1B, MW-2B, MW-4B, MW-5S, MW-6S and MW-8S. The location of monitoring well MW-10B could not be determined during a recent field visit, and a metal detector will be used to determine whether this well currently exist and can be sampled.

In 1994, monitoring well MW-11B was determined to be dry and, therefore, no samples have been collected from this location. Since MW-11B is located away from the current study area, it has been previously agreed that sampling of this well is not to be part of this workplan.



Field Procedures

Field sampling will be performed by a qualified technician from Upstate Laboratories, Inc. Groundwater monitoring wells will be purged by removing a minimum of three well volumes of water and allowed to recharge prior to sampling. Samples will be collected using dedicated bailers for each well and prepared for transportation to the laboratory using standard chain of custody forms. Samples processed for analyses will be packaged for shipment in accordance with current U.S. Department of Transportation (DOT) regulations.

Laboratory Analysis

Laboratory analysis will be provided under separate contract by Upstate Laboratories, Inc. Each sample will be analyzed for USEPA Method 8260 Volatile Organics (TCL List-2005). Quality control/quality analysis procedures will be followed using a matrix spike and matrix spike duplicate. Quality control procedures will be reviewed to verify consistency with NYSDEC guidance. All sample bottles will be labeled individually. Each label will identify the site name, depth, matrix and sample location and date and time of sample collection.

The following analytical method references will be followed for any samples:

1. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846,
2. *Standard Methods for the Examination of Water and Wastes* (most recent edition).
3. *EPA Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-69-020,

A sufficient number of trip blanks for volatile organic analysis, if required, will be prepared by the laboratory and delivered to the sampling team prior to each sampling event. One sealed trip blank will be carried into the field per day, along with the sample containers for each day that volatile organic samples are collected. Trip blanks will be transported and handled in the same manner as the actual samples. The results of the trip blank analysis will be reviewed to evaluate if the potential exists for sample contamination during transportation and handling.

The laboratory will perform all standard in-house QA/QC necessary to control the introduction of contamination in the laboratory and to ensure the accuracy and precision of the data.

Report

Groundwater sampling results will be summarized in tabular form supplemented by individual laboratory reports. A table will be prepared comparing the current groundwater conditions with those of samples analyzed in 1993 and 1994.

Schedule

Assuming timely approval of this work plan, we anticipate commencing field sampling requirements the week of October 24, 2011, access and weather conditions permitting. The proposed workplan schedule includes:

1. Initiate work after NYSDEC approval of this workplan; and



2. Submit laboratory results with tabular summary to the NYSDEC within 2 weeks after receipt of final laboratory analysis reports from Upstate Laboratories, Inc.

With immediate approval by the NYSDEC, we expect to submit a draft report on the findings of this investigation prior to December 31, 2011, or shortly thereafter.

Please contact me if you have questions regarding this workplan.

Sincerely,

GHD CONSULTING ENGINEERS, LLC

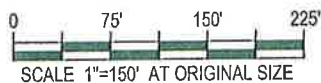
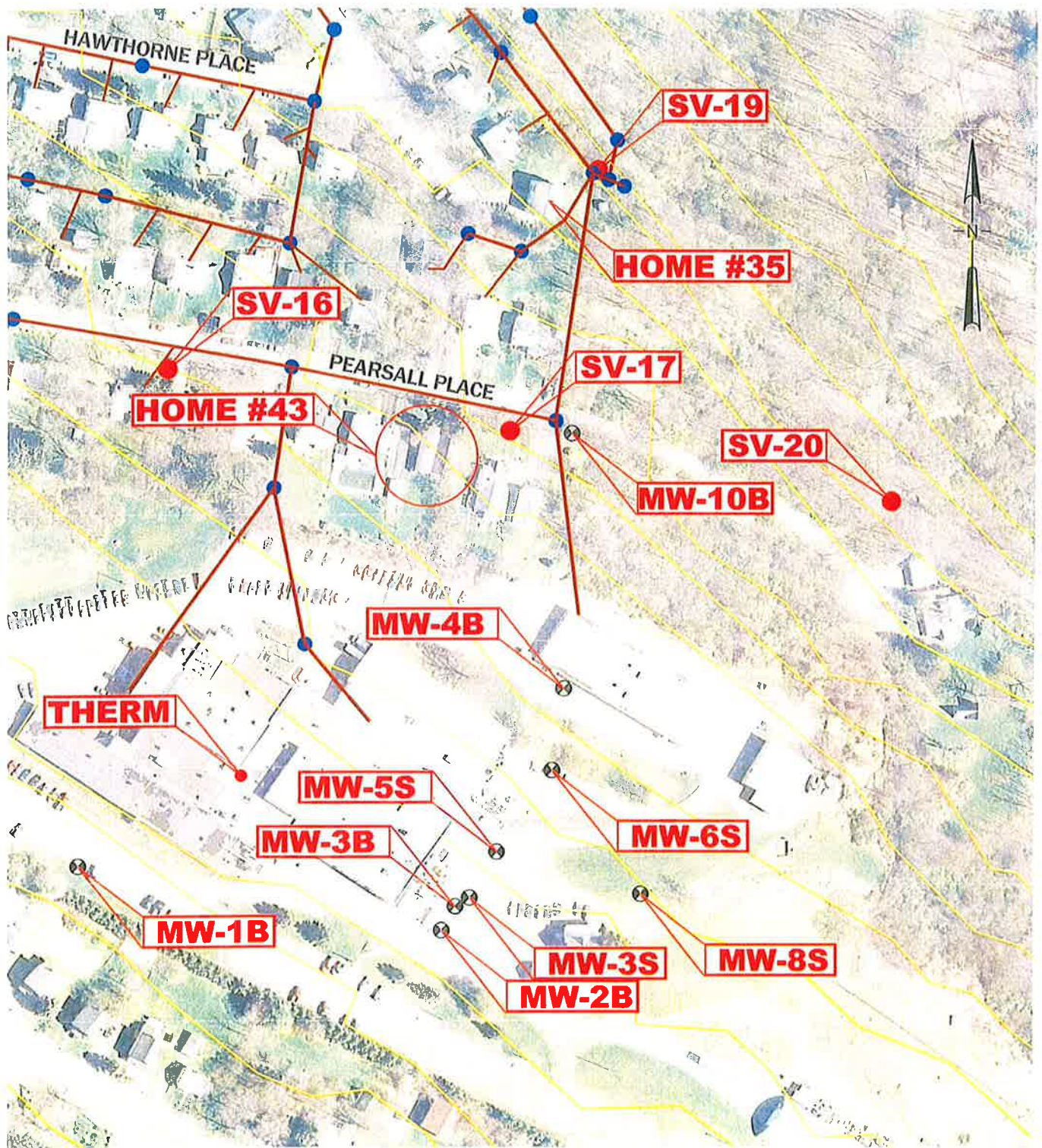
A handwritten signature in black ink, appearing to read 'Wayne E. McFarland', is written over the printed name.

Wayne E. McFarland, P.E., BCEE
Principal

WEM/jlb:kan

Enclosure: Figure 1 – Sampling Locations
 Figure 2 – Monitoring Well Locations
 Monitoring Well Levels
 EnviroGroup, Ltd. Soil Vapor Investigation Workplan

cc: Doreen Simmons, Esq., Hancock & Estabrook (w/enc.)
 David Folkes, P.E., EnviroGroup, Ltd (w/enc.)



THERM, INC

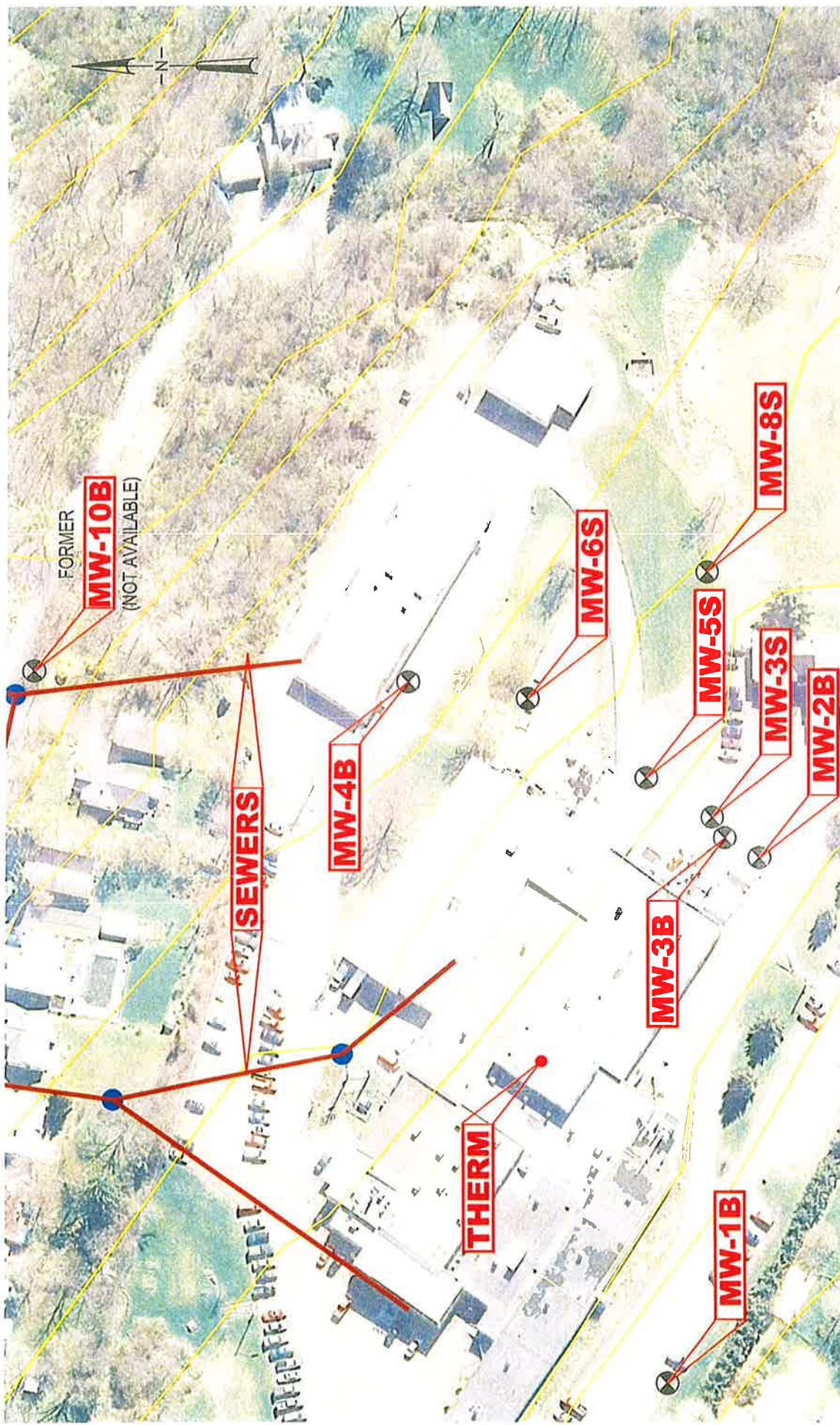
SAMPLE LOCATIONS

Job Number 8612339

Revision A

Date 06/11

Figure 01



THERM, INC

Job Number | 8612339

Division A

MONITORING WELL LOCATIONS

Figure 02

One Remington Park Drive, Cazenovia NY 13035 USA T 315 679 5800 F 315 679 5853 E cazmail@ghd.com W www.ghd.com

Therm Monitoring Wells

8/5/2011

WEM

Well	By	Original Depth*	8/5/2011		Top of Well Casing**	Water Elevation	
			Measured Depth	Depth to Water		10/17/1994	8/5/2011
MW-1B	OBG	No Well Log	25'-1"	5'-3"	734.5	Not Sampled	729.2
MW-2B	OBG	26'	26'-2"	6'-8"	717.8	712.0	711.4
MW-3B	S&W	26'	Could not access well		717.1	711.9	
MW-3S	S&W	8'	Could not access well		717.3	710.3	
MW-4B	OBG	21'	21'-2"	3'-6"	690.3	684.4	686.8
MW-5S	OBG	12'	12'-0"	10'-7"	717.2	706.7	706.6
MW-6S	S&W	15'	14'-4"	10'-0"	704.5	697.4	694.5
MW-8S	S&W	10'	9'-9"	9'-7"	711.5	701.3	701.9
MW-10B	S&W	19'	Could not access well		664.6	650.6	

* from field measurements, October 1994

** from 12/19/94 letter from Stearns & Wheler, Table 3

October 5, 2011

Mr. Wayne McFarland, P.E., DEE
GHD
1 Remington Park Drive
Cazenovia, New York 13035

**Re: Passive Soil Vapor Sampling Work Plan
Home #43 and Home #35, Ithaca, New York**

Dear Mr. McFarland:

This document presents a passive soil vapor sampling work plan (the “Work Plan”) for evaluating the presence and spatial distribution of certain volatile organic compounds (VOCs) in shallow soil vapor at two properties north of the Therm facility on Hudson Street Extension, in Ithaca, New York, pursuant to various requests of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH).

PURPOSE AND OBJECTIVES

Recent investigations conducted by contractors for the NYSDEC have indicated anomalous concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) in sub-slab vapor at Home #43 and at soil vapor probe SV-19, north of Pearsall Place (the “Evaluation Areas”). The purpose of this Work Plan is to see whether TCE and PCE are present in soil vapor in the Evaluation Areas and, if so, to assess the general nature, extent and potential source(s) of the compounds based on their spatial distribution in shallow soil vapor.

Passive soil vapor samples will indicate the relative masses of these compounds, if any, that are sorbed onto the samples over a specific period of time. While the passive soil vapor probes will not provide soil vapor concentrations for the compounds of interest, the spatial distributions of the relative sorbed masses will help achieve the following objectives:

Home #43

- Determine whether TCE (or PCE) is present in soil vapor or if the prior detection of TCE in sub-slab vapor (2100 $\mu\text{g}/\text{m}^3$) was anomalous/erroneous.
- Determine whether the TCE present in soil vapor is confined to the immediate vicinity of the house (indicating a potential local source) or if it is more extensive.

- In the latter case, the spatial distribution will help determine if the TCE is coming from any particular direction, e.g., the sewer line to the north, or from the south.

SV-19 (Home #35)

- Determine whether PCE or TCE is present at the soil vapor probe SV-19 location, or if the prior detection was anomalous/erroneous.
- In the case that PCE or TCE is present, the spatial distribution will help determine whether the PCE is:
 - Following any of the sewers in the vicinity, e.g., sewers coming from the south, east or west;
 - Due to some subsurface source (soil or groundwater);
 - Very localized (suggesting a local source); or,
 - Coming from any particular direction (if not a local source).

PROBE LOCATIONS

The following locations will be evaluated for the presence of elevated VOC concentrations in shallow soil vapor by collecting and analyzing passive soil vapor samples.

- Approximately 39 passive soil vapor samples at Home #43 (Figure 1);
 - 35 of the 39 passive soil vapor probes will be installed to a depth of three feet below ground surface (BGS) at the following spacing:
 - A nominal 10 foot by 10 foot grid pattern in the front and back yard. The center-line of the back yard grid will be extended to the south by two probes (20 feet) to evaluate the shallow soil vapor VOC trend between the Therm property and Home 43.
 - A nominal 10 foot spaced row along the east and west side yards.
 - The remaining four of the 39 passive soil vapor probes will be installed to a depth of five feet bgs (or refusal) in the following locations:
 - Two will be installed next to three foot deep probes in the front yard near the sewer lateral to the house.
 - Two will be installed in adjacent to three foot probes along the north-south centerline of the backyard grid.
- Approximately 31 passive soil vapor samples from the soil vapor probe SV-19 area (Home #35 property) on a nominal 10 foot by 10 foot grid pattern extending in all directions (Figure 2).

The exact number and locations of samples may vary slightly based on the conditions encountered in the field, such as the locations of structures and utilities. The actual sample

locations will be measured from a fixed feature on the property and mapped, along with other relevant property features, such as buildings, driveways, and underground utilities.

INVESTIGATION PROCEDURES

The following sections describe the field, laboratory, and QA/QC procedures.

Field Procedures

Passive soil vapor sample probes will be installed and sampled by EnviroGroup in accordance with the probe manufacturer's recommendations as described below. We understand that prior to our field activities, GHD will 1) arrange access, 2) have Dig Safe New York timely mark the locations of public underground utilities, and 3) have the property owners identify the locations of all known private underground utilities and structures in the Evaluation Areas.

Boreholes for passive soil vapor sample collection will be advanced using an electric hammer drill and appropriate sized bits. For both the three foot and five foot deep sample locations, an approximate one-inch diameter hole will be advanced to three feet BGS. For the five foot deep sample locations, a PVC casing will be inserted into this hole and an approximate ½ inch diameter hole will be advanced to five feet BSG (or refusal).

Passive soil vapor samples will be collected using passive soil gas (PSG) samplers provided by Beacon Environmental Services, Inc. (Beacon). Beacon will provide the PSG Samplers in a BESURE Sample Collection Kit™ (Kit) with all the materials necessary to collect the requested number of soil vapor samples. After the hole is created, a PSG Sampler (a rugged, borosilicate glass vial containing two sets of hydrophobic adsorbent cartridges) will be removed from the Kit. The PSG Samplers will be delivered wrapped with a retrieval wire, which will be unwound prior to deployment. Next, the solid cap on the PSG Sampler vial will be removed and replaced with a sampling cap (a one-hole cap with a screen meshing insert). The PSG Sampler will then be lowered with the screened-capped-end pointing down into the hole. Irrespective of borehole depth (i.e. three or five feet), the PSG sampler will be lowered to 3 feet BGS (or bottom of hole for holes shallower than three feet due to refusal). With the retrieval wire extending from the hole, an aluminum foil plug will be inserted into the top of the hole and the soil collapsed above the foil plug, flush with the ground surface. The wire will be coiled and laid flat on the ground surface. For sample locations beneath concrete or asphalt (not anticipated at this time), the PSG Sampler will be lowered into the hole through a provided metal pipe. The surface will be plugged with aluminum foil and a thin concrete patch (approximately ½" thick) to effectively seal the PSG Sampler in the ground.

The samplers will be left in place and exposed to any subsurface vapors for approximately 10 to 14 days (the duration will be the same for all probes at each property). At the end of the sample period the PSG Samplers will be removed by pulling on the wire when in soils or by using a small chisel and hammer to chip the thin concrete patch away when in asphalt/concrete. The PSG

Samplers will be retrieved by pulling on the retrieval wire. The sampling cap will be removed, the wire cut from the vial, and the solid cap replaced on the sampler vial.

Passive soil vapor samples will be labeled with the sample identification number, placed in a sealable plastic bag and shipped under chain of custody control to Beacon for analysis.

All reusable tools and equipment used for the installation of the passive soil vapor samples will be decontaminated prior to installing the first probe and between each probe installation using a non phosphate soap followed by a distilled water rinse.

Passive soil vapor samples will be stored at room temperature before and after use, and will be shipped to the laboratory under chain of custody procedures, including one (1) trip blanks and three (3) duplicate samples. The holding time of 30 days (between sample collection and analysis) will not be exceeded unless this occurs due to events or conditions beyond our control.

Laboratory Procedures

Passive soil vapor samples will be analyzed by Beacon using gas chromatography/mass spectrometry (GC/MS) instrumentation following modified EPA Method 8260C procedures. Samples will be analyzed for vinyl chloride; 1,1-dichloroethene; trans-1,2-dichloroethene; cis-1,2-dichloroethene; trichloroethene (TCE); and tetrachloroethene (PCE). The laboratory will perform an initial five-point calibration. In addition, a 4-bromofluoro-benzene (BFB) tune will be performed daily and a method blank will be performed following daily calibration. Internal standards and surrogates are included with each sample analysis. Beacon's reported quantitation level (RQL) for each of the targeted compounds is 10 nanograms (ng) and the demonstrated limit of detection (LOD) is 5 ng.

Quality Assurance and Quality Control

Quality assurance and quality control (QC) procedures will be consistent with NYSDOH guidance for development of a Data Usability Summary Report, including preparation of sample log sheets and collection of duplicate samples and trip blanks (1 in 20), and standard laboratory quality control tests and procedures pursuant to EPA Method requirements. Duplicate passive soil vapor samples will be collected through a second adsorbent cartridge within the same vial.

Passive soil vapor sample data will be reviewed, validated, and verified in terms of their ability to satisfy quality assurance requirements. QC procedures will be reviewed to verify consistency with the NYSDEC guidance for development of a Data Usability Summary Report.

DATA VALIDATION AND EVALUATION METHODS

All passive soil vapor samples collected will be subject to data validation and evaluation prior to the reporting of results. Data validation and evaluation procedures are provided below.

Data Validation

All passive soil vapor sample data will be validated by an experienced EnviroGroup environmental scientist who was not involved with the field program. This process is intended to verify whether the samples were collected and tested according to the procedures specified in this Work Plan and as required by NYSDEC and NYSDOH.

Data validation will include the following items:

- Ensuring that sample documentation and holding time requirements were met for all samples;
- Ensuring that chain of custody requirements are met;
- Evaluation of field duplicates;
- Ensuring that laboratory control samples and standards are within laboratory specified control ranges for the VOCs analyzed;
- Ensuring the method blank results are non-detect at the reporting limits;
- Ensuring that instrument tuning procedures are documented;
- Ensuring that all surrogate recoveries are within acceptable ranges; and
- Ensuring that the data summary sheets are a correct, based on an evaluation of the raw data.

DATA EVALUATION

Any detected VOCs in passive soil vapor samples will be plotted and contoured in colored isopleths maps showing distribution of detected compounds. This information, together with an evaluation of site features, will be used to evaluate potential presence, preferential pathways, and sources of soil vapors detected in the Evaluation Areas. The collocated three foot and five foot deep probe sample data will be evaluated to assess the effect of probe depth on sample results.

REPORTING REQUIREMENTS

Laboratory analytical results will be validated and provided to NYSDEC within two weeks after receipt by EnviroGroup. When all final analytical data from the laboratory have been received and validated, a final evaluation report will be prepared. The report will describe the work completed; any deviations from this Work Plan; the results of all tests; our evaluation of results; and provide recommendations for additional investigation and/or further action (if any).

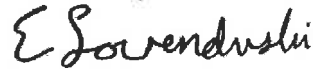
SCHEDULE

The proposed Work Plan schedule is as follows:

- The passive soil vapor probes will be installed during the week of October 10, 2011, assuming a timely approval of this Work Plan and GHD authorization to proceed, access permitting and assuming utility locates are completed by GHD by this time.
- The probes will be removed and shipped to laboratory 10 to 14 days after installation.
- We will submit validated results to NYSDEC within two weeks after receipt of laboratory analytical report by EnviroGroup.
- We will prepare a Passive Soil Vapor Evaluation Report to NYSDEC within 60 days of receipt of the laboratory analytical report.

Please feel free to contact me if you have any questions regarding this Work Plan.

Sincerely,
EnviroGroup Limited



for

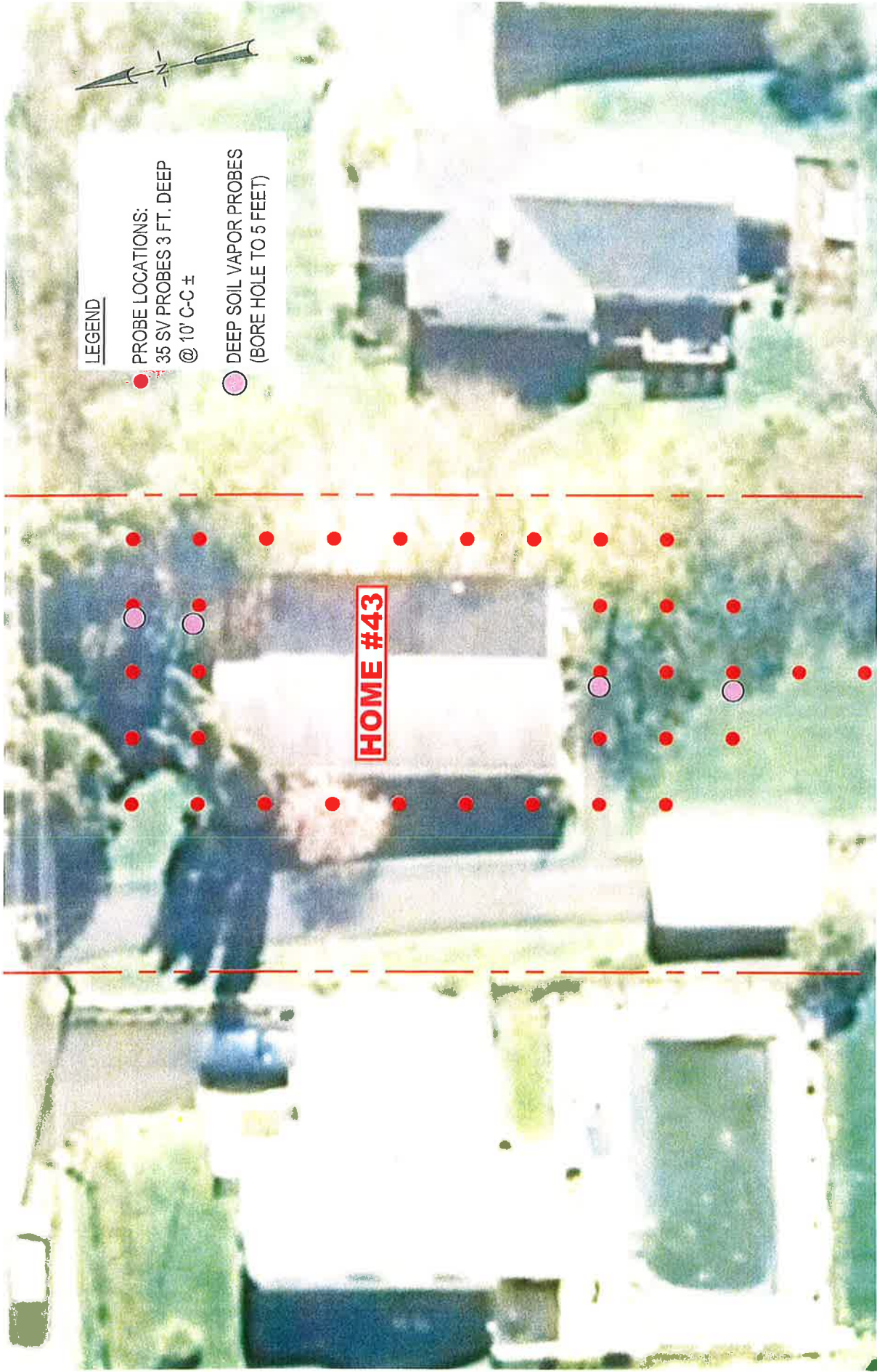
David Folkes, P.E. (CO)
Principal and President

Attachments:

Figure 1 – Soil Vapor Probe Locations, Home #43

Figure 2 – Soil Vapor Probe Locations, SV-19 Vicinity

cc: Doreen Simmons, Esquire, Hancock Estabrook
File HL-0634

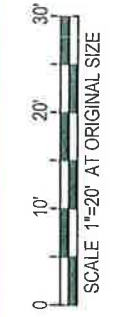


LEGEND

- PROBE LOCATIONS:
35 SV PROBES 3 FT. DEEP
@ 10' C-C ±
- DEEP SOIL VAPOR PROBES
(BORE HOLE TO 5 FEET)

HOME #43

APPROX. PROPERTY LINES

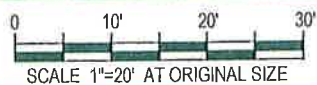
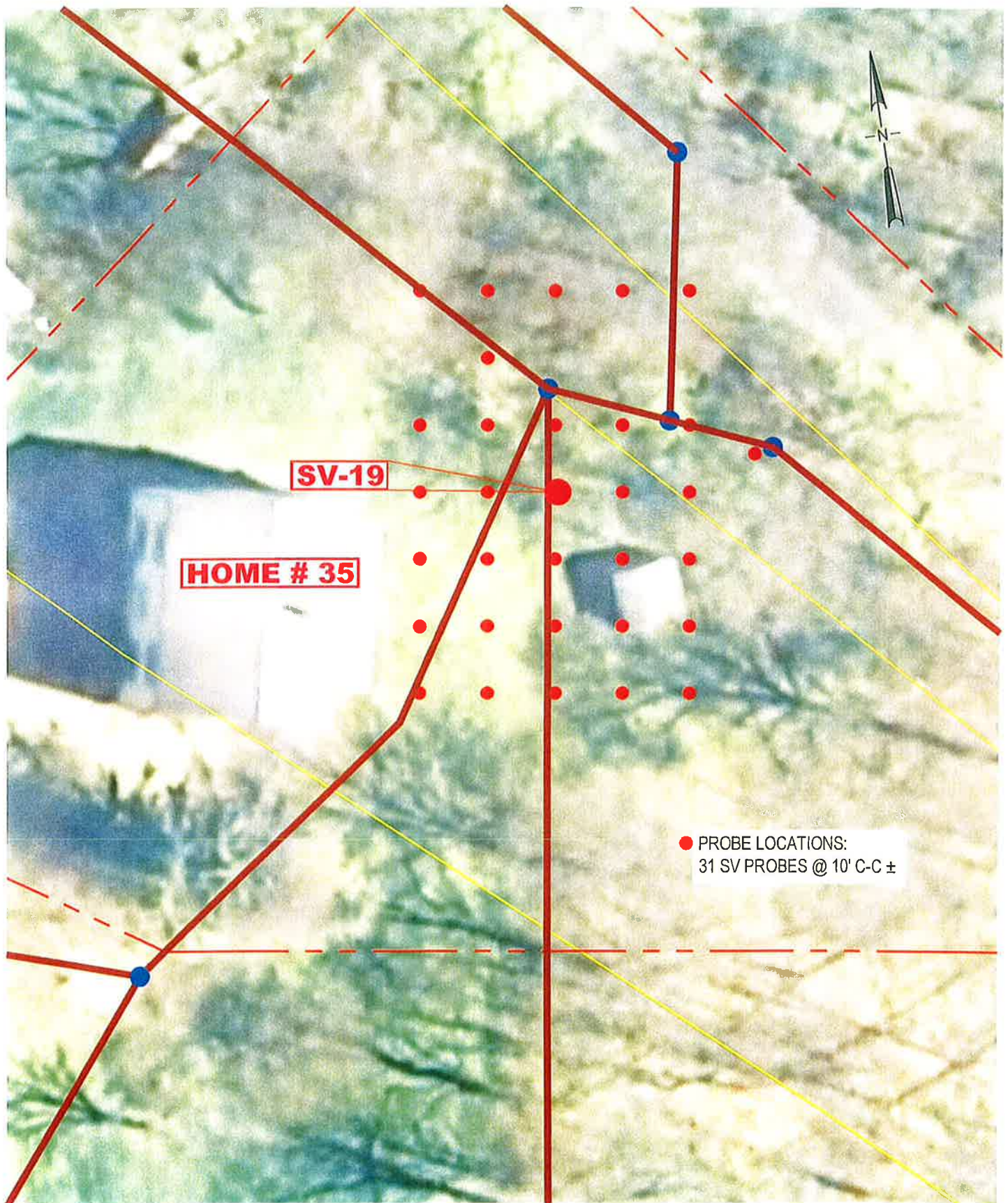


THERM, INC

Job Number | 8612339
Revision | A
Date | 06/11

**HOME #43 PASSIVE SOIL
VAPOR PROBE LOCATIONS**

Figure 01



— APPROX PROPERTY LINES



THERM, INC

SV-19 PASSIVE SOIL
VAPOR PROBE LOCATIONS

Job Number | 8612339

Revision | A

Date | 06/11

Figure 02