Vermont HydroGeo, LLC

December 30, 2014

Mrs. Karen Cox
First Presbyterian Church
3 Highland Crofts Road
Graniteville, Vermont 05654-8123

Re: Supplemental Site Investigation
First Presbyterian Church
648 Lower Graniteville Road
Graniteville, Vermont (SMS #2009-3991) (Site or Property)

Dear Mrs. Cox:

This letter transmits the results of a Supplemental Site Investigation (SSI) completed by Vermont HydroGeo, LLC (VHG) at the above-referenced Site (**Figure 1**). The SSI was conducted in accordance with VHG's work plan and cost estimate dated September 23, 2014, which was subsequently approved by Mr. Gerold Noyes, P.E. of the Vermont Department of Environmental Conservation (VT DEC). The Petroleum Cleanup Fund budget tracking number for this work is 13643.

This report is organized in the following manner:

- **Section 1.0** provides background information on the project, including the Site location and physical setting;
- **Section 2.0** describes the work completed for the SSI;
- **Section 3.0** presents the results of the SSI;
- **Section 4.0** presents an updated conceptual site model and evaluates the risk to sensitive receptors; and
- **Section 5.0** provides conclusions and recommendations.

2113 Stony Brook Road
Northfield, Vermont 05663
(802) 485-9466

1.0 BACKGROUND

1.1 Site Description and Physical Setting

The Property is located at 648 Lower Graniteville Road in Graniteville, Vermont, at the corner of Dodge Avenue (**Figure 1)**. The Property is at an approximate latitude of 044.150913 N and longitude 72.489487 W, and elevation of 1,270 feet above mean sea level**.**

One structure is located on the Property, which houses the First Presbyterian Church. The building has a footprint of about 2,000 square feet, with poured concrete foundation walls. The basement of the building is finished with hardwood flooring; the construction details of the subfloor are currently unknown. Given the depth-to-groundwater relative to the invert elevation of the basement floor, it is probable that the building has a foundation drain; however, details of the curtain drain network, if present, are unknown.

The Site is located in a mixed commercial / residential setting, with residences surrounding the Site to the north, west, and south; a country store borders the Property to the east. The Site, and neighboring properties, is served by municipal water and sewer.

The former UST was located on the southeast portion of the Property, about three feet away from the building. The UST was located at the toe of a relatively steep slope associated with a terrace (likely comprised of fill materials) that is used as a parking lot for the country store. The balance of the surface topography at the Site generally slopes down to the north at an approximate gradient of eight percent. Ground cover across the Property is generally comprised of grassed areas.

The nearest surface water body is an unnamed ephemeral tributary of the Stevens Branch, located about 475 feet north of the former UST.

1.2 Site History

On October 21, 2009, Estes Trucking and Excavating of Barre, Vermont removed a 500-gallon, #2 heating oil UST from the Site. During the removal, Mr. Estes apparently noticed fuel oil odors on soils within the UST excavation, and notified the VT DEC Waste Management Division (WMD). On October 22nd, Applied GeoSolutions, LLC (AGS) was retained by Ms. Karen Cox of the First Presbyterian Church of Graniteville to further evaluate the impact from the apparent release. AGS arrived on-Site later that day, and observed that the UST excavation had been backfilled, and the UST had been transported off-Site. All contaminated soils are believed to have been returned to the excavation.

AGS initiated an initial site investigation (ISI) at the Site in October 2009, the results of which were documented in the ISI Report dated May 20, 2010. For the ISI, one shallow soil boring / monitoring well was completed (MW-1) within the former UST grave, groundwater from MW-1 and a groundwater seep was sampled and analyzed for target volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH), and the indoor air within the basement of the church was screened for the possible presence of VOCs using a photoionization detector (PID). A synopsis of the ISI results follows:

- The highest PID readings at MW-1, ranging from 540 to 800 parts per million volume/volume (ppm v/v), were recorded within the "smear zone" in the upper portion of the native glacial till, between about 3.5 to 6 feet below ground surface (bgs).
- Total trimethylbenzene (TMBs) and naphthalene were detected at concentrations above the respective Vermont Groundwater Enforcement Standards (VGESs) in a groundwater sample collected from monitoring well MW-1.
- Subsequent hydraulic gauging identified 0.08 feet of free-phase product in MW-1.
- The horizontal extent of the petroleum contamination at the Site was not reasonably defined.
- No elevated PID readings were recorded in the church basement.

Based on the ISI results, AGS recommended that an SSI be completed to further to define the degree and extent of soil and groundwater contamination at the Site. AGS since reformed as Vermont HydroGeo, LLC (VHG), and VHG implemented an SSI in November 2012.

The SSI included the completion of three soil borings (SB-1, SB-2, and SB-3) near the former UST grave, collection of a soil sample from SB-2 (at 4.5 feet bgs) for laboratory analysis of VOCs and TPH, and groundwater sampling of the seep and temporary well installed at SB-3 for VOC and TPH analysis. Results of the SSI included:

- TPH was detected at a concentration of 858 mg/Kg in the soil sample collected at 4.5 feet bgs from SB-2, which is above the VT DEC soil screening value (SSV) of 200 mg/Kg for a residential setting, but below the SSV of 1,000 mg/Kg for an industrial/commercial setting. No individual VOCs were detected at concentrations above respective SSVs.
- No VOCs were detected at concentrations above the respective VGESs in temporary well SB-3, located about 15 feet downgradient of MW-1, and all VOCs were non detect in the sample collected from the seep.
- About 0.1 feet of free product was present in monitoring well MW-1.

The SSI concluded that most of the contamination is limited to the vicinity of the former UST, and the risk to sensitive receptors is low. However, given the presence of free-phase product

in MW-1 and the elevated TPH concentration in soil, the vapor intrusion pathway required further assessment in order to comply with the VT DEC's *Investigation and Remediation of Contaminated Properties Procedure*, effective April 2012. In addition, recoverable free product in MW-1 required removal.

2.0 WORK COMPLETED

2.1 Free Product Recovery and Monitoring

On January 12, 2014, VHG gauged liquid levels in monitoring well MW-1 using an electronic interface probe, and then installed an oleophilic "sock" within the well to straddle the water table. On September 15, 2014, VHG removed the "sock" and gauged liquid levels. Liquid levels were again gauged on September 30, 2014 and December 27, 2014.

2.2 Groundwater Sampling

On September 30, 2014, VHG collected a groundwater sample from monitoring well MW-1, which is located within the footprint of the former UST. A sample was not collected from the downgradient "seep" area because this location was dry.

Prior to sampling, the liquid levels were gauged using an electronic interface probe. The well was then purged dry using a dedicated bailer and drop line. Once the groundwater level recovered sufficiently, a groundwater sample was collected.

A trip blank and duplicate sample (from MW-1) was obtained to evaluate quality assurance and quality control (QA/QC).

Following collection, the samples were properly preserved and placed in an ice-filled cooler for transport under a chain-of-custody to Endyne, Inc. of Williston, Vermont. The samples were subsequently analyzed for VOCs by EPA Method 8021B (for target petroleum-related compounds).

2.3 Soil Gas Sampling

On October 15, 2014, VHG collected a shallow soil gas sample from SG-01, located about one foot east of the building near the former UST grave (**Figure 2**). The soil gas sample was obtained from a depth of about two feet bgs, which generally corresponds with the elevation of the building's basement floor in this area. The objective of the soil gas monitoring was to quantify target VOC concentrations in soil gas to better assess the risk of vapor intrusion to the building.

The soil gas sample was collected using an AMS Retract-A-Tip Vapor Probe connected to a dedicated ¼-inch I.D. Teflon-lined polyethylene tubing inserted through 5/8-inch O.D. hollow rod. The Retract-A-Tip sampler was driven to two feet bgs using a slide hammer. The sampling ports in the tip were then exposed by retracting the gas vapor probe extension rods a few inches. The annulus of the borehole was then sealed at the surface with hydrated bentonite.

The Teflon-lined polyethylene tubing was connected to a portable PID (Ion Science Tiger with a 10.6 eV UV lamp) and about 200 milliliters of soil gas was purged using the integral pump of the unit. Following purging, a soil gas sample was collected by attaching the tubing to a certified-clean 6-Liter SUMMA® canister with a flow controller set for 30 minutes. After collection, the sample was transported to Test America Laboratories, Inc. in South Burlington, Vermont for analysis of target VOCs via EPA Method TO-15.

3.0 RESULTS

3.1 Free-Phase Product Monitoring

Free-phase product monitoring data at MW-1 are summarized in **Table 3-1**. No measureable product has been recorded since prior to installation of an absorbent "sock" in January 2014.

Table 3-1. Free Product Monitoring Results at MW-1

Date	Depth-to-Product (feet BTOC)	Depth-to-Water (feet BTOC)	Apparent Product Thickness (feet)	Comments
1/12/2014	4.85	4.94	0.09	Installed oleophilic "sock".
9/15/2014	--	5.96	0.00	Removed oleophilic "sock".
9/30/2014	--	6.23	0.00	
12/27/2014	--	4.95	0.00	

3.2 Laboratory Analytical Results

3.2.1 Soil Gas

No VOCs were detected above the laboratory reporting limits in soil gas sample SG-01. Laboratory report forms are included in **Attachment A**.

3.2.2 Groundwater

Dissolved-phase analytical results from the September 30, 2014 sampling event are included in **Table 3-2**, and on **Figure 3**. Also included in **Table 3-2** and **Figure 3** are previous

analytical results. Laboratory report forms for the September 2014 event are included in **Attachment B**.

Table 3-2. Summary of Groundwater Analytical Results

Well ID	Date	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total TMBs	Naph-thalene	Total VOCs	TPH
MW-1	12/3/09	ND<10.0	ND<10	ND<10	**44**	**310**	**397**	**44**	**795**	**190**
	9/30/14	ND<10.0	ND<5.0	ND<5.0	ND<5.0	**15.0**	**66.9**	ND<10.0	**81.9**	--
Seep	12/3/09	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND	ND<0.58
	11/20/12	ND<2.0	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<1.0	ND<2.0	ND	ND<0.40
SB-3-GW	11/20/12	ND<4.0	ND<2.0	ND<2.0	ND<2.0	**3.0**	**9.0**	**7.0**	**19.0**	**4.07**
VGES	**--**	***40***	***5***	***1,000***	***700***	***10,000***	***350***	***20***	**--**	**--**

Notes: Concentrations reported in µg/L, except TPH, reported in mg/L.
Shaded values exceed VGES.

In September 2014, total target VOCs were detected in the sample collected from monitoring well MW-1 at a concentration of 81.9 micrograms per Liter (µg/L). No VOCs were detected at concentrations above their respective VGES.

The relative percent difference (RPD) values for sample MW-1 and its field duplicate sample (Dup) ranged from 6.5 to 10.5 percent. The maximum acceptable RPD for water samples is 30 percent. No VOCs were detected in the trip blank.

4.0 UPDATED CONCEPTUAL SITE MODEL

VHG developed an updated conceptual site model (CSM) based on available Site data. A CSM is a set of working hypotheses which describe key aspects of the problem(s) at a site. As with any hypothesis, the CSM is not conclusive and may require testing to arrive at desired levels of certainty. The CSM includes discussion of Site geology/hydrogeology, how contaminants of concern were released at the Site, their transport pathways and fate mechanisms, as well as exposure routes for both ecological and human receptors based on current Site use.

Geology/Hydrogeology

Soils at the Site generally consist of loose, reworked glacial till overlying native, grey glacial till. The till consists of varying percentages of poorly sorted silt, sand, and gravel. Bedrock was not encountered to a maximum exploratory depth of about seven feet bgs.

The depth-to-groundwater in the former UST area varies seasonally between about three to 5.5 feet bgs. Based on surface topography, shallow groundwater flow in the overburden is likely to the north. Under relatively high water table conditions, a groundwater "seep" is

present in the grassed area north of the church. It is believed that this seep may be associated with the terminus of the church building's foundation drain.

Contaminant Distribution/Fate & Transport

Heating oil (#2) has been released to the subsurface at the Site from the former UST system, either via failure of the former UST system or spills/overfills from historic fueling events, or a combination thereof. The volume and timing of the release(s) is unknown.

The horizontal and vertical extent of the petroleum contamination at the Site has been reasonably defined; the area with PID readings >10 ppm v/v on soils is estimated at about 200 square feet (ft^2), and the area with PID readings >100 ppm v/v is estimated at about 95 ft^2, localized in the immediate vicinity of the former UST (**Figure 4**). Vertically, within the former UST area, the highest PID readings (e.g. 540 to 800 ppm v/v) were present within the "smear zone" in the upper portion of the native glacial till, between about 3.5 to 6 feet bgs. Beneath the smear zone, PID readings decreased to 33 ppm v/v and 60 ppm v/v at 6-6.5 feet bgs and 6.5-7 feet bgs, respectively. The variability of elevated PID readings on shallow, unsaturated soils near MW-1 between grade and 3.5 feet bgs, ranging from 16 ppm v/v to 198 ppm v/v, may be attributed to mixing of contaminated soils of varying degrees during backfilling. Vadose zone contamination appears to be generally confined to the vicinity of the former UST, comprising an area of about 40 ft^2. Outside of the former UST grave, there is generally about four feet of "clean" soil overlying contaminated soils in the smear zone. About 30 cubic yards (45 tons) of soil is estimated to exhibit PID readings >10 ppm v/v within the vadose and saturated zones at the Site; about 17 cubic yards (26 tons) of soil have PID readings >100 ppm v/v.

Although elevated PID readings are present on soils within the former UST area, no target VOCs were detected in shallow soil gas sample SG-01, located between the former UST and the building.

Free-phase product (#2 oil), up to 0.1 feet in thickness, has historically been present in monitoring well MW-1. However, no measureable product has been recorded since prior to installation of an oleophilic "sock" in January 2014, despite removal of the "sock" on September 15, 2014.

In December 2009, naphthalene and total TMBs were detected above the VGES in a groundwater sample collected from monitoring well MW-1. However, during the most recent monitoring event in September 2014, no target VOCs exceeded the VGES. Since no VOCs were detected at concentrations above the VGES in temporary well SB-3, located about 15 feet downgradient of MW-1, these data suggest groundwater contamination is limited in magnitude and extent.

Sensitive Receptor Evaluation

Impacted media include soil and shallow groundwater. Potential exposure pathways to human and/or ecological receptors are evaluated below.

- **Indoor Air** – There does not appear to be a risk of acute or chronic exposure to human receptors via vapor intrusion (VI) of petroleum VOCs to indoor air because: A) the basement area of the church is occupied by humans on an infrequent basis (generally once a week for an hour or so); B) during the ISI, PID readings in the basement were non-detect and no fuel oil odors were observed; and C) no target VOCs were detected in shallow soil gas sample SG-01, located between the former UST and the building.

- **Soil –** Exposure pathways for humans through impacted soils include dermal absorption (via direct contact), incidental ingestion, and inhalation.

  In November 2012, TPH was detected at a concentration of 858 mg/Kg in a soil sample collected immediately downgradient of the former UST at 4.5 feet bgs from SB-2; this concentration is above the VT DEC SSV of 200 mg/Kg for a residential setting, but below the SSV of 1,000 mg/Kg for an industrial/commercial setting. Given the current use of the Property, the industrial/commercial SSV is more applicable than the residential SSV. Regardless, given that there is about four feet of "clean" soil overlying contaminated soils in this area, the risk of exposure appears low.

- **Groundwater –** The shallow unconfined aquifer at the Site is impacted by select target VOCs, but none exceeded the VGES during the most recent monitoring event in September 2014. According to the Vermont Agency of Natural Resources GIS website, no private supply wells or public drinking water supplies are located within 1,000 feet of the former UST. Given the above, no drinking water supplies appear to be at risk.

- **Surface Water –** Surface waters do not appear to be at risk of impact from contaminants of concern.

- **Underground Utilities –** If present, the curtain drain network may be impacted by the petroleum release given the proximity of the contamination relative to the building foundation. However, if the groundwater seep north of the church is related to the outfall of the suspected curtain drain network, the absence of detectable VOCs or TPH in the seep sample suggests any possible impact to the drain was not widespread at the time. No other underground utilities appear to be at significant risk.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on data collected to date, VHG has drawn the following conclusions:

- The magnitude and extent of soil and groundwater contamination at the Site has been reasonably defined. About 30 cubic yards (45 tons) of soil is estimated to exhibit PID readings >10 ppm v/v within the vadose and saturated zones at the Site; about 17 cubic yards (26 tons) of soil have PID readings >100 ppm v/v. Most of the contamination is limited to the vicinity of the former UST.

- Although elevated PID readings are present on soils within the former UST area, no target VOCs were detected in shallow soil gas sample SG-01, located between the former UST and the building.

- Free-phase product (#2 oil), up to 0.1 feet in thickness, has historically been present in monitoring well MW-1. However, no measureable product has been recorded since prior to installation of an oleophilic "sock" in January 2014, despite removal of the "sock" on September 15, 2014.

- In December 2009, naphthalene and total TMBs were detected above the VGES in a groundwater sample collected from monitoring well MW-1. However, during the most recent monitoring event in September 2014, when the water table was about 1.75 feet lower, no target VOCs exceeded the VGES. Although these limited data suggest the plume is naturally attenuating, additional monitoring would be required to evaluate whether contaminants are remobilized under high water table conditions. Regardless of whether there may be seasonal fluctuations in contaminant concentrations at MW-1, the plume appears to generally be confined to former UST area and is not likely migrating.

- Petroleum constituents present in soil and groundwater at the Site do not appear to present a risk to sensitive receptors.

Given the above conclusions, VHG recommends the following:

- Monitoring well MW-1 should continue to be checked on a quarterly basis for the presence of free product in accordance with the previously approved work plan and cost estimate. If product is present, an oleophilic "sock" should be reinstalled to wick the product. The next events should occur in spring and summer 2015.

- Monitoring well MW-1 should be sampled for VOC analysis under high water table conditions in spring 2015.

If no free product recurs, the Site should be eligible for a Site Management Activity Completed (SMAC) designation, once monitoring well MW-1 is properly abandoned.

****

VHG appreciates the opportunity to assist you on this project. Please feel free to contact me at (802) 485-9466 if you have any questions.

Yours truly,
Vermont HydroGeo, LLC

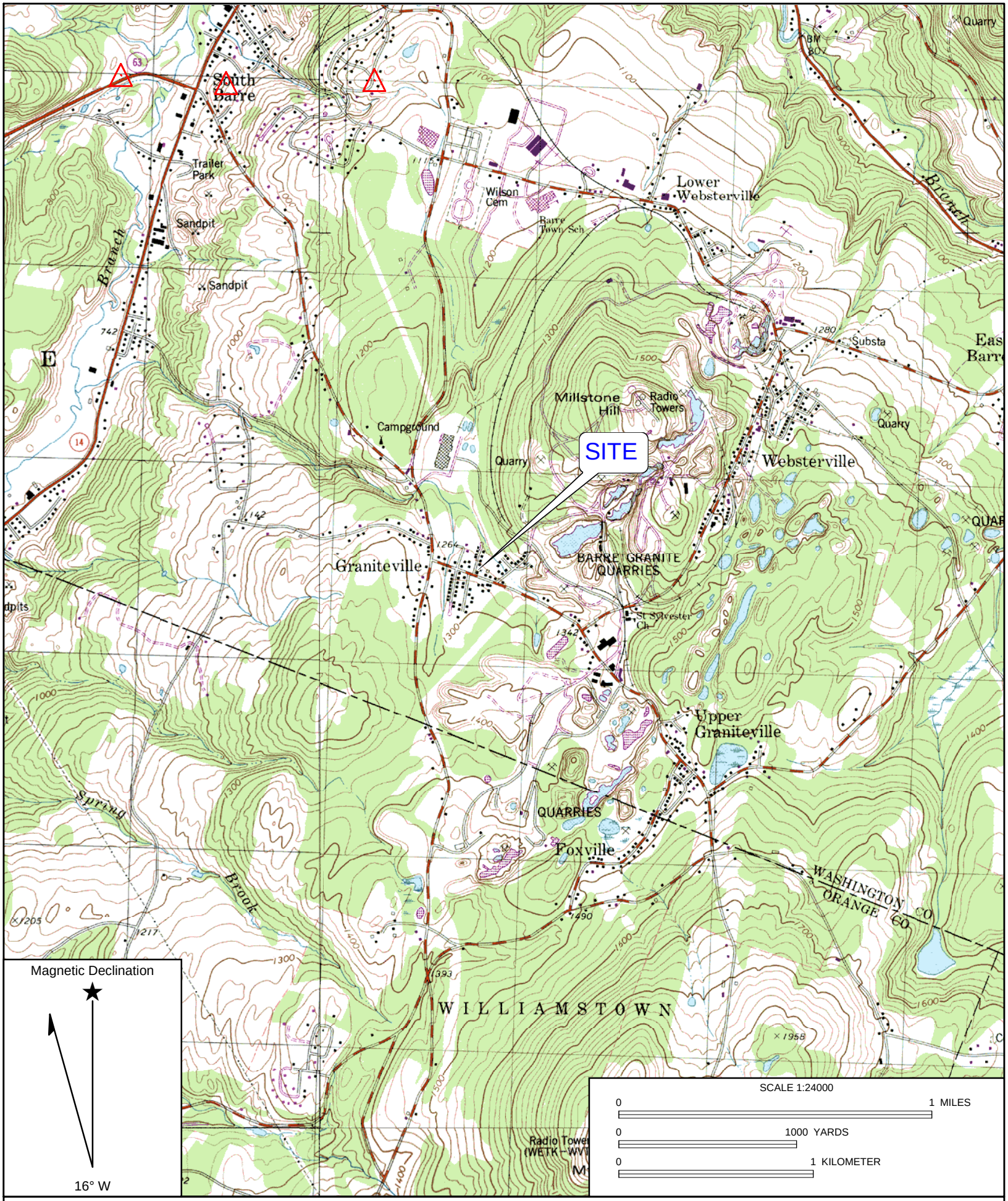
Digitally signed by Eric J. Swiech
DN: cn=Eric J. Swiech, o=Vemont HydroGeo, LLC, ou, email=eric.vthydrogeo@tds.net, c=US
Date: 2014.12.30 10:51:18 -05'00'

Eric J. Swiech, P.G.

Attachments

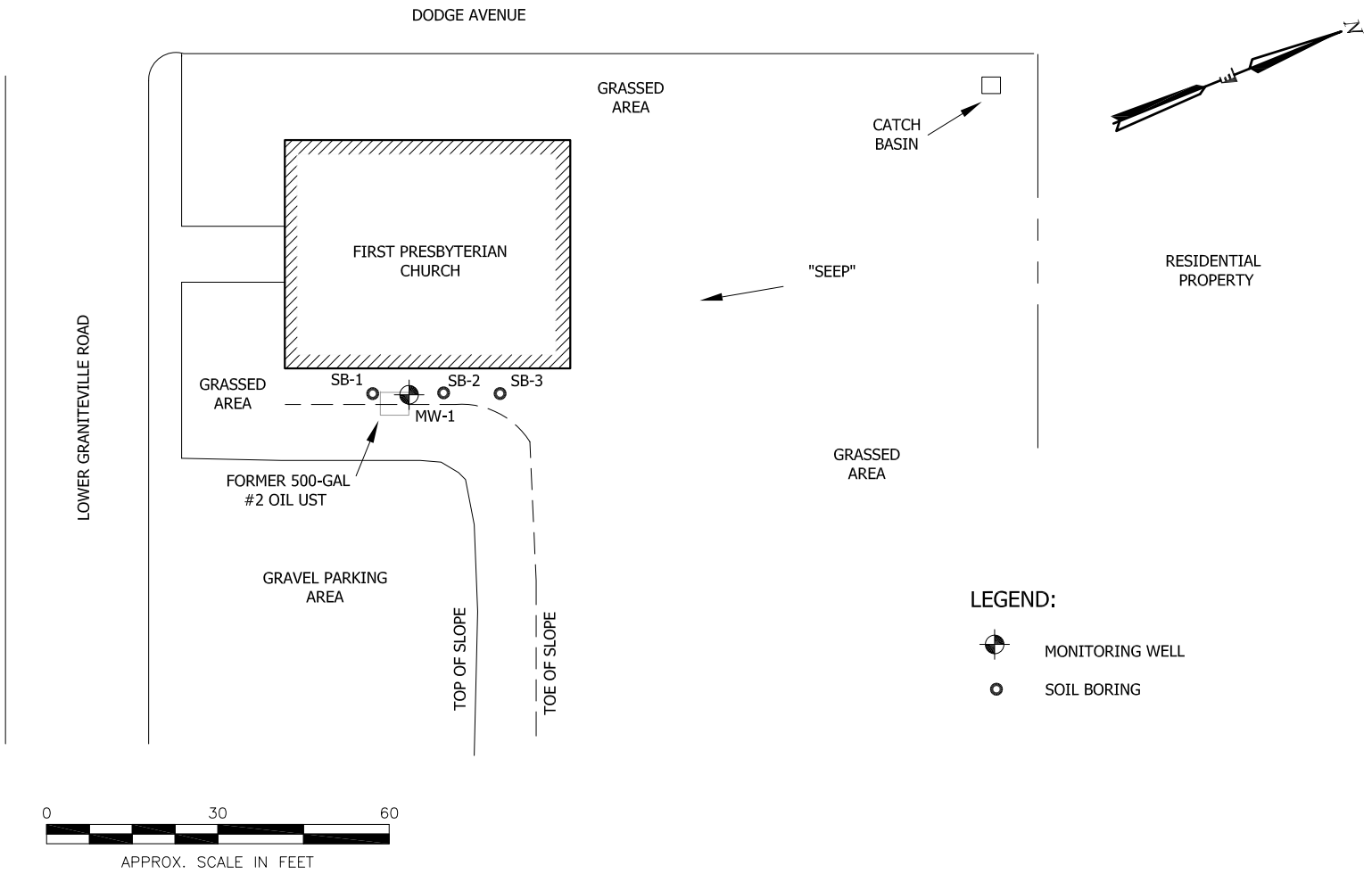
cc: Mr. Gerold Noyes, PE (VT DEC)

FIGURES



Name: BARRE EAST
Date: 12/27/2009
Scale: 1 inch equals 2000 feet

Location: 044° 08' 58.40" N 072° 29' 17.27" W NAD 27
Caption: Figure 1. Site Location Map



NOTES:

ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NO CLAIM IS MADE TO ACCURACY. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES, PROPERTY LINE DETERMINATION, EXACT LOCATION OF SITE FEATURES ETC.

Vermont HydroGeo, LLC VHG

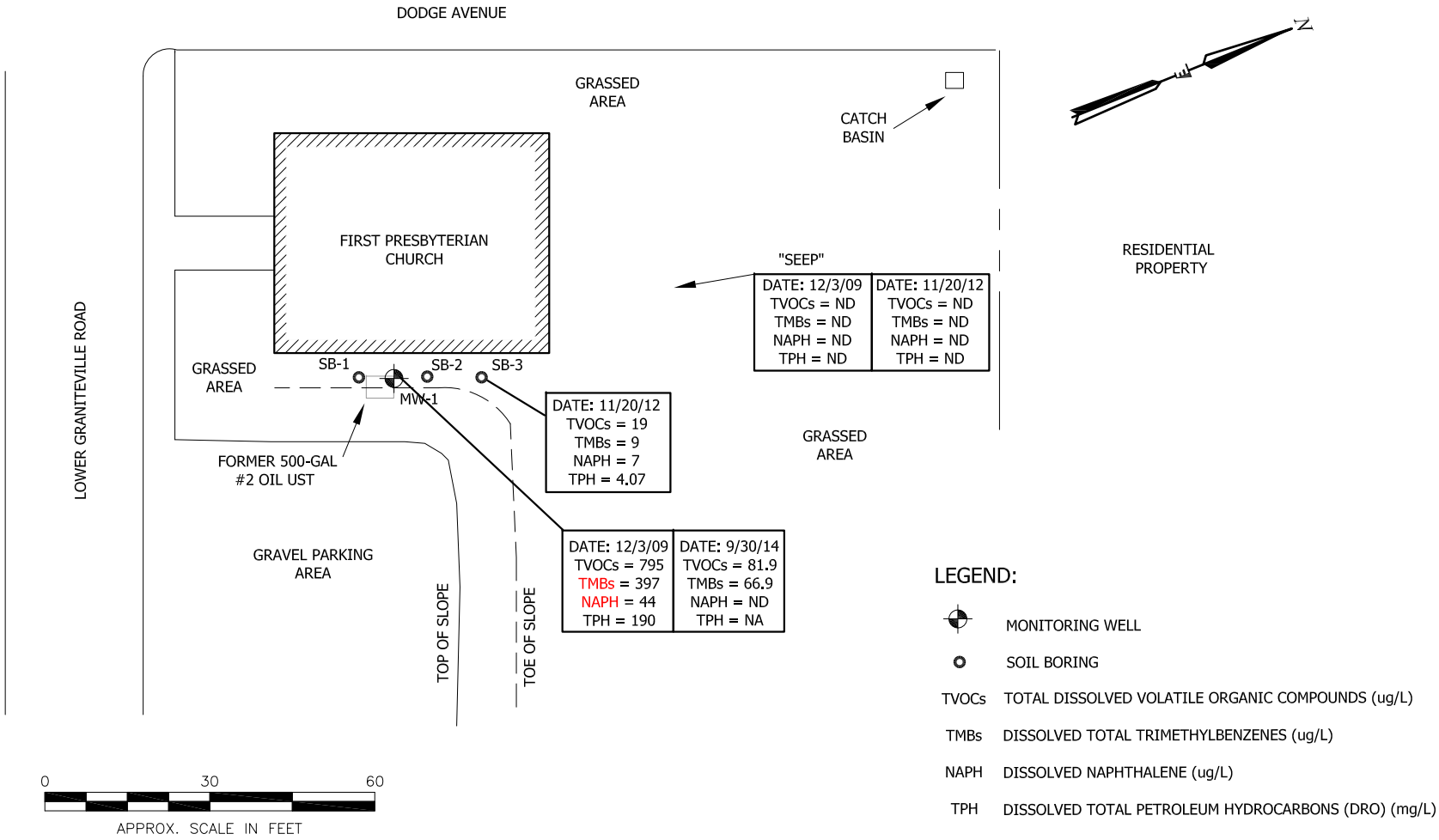
TITLE: SITE PLAN

PROJECT: GRANITEVILLE FIRST PRESBYTERIAN CHURCH

FIGURE NO.: 2

DATE: 12/30/14

DRAWN BY: EJS



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ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NO CLAIM IS MADE TO ACCURACY. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES, PROPERTY LINE DETERMINATION, EXACT LOCATION OF SITE FEATURES ETC.

RED VALUES EXCEED THE RESPECTIVE VERMONT GROUNDWATER ENFORCEMENT STANDARD.

Vermont HydroGeo, LLC

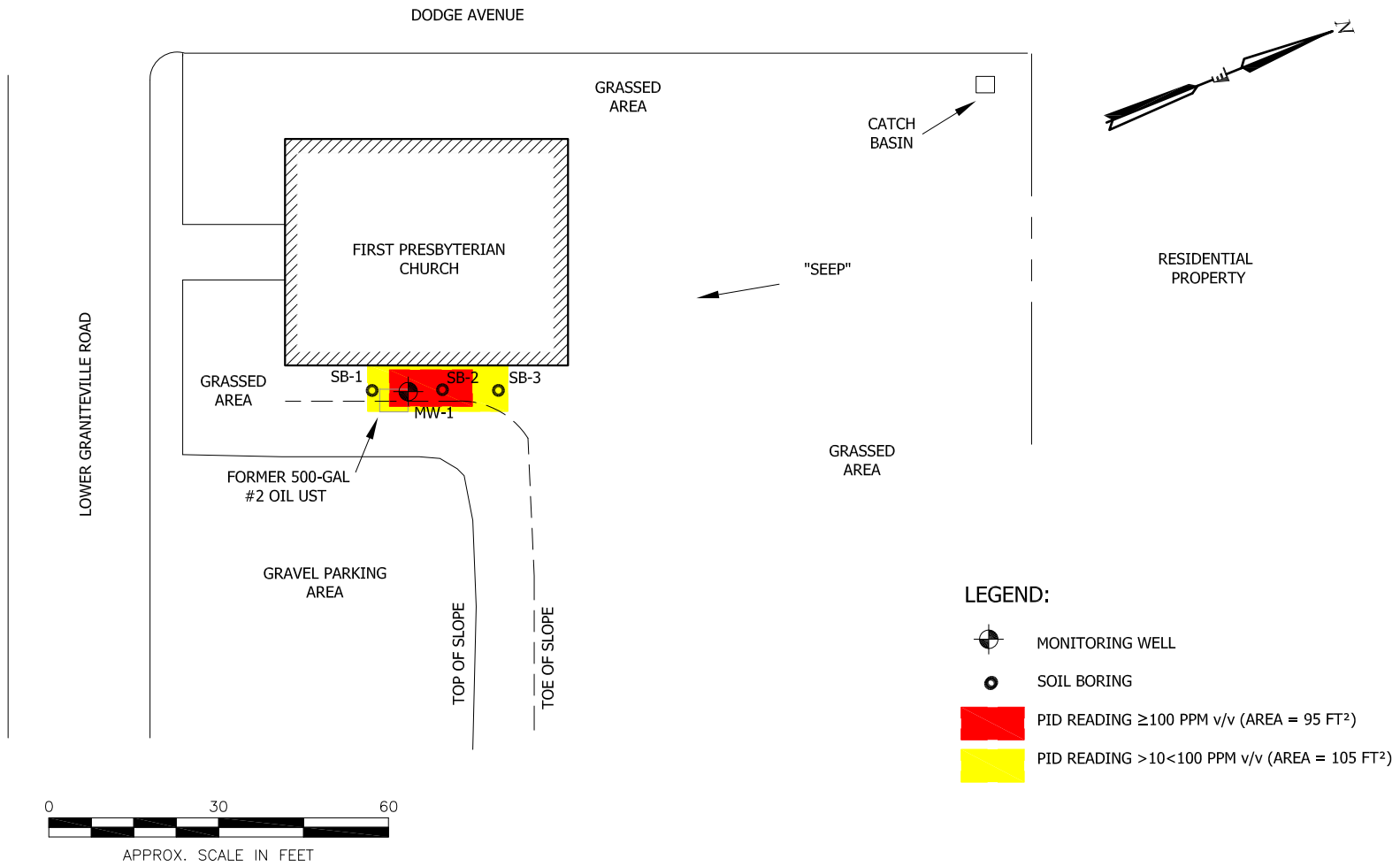
TITLE: CONTAMINANT DISTRIBUTION - GROUNDWATER

PROJECT: GRANITEVILLE FIRST PRESBYTERIAN CHURCH

FIGURE NO.: 3

DATE: 12/30/14

DRAWN BY: EJS



NOTES:

ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NO CLAIM IS MADE TO ACCURACY. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES, PROPERTY LINE DETERMINATION, EXACT LOCATION OF SITE FEATURES ETC.

PID READINGS AT MW-1 OBTAINED ON 10/22/09; DATA FROM SB-1, SB-2, AND SB-3 OBTAINED ON 11/20/12. RESULTS REPORTED IN PARTS PER MILLION VOLUME / VOLUME (PPM v/v).

Vermont HydroGeo, LLC

TITLE: CONTAMINANT DISTRIBUTION - SOIL

PROJECT: GRANITEVILLE FIRST PRESBYTERIAN CHURCH

FIGURE NO.: 4

DATE: 12/30/14

DRAWN BY: EJS

ATTACHMENT A

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 200-25044-1

SDG Number: 200-25044

Job Description: GFP

For:
Vermont HydroGeo, LLC
2113 Stony Brook Road
Northfield, VT 05663

Attention: Eric Swiech

Approved for release.
Don C Dawicki
Manager of Project Management
11/7/2014 9:56 AM

Don C Dawicki, Manager of Project Management
30 Community Drive, South Burlington, VT, 05403
(802)660-1990
don.dawicki@testamericainc.com
11/07/2014

CASE NARRATIVE

Client: Vermont HydroGeo, LLC

Project: GFP

Report Number: 200-25044-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The sample was received on 10/28/2014; the samples arrived in good condition.

VOLATILE ORGANIC COMPOUNDS
Sample SG-01 was analyzed for Volatile Organic Compounds in accordance with EPA Method TO-15. The sample was analyzed on 10/30/2014.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

EXECUTIVE SUMMARY - Detections

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Description	Lab Location	Method	Preparation Method
Matrix: Air			
Volatile Organic Compounds in Ambient Air	TAL BUR	EPA TO-15	
Collection via Summa Canister	TAL BUR		Summa Canister

Lab References:

TAL BUR = TestAmerica Burlington

Method References:

EPA = US Environmental Protection Agency

METHOD / ANALYST SUMMARY

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Method	Analyst	Analyst ID
EPA TO-15	Desjardins, William R	WRD

SAMPLE SUMMARY

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
200-25044-1	SG-01	Air	10/15/2014 1636	10/28/2014 1010

SAMPLE RESULTS

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Client Sample ID: **SG-01**

Lab Sample ID: 200-25044-1
Client Matrix: Air

Date Sampled: 10/15/2014 1636
Date Received: 10/28/2014 1010

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-79505	Instrument ID:	CHX.i
Prep Method:	Summa Canister	Prep Batch:	N/A	Lab File ID:	10246-021.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	10/30/2014 0033			Final Weight/Volume:	200 mL
Prep Date:	10/30/2014 0033			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	RL	RL
Benzene	0.20	U	0.20	0.20
Toluene	0.20	U	0.20	0.20
Ethylbenzene	0.20	U	0.20	0.20
m,p-Xylene	0.50	U	0.50	0.50
Xylene, o-	0.20	U	0.20	0.20
Xylene (total)	0.20	U	0.20	0.20
Methyl tert-butyl ether	0.20	U	0.20	0.20
1,3,5-Trimethylbenzene	0.20	U	0.20	0.20
1,2,4-Trimethylbenzene	0.20	U	0.20	0.20
Naphthalene	0.50	U	0.50	0.50

Analyte	Result (ug/m3)	Qualifier	RL	RL
Benzene	0.64	U	0.64	0.64
Toluene	0.75	U	0.75	0.75
Ethylbenzene	0.87	U	0.87	0.87
m,p-Xylene	2.2	U	2.2	2.2
Xylene, o-	0.87	U	0.87	0.87
Xylene (total)	0.87	U	0.87	0.87
Methyl tert-butyl ether	0.72	U	0.72	0.72
1,3,5-Trimethylbenzene	0.98	U	0.98	0.98
1,2,4-Trimethylbenzene	0.98	U	0.98	0.98
Naphthalene	2.6	U	2.6	2.6

DATA REPORTING QUALIFIERS

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Lab Section	Qualifier	Description
Air - GC/MS VOA		
	U	Indicates the analyte was analyzed for but not detected.

QUALITY CONTROL RESULTS

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Air - GC/MS VOA					
Analysis Batch:200-79505					
LCS 200-79505/3	Lab Control Sample	T	Air	TO-15	
MB 200-79505/4	Method Blank	T	Air	TO-15	
200-25044-1	SG-01	T	Air	TO-15	

Report Basis
T = Total

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Method Blank - Batch: 200-79505

Method: TO-15
Preparation: Summa Canister

Lab Sample ID:	MB 200-79505/4	Analysis Batch:	200-79505	Instrument ID:	CHX.i
Client Matrix:	Air	Prep Batch:	N/A	Lab File ID:	10246-004.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	200 mL
Analysis Date:	10/29/2014 1007	Units:	ppb v/v	Final Weight/Volume:	200 mL
Prep Date:	10/29/2014 1007			Injection Volume:	200 mL
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Benzene	0.20	U	0.20	0.20
Toluene	0.20	U	0.20	0.20
Ethylbenzene	0.20	U	0.20	0.20
m,p-Xylene	0.50	U	0.50	0.50
Xylene, o-	0.20	U	0.20	0.20
Xylene (total)	0.20	U	0.20	0.20
Methyl tert-butyl ether	0.20	U	0.20	0.20
1,3,5-Trimethylbenzene	0.20	U	0.20	0.20
1,2,4-Trimethylbenzene	0.20	U	0.20	0.20
Naphthalene	0.50	U	0.50	0.50

Method Blank - Batch: 200-79505

Method: TO-15
Preparation: Summa Canister

Lab Sample ID:	MB 200-79505/4	Analysis Batch:	200-79505	Instrument ID:	CHX.i
Client Matrix:	Air	Prep Batch:	N/A	Lab File ID:	10246-004.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	200 mL
Analysis Date:	10/29/2014 1007	Units:	ug/m3	Final Weight/Volume:	200 mL
Prep Date:	10/29/2014 1007			Injection Volume:	200 mL
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Benzene	0.64	U	0.64	0.64
Toluene	0.75	U	0.75	0.75
Ethylbenzene	0.87	U	0.87	0.87
m,p-Xylene	2.2	U	2.2	2.2
Xylene, o-	0.87	U	0.87	0.87
Xylene (total)	0.87	U	0.87	0.87
Methyl tert-butyl ether	0.72	U	0.72	0.72
1,3,5-Trimethylbenzene	0.98	U	0.98	0.98
1,2,4-Trimethylbenzene	0.98	U	0.98	0.98
Naphthalene	2.6	U	2.6	2.6

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
Sdg Number: 200-25044

Lab Control Sample - Batch: 200-79505

Method: TO-15
Preparation: Summa Canister

Lab Sample ID:	LCS 200-79505/3	Analysis Batch:	200-79505	Instrument ID:	CHX.i
Client Matrix:	Air	Prep Batch:	N/A	Lab File ID:	10246-003.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	200 mL
Analysis Date:	10/29/2014 0917	Units:	ppb v/v	Final Weight/Volume:	200 mL
Prep Date:	10/29/2014 0917			Injection Volume:	200 mL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	10.0	10.7	107	70 - 130	
Toluene	10.0	10.4	104	70 - 130	
Ethylbenzene	10.0	10.4	104	70 - 130	
m,p-Xylene	20.0	19.1	95	70 - 130	
Xylene, o-	10.0	9.71	97	70 - 130	
Methyl tert-butyl ether	10.0	9.86	99	70 - 130	
1,3,5-Trimethylbenzene	10.0	9.95	100	70 - 130	
1,2,4-Trimethylbenzene	10.0	9.83	98	70 - 130	
Naphthalene	10.0	9.73	97	70 - 130	

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: ERIC SWIERK	Samples Collected By: EJS	1 of 1 COCs
Company: VT HYDROGEO, LLC	Phone: 802-485-9466		
Address: 2113 STONY BROOK RD.	Email: ERIC.VTHYDROGEOLOGY.NET		
City/State/Zip NORTHFIELD VT 05663			
Phone: 802-485-9466	Site Contact:		
FAX:	TA Contact: DON DAWICKI		
Project Name: GFP	**Analysis Turnaround Time**		
Site: —	Standard (Specify) X		
PO # —	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15 (TARGET PETROLEUM LIST)	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
SG-01	10.15.14	1606	1636	-29	-5	4611	4357	X									X		

Temperature (Fahrenheit)	Interior	Ambient
Start	—	75
Stop	—	75

Pressure (inches of Hg)	Interior	Ambient
Start	—	—
Stop	—	—

200-25044 Chain of Custody

Special Instructions/QC Requirements & Comments:

TARGET PETROLEUM VOCs ONLY

Samples Shipped by:	Date/Time:	Samples Received by: TABU	10.10 10/28/14
Samples Relinquished by:	Date/Time: 10-28-14 / 1005	Received by:	
Relinquished by:	Date/Time:	Received by:	

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

Login Sample Receipt Checklist

Client: Vermont HydroGeo, LLC

Job Number: 200-25044-1
SDG Number: 200-25044

Login Number: 25044
List Number: 1
Creator: Young, Joseph W

List Source: TestAmerica Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	AMBIENT
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

ATTACHMENT B

ENDYNE Inc.
Environmental Laboratories

Vermont HydroGeo	
2113 Stony Brook Rd	100905
Northfield, VT 05663	
Atten: Eric Swiech	

PROJECT: GFP
WORK ORDER: **1409-20357**
DATE RECEIVED: September 30, 2014
DATE REPORTED: October 07, 2014
SAMPLER: Eric

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 10/07/2014

CLIENT: Vermont HydroGeo
PROJECT: GFP

WORK ORDER: **1409-20357**
DATE RECEIVED 09/30/2014

001 Site: MW-1 Date Sampled: 9/30/14 Time: 14:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Vt Petroleum List 8021B							
Methyl-t-butyl ether (MTBE)	< 10.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Benzene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Toluene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Ethylbenzene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Xylenes, Total	15.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,3,5-Trimethylbenzene	31.3	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,2,4-Trimethylbenzene	35.6	ug/L	EPA 8021B	10/3/14	W MHM	N	
Naphthalene	< 10.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Surr. 1 (Bromobenzene)	100	%	EPA 8021B	10/3/14	W MHM	N	
Unidentified Peaks	> 10		EPA 8021B	10/3/14	W MHM	N	

002 Site: Dup Date Sampled: 9/30/14 0:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Vt Petroleum List 8021B							
Methyl-t-butyl ether (MTBE)	< 10.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Benzene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Toluene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Ethylbenzene	< 5.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Xylenes, Total	13.5	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,3,5-Trimethylbenzene	28.2	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,2,4-Trimethylbenzene	34.5	ug/L	EPA 8021B	10/3/14	W MHM	N	
Naphthalene	< 10.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Surr. 1 (Bromobenzene)	106	%	EPA 8021B	10/3/14	W MHM	N	
Unidentified Peaks	> 10		EPA 8021B	10/3/14	W MHM	N	

003 Site: Trip Blank Date Sampled: 9/30/14 Time: 14:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Vt Petroleum List 8021B							
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Benzene	< 1.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Toluene	< 1.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Ethylbenzene	< 1.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Xylenes, Total	< 2.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,3,5-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
1,2,4-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Naphthalene	< 2.0	ug/L	EPA 8021B	10/3/14	W MHM	N	
Surr. 1 (Bromobenzene)	104	%	EPA 8021B	10/3/14	W MHM	N	
Unidentified Peaks	0		EPA 8021B	10/3/14	W MHM	N	

ENDYNE, INC.
160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY-RECORD

71130

Special Reporting Instructions/PO#: _____

Project Name: GFP	Client/Contact Name: VHG / ERIC SWIECH	Sampler Name: ← SAME
	Phone #: 485-9466	Phone #:
State of Origin: VT ~~X~~ NY __ NH __ Other __	Mailing Address: 2113 STONY BROOK RD NORTHFIELD, VT 05663	Billing Address: ← SAME
Endyne WO # 1409-20357		

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled 9-30-14	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	FieldResults/Remarks	Due Date
MW-1	WATER	X		1400	2	40 mL	HCl	19		
DUP	↓	↓		—	↓	↓	↓	↓		
TB	↓	↓		1405	↓	↓	↓	↓		

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
	9-30-14 1523		9/30/14 15:25		

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp: 6°
Comment:

(White - Laboratory / Yellow - Client)