VHB PIONEER

Environmental | Transportation | Land Development Services

August 24, 2010

Ref: 57369

Bryant M. Watson
Executive Director
Vermont Association of Snow Travelers, Inc.
26 VAST Lane
Barre, Vermont 05641

Re: Snowmobile Trail Chemistry Study
Final Report

Dear Bryant:

Enclosed please find 15 copies of VHB Pioneer's final report of the snowmobile trail chemistry study. As the report explains in detail, we have found that usage of busy snowmobile trails has not caused any significant impacts to the chemistry of the snow, soil, runoff, or water, at the study sites in Vermont that we investigated.

Please call me if you have any questions.

Sincerely,
VANASSE HANGEN BRUSTLIN, INC.

Meddie J. Perry, CGWP
Senior Hydrogeologist

MJP/pwe
Enclosures

7056 US Route 7
Post Office Box 120
North Ferrisburgh, VT 05473
802.425.7788 • FAX 802.425.7799
www.vhb.com

Snowmobile Trail Chemistry Study

VERMONT ASSOCIATION OF SNOW TRAVELERS, INC.

Barre, Vermont

Prepared for **Vermont Association of Snow Travelers, Inc**
Barre, Vermont

Prepared by **VHB Pioneer**
7056 US Route 7
North Ferrisburgh, VT 05473

August 24, 2010

VHB PIONEER

Table of Contents

1.0 Introduction

With increased snowmobile usage in the State of Vermont over the past 30 years, concern from a variety of interest groups has arisen about the potential environmental impacts associated with the use of snowmobiles on public lands. Little research has been previously conducted to evaluate the effects of snowmobile traffic on the chemical composition of snowpack, and therefore, The Vermont Association of Snow Travelers (VAST) requested that VHB Pioneer conduct a scientific study that investigates whether chemical compound emissions associated with snowmobiles are impacting snow, soil, and/or water.

As outlined in the Quality Assurance Project Plan (QAPP) that was developed for this snowpack chemistry study, a scientifically valid approach was performed in order to evaluate the chemical composition of soil, snow, and runoff in the proximity of heavily traveled snowmobile trails in public lands of Vermont (VHB Pioneer 2009). The QAPP was developed and utilized in order to provide guidance in the proper implementation of the study consistent with Vermont Department of Environmental Conservation (VT DEC), U.S. Forest Service (USFS), and U.S. Fish and Wildlife Service (USFWS) guidelines (VHB Pioneer 2009). Soil, snowpack, and snowmelt/runoff monitoring was conducted at selected monitoring stations located within four investigation areas throughout the state of Vermont that are located in conjunction with heavily traveled snowmobile trails that are located on public lands as well as one investigation area that is designated as wilderness and was used as a reference site for the study. The five investigation areas include the Lamoille Valley Rail Trail (LVRT), the northern section of the Green Mountain National Forest (GMNF), the southern section of the GMNF, the Silvio O. Conte National Fish and Wildlife Refuge (Conte NWR), and the Lye Brook Wilderness Area (Reference Site).

The specific objectives of the snow chemistry study were to collect and analyze snow, soil, and snowmelt/runoff samples from a monitoring network that represents the most heavily used snowmobile trails in Vermont, perform statistical analysis of these data, and provide a scientifically valid conclusion about the impact, if any, that snowmobile use has on snowpack, soil, and runoff chemistry at the sites evaluated. The general design of this study was based on an investigation conducted by the USGS at Yellowstone National Park and other locations (Ingersoll 1998).

Collection and analysis of snow, soil, snowmelt and runoff samples occurred over the course of the 2009/2010 winter. The results indicated that snowmobile use in Vermont does not significantly impact the chemical composition of snowpack, snowmelt, runoff, or soil.

2.0 Study Area / Sampling Station Locations

The Vermont Association of Snow Travelers (VAST) provides access to an extensive network of trails for snowmobile users. Four investigation areas that are located on public lands of Vermont and contain this trail network have been selected to be monitored for this snow chemistry study. Additionally, an investigation area located within designated wilderness has been identified to serve as a reference site for the study. These five investigation areas include the LVRT, southern section of the Green Mountain National Forest (GMNF), northern section of the GMNF, the Silvio O. Conte National Fish and Wildlife Refuge (Conte NWR), and the Lye Brook Wilderness Area (Reference Site).

Snowpack, soil, and snowmelt/runoff monitoring was completed at 12 sampling stations located within the five investigation areas. Four of the sampling stations are located within the LVRT investigation area; three stations are located within the southern GMNF investigation area; two stations are located within the northern

GMNF investigation area; two stations are located within the Conte NWR investigation area; one reference station is located within the Lye Brook Wilderness investigation area. The snowmobile trail sampling stations were selected based on high snowmobile traffic areas located away from other potential contamination sources and locations that are located close to surface water sources for snowmelt/runoff sampling purposes. Details of station locations are listed below, in Table 1, and presented on the Monitoring Station Maps on pages 1 through 18 of Appendix 1.

2.1 Sampling Station – Monitoring Location Designations

Each sampling station for the Snowpack Chemistry Study is composed of three separate monitoring locations; one on-trail monitoring location, one off-trail (50 meters from trail) monitoring location, and one surface water monitoring location. The on-trail monitoring locations were designated as is (example = A1), the off-trail monitoring locations were designated with "A" (example = A1-A), and the surface water monitoring locations were designated with "B" (example = A1-B). The three monitoring locations that compose each sampling station are presented on the Sampling Station Location Maps in Appendix 1.

2.2 Lamoille Valley Rail Trail

The LVRT investigation area is located along corridor 15, which is the section of snowmobile trail/proposed rail trail between East Hardwick and Danville, Vermont. This route follows the former Lamoille Valley Railroad, using the railbed and railway bridges. A total of four sampling stations are located within this investigation area, and are named A1, A2, A3, and A4. The locations of these sampling stations are presented on the LVRT Investigation Area Monitoring Station Map on page 1 of the Appendix. Additionally, detailed Station Location Maps are presented on pages 2 through 5 of Appendix 1.

2.3 Southern Green Mountain National Forest

The southern GMNF investigation area is separated into three different sections that are spread out throughout the southern section of the Green Mountain National Forest. As shown on the Southern GMNF Investigation Area Maps on pages 6 and 7 of the Appendix, the investigation area sections are located just west of the Somerset Reservoir, at the intersection of VT Route 30 and VT Route 11 near Bromley Mountain, and just southeast of the George D. Aiken Wilderness Road in Woodford, Vermont. A total of three sampling stations are located within this investigation area, and are named B1, B2, and B3. Detailed Station Location Maps are presented on pages 8 through 10 of Appendix 1.

2.4 Northern Green Mountain National Forest

The northern GMNF investigation area is located in the northern section of the Green Mountain National Forest just north of the Chittenden Reservoir in the town of Chittenden, VT. There are a total of two sampling stations located within this investigation area (C1 and C2). The locations of these sampling stations are presented on the Northern GMNF Investigation Area Map on page 11 of the Appendix. Detailed Station Location Maps are presented on pages 12 and 13 of Appendix 1.

2.5 Silvio O. Conte National Fish and Wildlife Refuge

The Conte NWR investigation area is located in the towns of Lewis and Bloomfield, VT and near the Yellow and Black branches of the Nulhegan River. There are a total of two sampling stations within the refuge that are named D1 and D2. The locations of the sampling stations are shown on the Conte Refuge Investigation Area Map on page 14 of the Appendix. Detailed Station Location Maps are presented on pages 15 and 16 of Appendix 1.

2.6 Lye Brook Wilderness Area

The Lye Brook Wilderness Area reference investigation area is located in the town of Manchester, VT just east of Lye Brook and Route 7. The investigation area is located within the Lye Brook Wilderness in which snowmobiling is not permitted. There is one sampling station (E1) located within this area, and it served as a reference station with no impact from snowmobiles to compare sampling results. The reference site sampling station is presented on the Lye Brook Wilderness Investigation Area Map on page 17 of the Appendix. A detailed Station Location Map is presented on page 18 of the Appendix.

Table 1: Snow Chemistry Study Monitoring Network – Sampling Stations

Sampling Stations	Investigation Area	Rationale
A1	LVRT	Located on heavily used section of snowmobile trail that is in proximity to the groundwater source protection area for a Public Community Water System (East Hardwick Fire District 1, WSID #5038) and is located close to a stream.
A2	LVRT	Located on heavily used section of the snowmobile trail that is within forested area without any surrounding land development or roads. The sampling station is located near a stream.
A3	LVRT	Located on heavily used section of snowmobile trail along Joe's Pond next to a small stream
A4	LVRT	Located on section of snowmobile trail that is heavily used, close to a stream and wetland, and close to the intersection on the trail with US Route 2
B1	Southern GMNF	Located on heavily used section of trail where the trail narrows enough for snowmobile usage to be recorded with trail counter. Station is near a stream.
B2	Southern GMNF	Located on section of the snowmobile trail that is heavily used and located near a stream
B3	Southern GMNF	Located on a heavily used connector snowmobile trail and near a stream
C1	Northern GMNF	Located on heavily used section of trail next to the "Fat Lady" Bridge
C2	Northern GMNF	Located on heavily used small connector trail next to a small stream

Table 1: Snow Chemistry Study Monitoring Network – Sampling Stations		
Sampling Stations	**Investigation Area**	**Rationale**
D1	Conte NWR	Located on heavily used trail near large wetland
D2	Conte NWR	Located on heavily used trail near small stream and large wetland
E1	Lye Brook Wilderness	Reference Station, located in designated wilderness where snowmobiling is not permitted

3.0 Study Methods

The snowpack chemistry study consisted of the following monitoring activities:

- Snowmelt/Runoff Chemistry Monitoring
- Snow Chemistry Monitoring
- Soil Chemistry Monitoring
- Snowmobile Usage Monitoring

The monitoring activities employed during the 2010 snowpack chemistry study were performed in accordance with the QAPP (VHB Pioneer 2009). A detailed monitoring schedule and matrix are provided on page 19 of Appendix 1. Table 2 below summarizes the monitoring activities that were completed throughout the duration of the snowpack chemistry study.

<table>
<tr><th colspan="5">Table 2: 2010 Snowpack Chemistry Study Monitoring Activities</th></tr>
<tr><th>Station</th><th>Snowmobile Usage Monitoring**</th><th>Snowmelt/Runoff Chemistry Monitoring*</th><th>Snowpack Chemistry Monitoring*</th><th>Soil Chemistry Monitoring*</th></tr>
<tr><td>A1</td><td rowspan="10">continuous during snowmobiling season</td><td rowspan="11">once at beginning of snowmobiling season, and

once at end of snowmobiling season</td><td rowspan="11">two samples in middle of trail, and

one sample 50 meters to side of trail</td><td rowspan="11">spring 2010: one sample in middle of trail, and

one sample 50 meters to side of trail</td></tr>
<tr><td>A2</td></tr>
<tr><td>A3</td></tr>
<tr><td>A4</td></tr>
<tr><td>B1</td></tr>
<tr><td>B2</td></tr>
<tr><td>B3</td></tr>
<tr><td>C1</td></tr>
<tr><td>C2</td></tr>
<tr><td>D1</td></tr>
<tr><td>D2</td></tr>
<tr><td>E1 (Reference Station)</td><td>NA</td></tr>
<tr><td colspan="5">*Monitoring activity completed by VHB Pioneer
**Monitoring activity completed by VAST</td></tr>
</table>

3.1 Snowmobile Trail Usage Monitoring

VAST installed Trafx Infrared Trail Counters on snowmobile trails at each of the sampling stations. These trail counters recorded the total number of snowmobiles that passed by each sampling station throughout the duration of the study.

3.2 Snowmelt/Runoff Chemistry Monitoring

On-site snowmelt/runoff water samples were collected by VHB Pioneer, two times at each of the investigation areas (see sampling matrix on page 19 of Appendix 1). The first sampling event was completed during early winter of 2010 to indicate background conditions prior to any potential impacts from the snowmobile season. The second sampling event was completed following snowmelt in early spring 2010 in order to indicate any potential impacts to water quality that may have been caused from the snowmobile season. During each of these sampling events, one water sample was collected downgradient of the snowmobile trail, from the flow path of a stream located at each sampling station.

3.2.1 Snowmelt/Runoff Chemistry Sampling

Runoff samples were collected via a grab sample taken at each of the fixed sampling stations via direct sample collection into laboratory containers. Four 40 mL glass sampling containers with a hydrochloric acid preservative were filled at each sampling station. Care was taken to fill the sample bottles to laboratory-specified limits without the loss of any preservative that was present within the sampling containers. Upon sample collection, sample containers were immediately placed in a chilled cooler to maintain 4°C temperature conditions. Sample containers were kept at 4°C temperature conditions and brought to Endyne, Inc. Laboratory Services (Endyne) in Williston, Vermont where they were analyzed for Total Petroleum Hydrocarbons – gasoline range organics (TPH-GRO) by method SW 8015B and for Volatile Organic Compounds (VOC) by method SW 8021B.

3.3 Snow Chemistry Monitoring

VHB Pioneer collected three sets of on-site snow core samples, at each of the five investigation areas during the late winter months of 2010 when maximum snow accumulation had occurred. Two individual snowpack samples were taken from the middle of the snowmobile trail and one snowpack sample was taken 150 feet away from the trail in either direction at each sampling station.

3.3.1 Snow Chemistry Sampling

Snow core samples were taken using a stainless steel snow corer, which was decontaminated with de-ionized water between samples. The snow core samples were obtained from the entire depth of the snowpack at each sampling station, in order to capture any contaminants from snowmobile usage, if any, that could be present in the snowpack. Snow core samples included only snow, and excluded any organic debris, leaf litter, or mineral soil material. Each snow core sample was immediately transferred into a sealed 12 inch by 18 inch non-absorbent Tedlar bag. The sampling bags were

filled to have no headspace and immediately placed on ice in a cooler to maintain 4°C temperature conditions at which the snow sample was allowed to melt. Once melted, each snow sample was transferred to four 40 mL glass amber sampling containers, all of which contained a hydrochloric acid preservative. Care was taken to fill the sample bottles to laboratory-specified limits without the loss of any preservative that was present in the sampling containers. Sample containers were kept at 4°C temperature conditions and brought to Endyne where they were analyzed for Total Petroleum Hydrocarbons – gasoline range organics (TPH-GRO) by method SW 8015B and for Volatile Organic Compounds (VOC) by method SW 8021B.

3.4 Soil Chemistry Monitoring

Soil chemistry monitoring was conducted by VHB Pioneer one time within each of the five investigation areas during the late spring months of 2010, immediately following snowmelt. Two soil core samples were taken at each sampling station within each of the investigation areas; one sample was taken in the middle of the snowmobile trail, and the other was taken 150 feet (50 meters) away from the trail in which ever direction was least disturbed and most feasible to sample. The sample taken 150 feet away from the trail is a reference sample that has not been impacted by snowmobile trail usage.

The samples from the middle of the trails were tested for Polycyclic aromatic hydrocarbons (PAHs), VOCs, and TPH-GRO; the samples from 50 meters away from the trail were tested only for VOCs and TPH-GRO.

3.4.1 Soil Chemistry Sampling

Soil core samples were taken using a stainless steel soil auger. This auger was decontaminated between each sample collection with de-ionized water. Samples of the A soil horizon were obtained from the top three inches of mineral soil at each sampling station, in order to capture contaminants from

snowmobile usage, if any, that could have seeped into the soil following snowmelt conditions.

Each soil core sample was transferred into four 40 mL glass sampling containers, three of which did not contain preservative, and one containing a methanol preservative. Care was taken to fill the sample bottles to laboratory-specified limits without the loss of any preservative that was present in the sampling containers. The sampling container with the methanol preservative was filled with approximately 20 grams of soil and the meniscus of the preservative was marked on the outside of the bottle. Sampling containers were filled with soil until there was no head space available.

Soil samples collected from the on-trail sampling locations and the Lye Brook Wilderness reference station for PAH analysis were placed in 250 mL amber glass jars. Upon sample collection, sample containers were immediately placed on ice in a cooler to maintain 4°C temperature conditions.

The soil samples were delivered to Endyne laboratory in Williston, Vermont. All soil samples were analyzed for Total Petroleum Hydrocarbons – gasoline range organics (TPH-GRO) by method SW 8015B and for Volatile Organic Compounds (VOC) by SW 8021B. Samples from the middle of the trails were also analyzed for PAHs by method SW 8270C

3.5 Sample Handling and Custody

As noted above, upon sample collection, sampling containers were labeled and immediately placed in a chilled cooler to maintain 4°C temperature conditions. As shown in Table 3, all of the constituents that were analyzed have a holding time of 14 days. A detailed outline of sample handling and custody procedures are outlined in the QAPP (VHB Pioneer 2009).

3.6 Analytical Methods

Laboratory analytical methods, sample containers, preservatives, and holding times are summarized in table 3 below.

Table 3: Summary of Analytical Methods and Requirements

Sample Set	Parameter	Stations	Sample Containers	Analytical Method	Sample Preservation	Holding Time
Soil Sampling	TPH - GRO	All	2 – 40 mL glass vials	SW 8015B	Cool, 4°C	14 days
	VOCs	All	2 – 40 mL glass vials	SW 8021B	Cool, 4°C, Methanol/HCl	14 days
	PAHs	All stations, mid-trail samples only	250 mL amber glass	SW-8270C	Cool, 4°C	14 days
Snow Sampling	TPH - GRO	All	2 – 40 mL glass vials	SW 8015B	Cool, 4°C, No bubbles, HCl to pH < 2	14 days
	VOCs	All	2 – 40 mL glass vials	SW 8021B	Cool, 4°C, No bubbles, HCl to pH < 2	14 days
Snowmelt Sampling	TPH - GRO	All	2 – 40 mL glass vials	SW 8015B	Cool, 4°C, No bubbles, HCl to pH < 2	14 days
	VOCs	All	2 – 40 mL glass vials	SW 8021B	Cool, 4°C, No bubbles, HCl to pH < 2	14 days

3.7 Quality Control

Quality control for the field sampling and laboratory activities was achieved by strictly following the procedures described in the QAPP (Pioneer 2009).

4.0 Monitoring Results

4.1 Snowmobile Trail Usage

Snowmobile trail usage monitoring was conducted on a continuous basis throughout the duration of the snowpack chemistry study. VAST installed Trafx Infrared Trail Counters at each of the sampling stations. The trail counters that were installed recorded the total number of snowmobiles that passed by each sampling station throughout the duration of the study to provide information on the overall usage of each snowmobile trail that was evaluated. A summary of the snowmobile trail usage data can be found on page 1 of Appendix 2. Table 4 and Figure 1 below show the total count and daily average snowmobile traffic that was recorded at each sampling station.

Table 4: Snowmobile Usage Monitoring - Trail Counter Data

Investigation Area	Station	Recording Time (Days)	Total Count	Daily Average
LVRT	A1	113	1,582	14
LVRT	A2	113	2,602	23
LVRT	A3	113	4,242	38
LVRT	A4	113	3,433	30
Southern GMNF	B1	127	8,594	68
Southern GMNF	B2	133	10,031	75
Southern GMNF	B3	127	4,095	32
Northern GMNF	C1	125	1,770	14
Northern GMNF	C2	104	1,868	18
Conte Refuge	D1	113	4,856	43
Conte Refuge	D2	113	8,290	73
Lye Brook Wilderness	E1	NA	0	0

Notes

Snowmobile usage data recorded with Trafx Infrared Trail Counters

No trail counter installed at reference site (Lye Brook Wilderness) as snowmobile traffic is not allowed

NA - Not Applicable

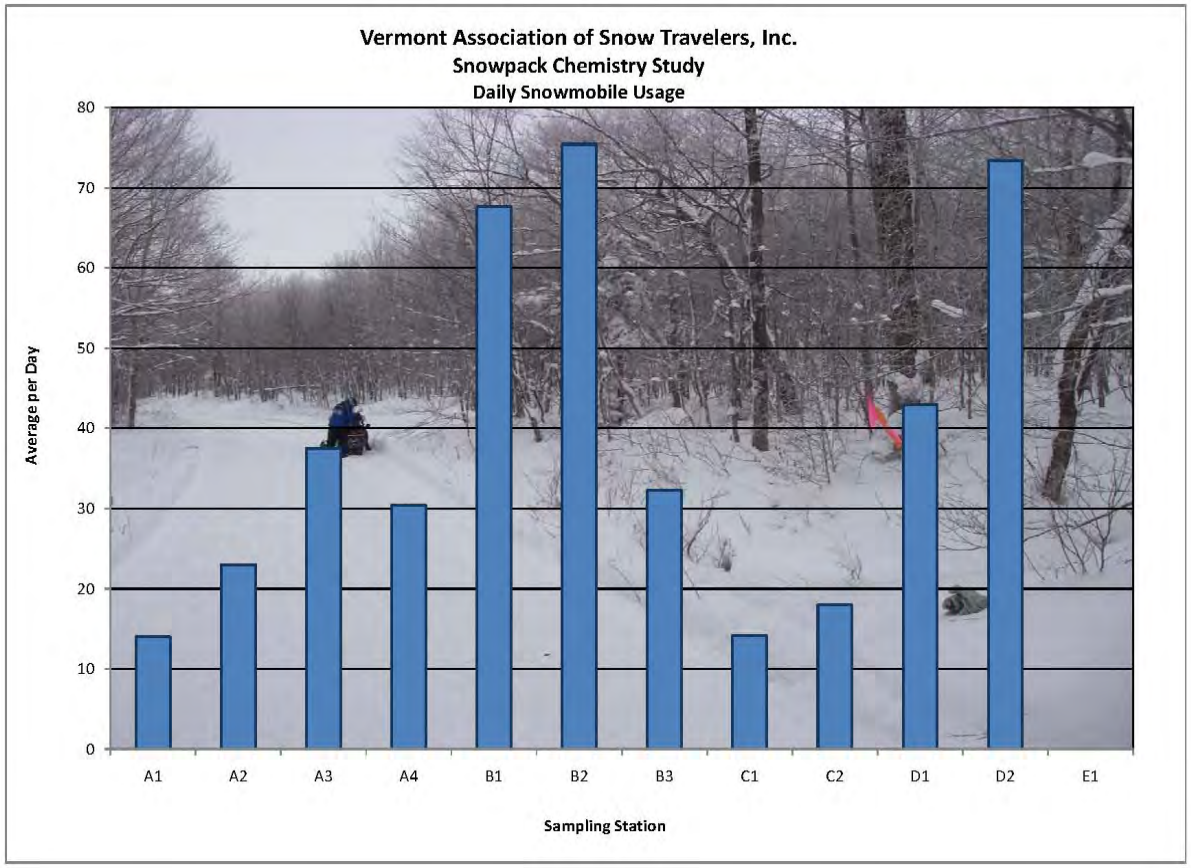


Figure 1: Daily average snowmobile usage during the study

The snowmobile trail usage data show that all sampling stations, with the exception of the reference station (Station E1), were located on heavily used snowmobile trails; therefore, the locations of the sampling stations are appropriate for this study. The highest usage was recorded at Station B2, located in the Southern GMNF Investigation Area, where an average of 75 users per day (10,031 total) were recorded. Considering the timing of holidays and vacation weeks and the occurrence of poor snowmobiling weather at times, the usage on peak days generally exceeds the seasonal average at all stations by a significant amount.

4.2 Snowmelt/Runoff Chemistry Results

Snowmelt and runoff water quality sampling was conducted twice during the duration of the 2010 snowpack chemistry study. As outlined in the monitoring

matrix on page 19 of Appendix 1, all 12 of the monitoring stations were sampled during both monitoring rounds. The first round of runoff water quality monitoring was completed on January 4, 5, and 6, 2010, and was representative of water quality conditions prior to the complete snowmobiling season. The second round of water quality monitoring was conducted following snowmelt conditions on April 8, 21, and 22, 2010, and was representative of post-snowmobile season water quality conditions. A complete station-by-station summary of snowmelt and runoff water chemistry results is included on pages 2 through 13 of Appendix 2. Summary data tables and a graph that compare the results of pre-season versus post-season snowmelt and runoff water chemistry results are presented on pages 14 through 17 of Appendix 2. Samples were analyzed by Endyne, Inc. Laboratory Services (Endyne) of Williston, Vermont, and all laboratory reports are presented in Appendix 3. Table 5 and Figure 2 below show the comparison between pre-season and post-season water quality conditions. The results are measured in units of ug/L (micrograms per liter of water, equivalent to parts per billion), except for the TPH which is measured in mg/L (milligrams per liter of water, equivalent to parts per million).

Table 5: Snowmelt/Runoff Chemistry Monitoring Summary

CHEMICAL COMPOUNDS	Regulatory Water Standards			Pre-Season/Wilderness Site				Post-Season			
	VWQS	VDWS (MCL)	VHA	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0

Table 5: Snowmelt/Runoff Chemistry Monitoring Summary

CHEMICAL COMPOUNDS	Regulatory Water Standards			Pre-Season/Wilderness Site				Post-Season			
	VWQS	VDWS (MCL)	VHA	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Unidentified Peaks	--	--	--	0	0	13	0.0	0	0	11	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	13	0.0	< 0.20	< 0.10	11	0.0

Notes
VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms
VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005
VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002
-- No Regulatory Standard
< - indicates not detected; for example <1.0 ug/L for Toluene indicates no Toluene was detected, with a 1.0 ug/L laboratory detection limit

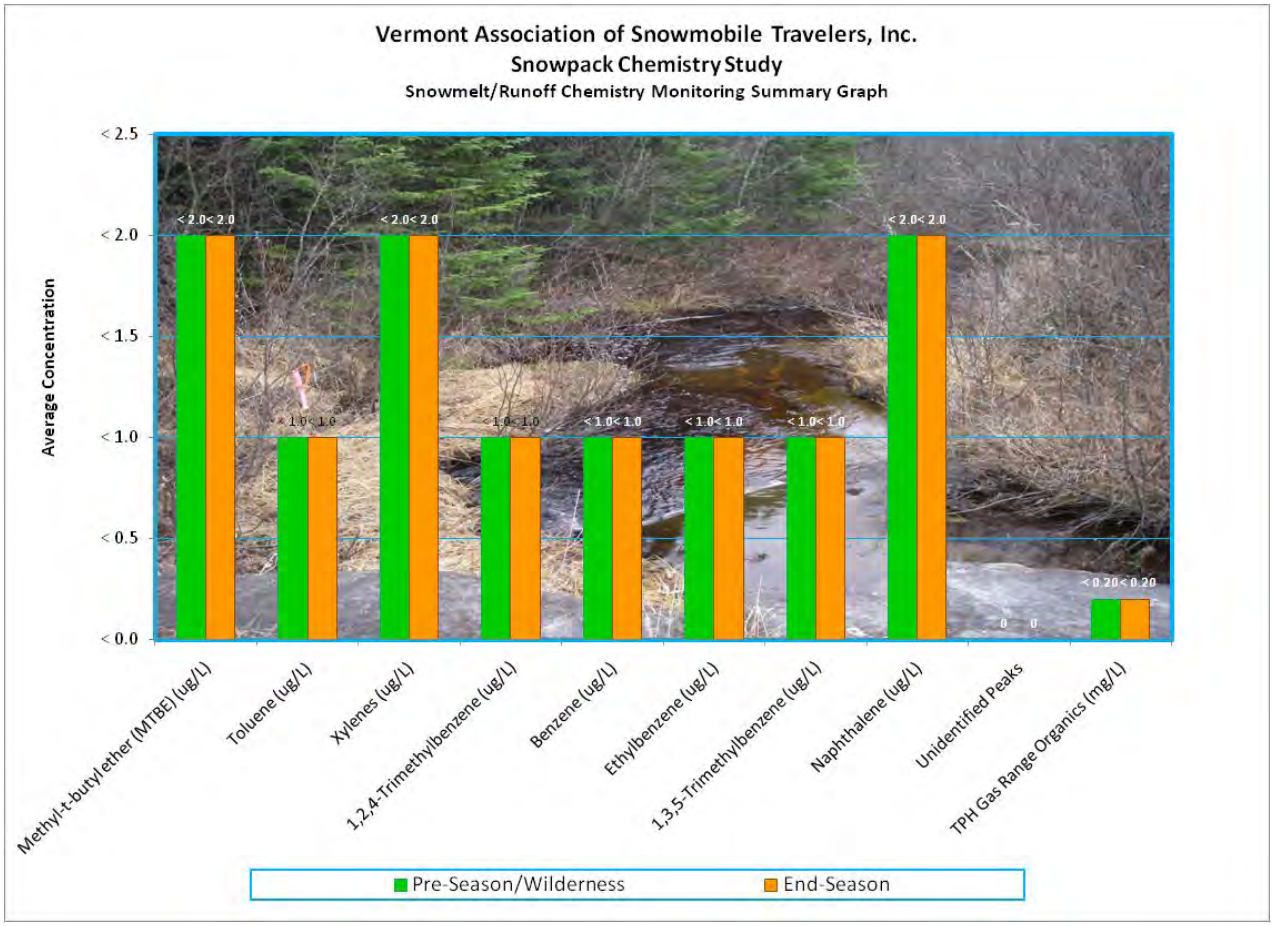


Figure 2: Pre-season versus post-season comparison of average snowmelt/runoff chemistry results.

As shown on pages 2 through 13 of Appendix 1, no VOCs were detected at any of the sampling stations during the pre-season and post-season monitoring rounds. Table 5 and Figure 2 show that there was no difference between pre-season and post-season stream conditions, as all samples showed undetected levels of chemical compounds. All laboratory detection limits are well below the regulatory water quality standards; therefore, no samples exceeded these standards. These data indicate that the snowmobile season did not have any impact on the surface water quality in the vicinity of the heavily used snowmobile trails.

4.3 Snow Chemistry Results

Snowpack sampling was conducted during the 2010 snowpack chemistry study, during which three snow core samples were taken at each sampling station. As outlined in the monitoring matrix on page 19 of Appendix 1, all 12 of the monitoring stations were sampled during snow chemistry sampling; two separate snow core samples were taken from the middle of the trails and one snow core sample was taken 50 meters away from the centers of the trails. Snow chemistry monitoring was completed on February 22 and 23, 2010 and March 3, 2010.

The two on-trail samples that were taken at each sampling station are representative of snowpack conditions exposed to snowmobile traffic, while the one sample taken 50 meters off of the trail at each station, and the two samples gathered at the reference station (Lye Brook Wilderness), are representative of background snow conditions.

A complete station-by-station summary of snow chemistry monitoring results is included on pages 18 through 40 of Appendix 2. Summary data tables and a graph that compare the results of background snow chemistry results with on-trail snow chemistry results are presented on pages 41 through 44 of Appendix 2. Additionally, Table 6 and Figure 3 below show the comparison between background and on-trail snow conditions. Samples were analyzed by Endyne, Inc. Laboratory Services

(Endyne) of Williston, Vermont, and all laboratory reports are presented in Appendix 3. The results are measured in units of ug/L (micrograms per liter of melted snow, equivalent to parts per billion), except for the TPH which is measured in mg/L (milligrams per liter of melted snow, equivalent to parts per million).

Table 6: Snow Chemistry Monitoring Summary

CHEMICAL COMPOUNDS	Regulatory Water Standards			Background Station Sampling				On-Trail Sampling			
	VWQS	VDWS (MCL)	VHA	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	13	0.0	1.01	**1.30**	22	0.1
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
Unidentified Peaks	--	--	--	0	0	13	0.0	0	0	22	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	13	0.0	< 0.20	< 0.20	22	0.0

Notes

VWQS - Vermont Water Quality Standards (2008) - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule (2005)

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance (2002)

-- No Regulatory Standard

NA - not applicable

< - indicates not detected; for example <1.0 ug/L for Toluene indicates no Toluene was detected, with a 1.0 ug/L laboratory detection limit

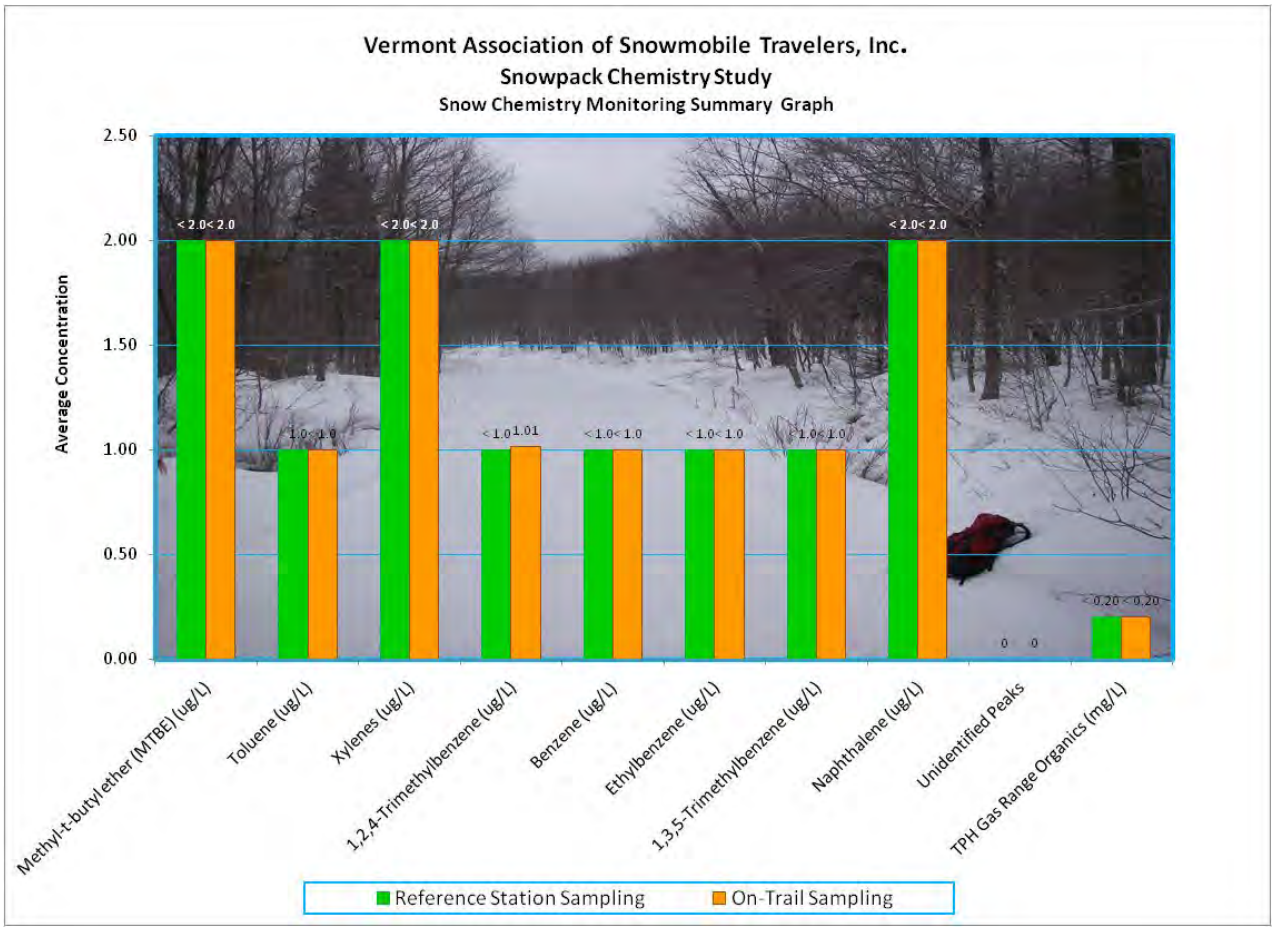


Figure 3: Background snow sampling versus on-trail snow sampling - comparison of average snow chemistry results.

As shown on pages 18 through 40 of Appendix 1, no chemical compounds were detected at any of the background or on-trail snow sampling stations tested, with the exception of one chemical compound that was detected in one of the samples taken at the on-trail Station B2, which is located within the Southern Green Mountain National Forest Investigation Area (see page 28 of Appendix 2). At Station B2, the substance 1,2,4-Trimethylbenzene was detected at a low concentration of 1.3 ug/L in only one out of the two samples taken. 1,2,4-Trimethylbenzene is a component of gasoline and is found in emissions from gasoline-powered vehicles; therefore it can be associated with the use of snowmobiles. No regulatory standards apply to snow but for comparison, the level of 1,2,4-Trimethylbenzene detected in the snowpack at

Station B2 is below the Vermont Health Advisory level of 5.0 ug/L that is set forth in the Vermont Department of Health Drinking Water Guidance (2002).

Table 6 and Figure 3 show there was no difference between background and on-trail snow conditions, with the exception of a very slightly elevated on-trail average concentration of 1,2,4-Trimethylbenzene above the background level. All other samples showed undetected levels of all chemical compounds. Laboratory detection limits are well below the Vermont surface water quality standards, drinking water standards, and health advisory levels; therefore, no snow samples exceeded any regulatory standards or environmental guidance levels. These data indicate that the snowmobile season did not have any significant impact on the snowpack in the vicinity of heavily used snowmobile trails, with the exception of one minor impact observed at Station B2, which is the most heavily used station in the study.

4.4 Soil Chemistry Results

Soil sampling was conducted once during the 2010 snowpack chemistry study, during which two soil core samples were taken at each sampling station. As outlined in the monitoring matrix on page 19 of Appendix 1, all 12 of the monitoring stations were sampled during soil chemistry sampling; one soil core sample was taken from the middle of the trail and one snow core sample was taken 50 meters away from the trail center. Soil chemistry monitoring was completed on April 8, 21, and 22, 2010. The on-trail soil samples that were taken at each sampling station are representative of soil conditions that have been exposed to snowmelt from a high usage snowmobile trail, while the samples taken 50 meters off of the trail at each station and the soil sample gathered at the reference station (Lye Brook Wilderness) are representative of background soil conditions. To evaluate the soil chemistry results, they were compared to the Environmental Protection Agency (EPA) Soil Screening Guidance Levels that are specified by the EPA Soil Screening Guidance Document (1996).

4.4.1 VOC and TPH Results in Soil

A complete station-by-station summary of soil chemistry monitoring results is included on pages 45 through 67 of Appendix 2. Summary data tables and a graph that compare the results of background VOC soil chemistry results with on-trail VOC soil chemistry results are presented on pages 68 through 71 of Appendix 2. Table 7 and Figure 4 below show the comparison between levels of volatile organic compounds in background and on-trail soil conditions. All laboratory reports are presented in Appendix 3. The results are measured in units of ug/Kg (micrograms per kilogram of soil, equivalent to parts per billion), except for the TPH which is measured in mg/Kg (milligrams per kilogram, equivalent to parts per million).

Table 7: Soil Chemistry Monitoring Summary - VOC Analysis

CHEMICAL COMPOUNDS	Regulatory Soil Standards	On-Trail Sampling				Reference Station Sampling			
	EPA SSG	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 29.1	< 60.0	11	16.4	< 78.3	< 120	12	21.7
Toluene (ug/Kg)	12,000	15.9	< 30.0	11	8.55	< 39.2	< 60.0	12	10.8
Xylenes (ug/Kg)	600,000	< 29.1	< 60.0	11	16.4	< 78.3	< 120	12	21.7
1,2,4-Trimethylbenzene (ug/Kg)	--	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Benzene (ug/Kg)	30	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Ethylbenzene (ug/Kg)	13,000	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
1,3,5-Trimethylbenzene (ug/Kg)	--	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Naphthalene (ug/Kg)	84,000	< 30.5	< 60.0	11	15.9	< 78.3	< 120	12	21.7
Unidentified Peaks	--	2.36	6	11	2.54	5.83	10	12	3.76
TPH Gas Range Organics (mg/Kg)	--	< 1.94	< 3.60	11	0.846	< 4.11	< 7.60	12	2.04

Notes
EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF
-- No Regulatory Standard
NA - not applicable
< - indicates not detected; for example <30 ug/L for Toluene indicates no Toluene was detected, with a 30 ug/L laboratory detection limit

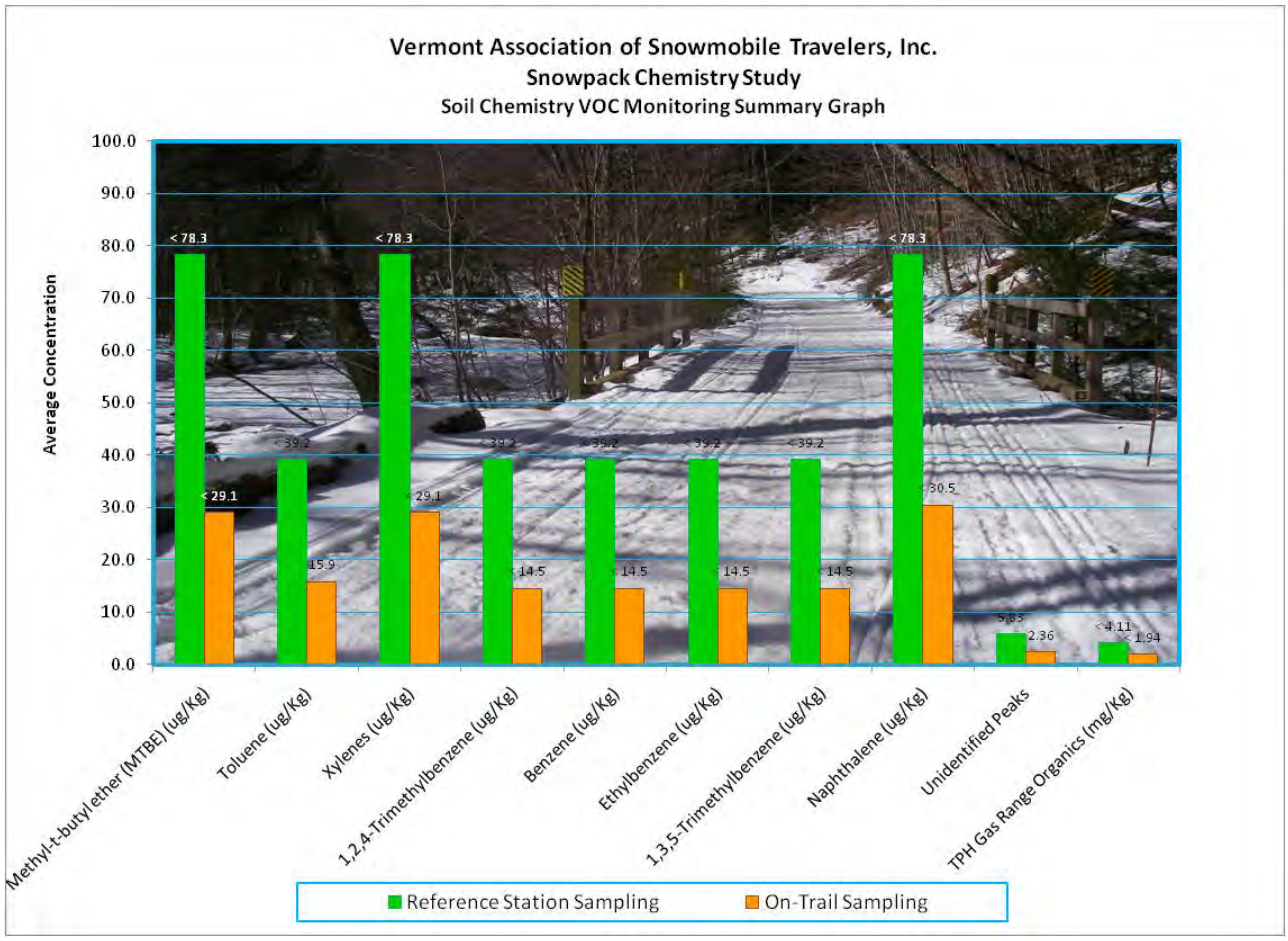


Figure 4: Background soil sampling versus on-trail soil sampling - comparison of average VOC soil chemistry results.

As shown on pages 45 through 67 of Appendix 2, no volatile organic compounds were detected at any of the background or on-trail soil sampling stations that were evaluated, with the exception of one volatile organic compound that was detected in the on-trail soil sample taken at Station C1, which is located within the Northern Green Mountain National Forest Investigation Area (see page 59 of Appendix 2). Toluene was detected at a low concentration of 24.4 ug/Kg at Station C1. Toluene is a chemical compound that is a component of gasoline; therefore, it can be associated with the use of snowmobiles or other motorized vehicles. The level of

Toluene detected in the soil at Station C1 was well below the EPA Soil Screening Guidance Level of 12,000 ug/Kg.

The low level of Toluene detected at Station C1 appears to be caused by the usage of snowmobiles on the trail. However, it is also possible that historic activities at the site, such as use of logging equipment and trucks, could be the causes of the Toluene detection. Unidentified peaks of volatile organic compounds were also detected at both background and on-trail soil sampling stations, and were shown to be more prevalent at background sampling stations, suggesting that snowmobile usage was not the source of the unidentified peaks.

Table 7 and Figure 4 above show the average volatile organic compound concentrations for the background soil samples and on-trail soil samples. All of the average VOC concentrations represent results that are below the detection limit, with the exception of Toluene, which was present in a low level in one sample. All laboratory detection limits were well below the Soil Screening Guidance Levels. These data indicate that snowmobile usage does not have a significant impact on volatile organic compound composition within soil at the sites evaluated.

4.4.2 PAH Results in Soil

Polycyclic aromatic hydrocarbons (PAHs) were only analyzed at the on-trail monitoring locations of each sampling station as well as the Lye Brook Wilderness Area reference station. As shown by the monitoring results included on pages 45 through 67 of Appendix 2, the levels of PAHs were elevated at the LVRT Investigation Area sampling stations (A1, A2, A3, and A4). Summary data tables and a graph that compare PAH soil chemistry results for LVRT on-trail sampling stations, non-LVRT on-trail sampling stations, and the Lye Brook Wilderness Area reference sampling station are

provided on pages 72 through 76 of Appendix 2. Table 8 and Figure 5 below show the comparison between PAH levels in LVRT on-trail sampling stations, non-LVRT on-trail sampling stations, and the Lye Brook Wilderness Area reference sampling station. All laboratory reports are presented in Appendix 3.

Table 8: Soil Chemistry Monitoring Summary - PAH Analysis

CHEMICAL COMPOUNDS	Regulatory Soil Standards	LVRT Stations - On-Trail Sampling				Non-LVRT Stations - On-Trail Sampling				Reference Station - Wilderness Site Sampling		
	EPA SSG	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.	Mean	Max	n
2-Methylnaphthalene (ug/Kg)	--	18.8	19.9	4	0.806	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1
Acenaphthylene (ug/Kg)	--	271	449	4	190	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1
Fluorene (ug/Kg)	560,000	42.4	68.7	4	26.8	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1
Anthracene (ug/Kg)	12,000,000	215	406	4	167	16.1	66.1	7	22.1	< 9.4	< 9.4	1
Pyrene (ug/Kg)	4,200,000	2,319	3,980	4	1,754	26.5	93.3	7	34.1	< 9.4	< 9.4	1
Chrysene (ug/Kg)	160,000	1,487	2,660	4	1,085	19.4	67.6	7	22.8	< 9.4	< 9.4	1
Benzo(k)fluoranthene (ug/Kg)	49,000	745	1,380	4	561	9.03	13.5	7	2.48	< 9.4	< 9.4	1
Indeno(1,2,3-cd)pyrene (ug/Kg)	--	1,263	2,140	4	850	11.6	25.9	7	7.18	< 9.4	< 9.4	1
Benzo(g,h,i)perylene (ug/Kg)	--	1,054	1,810	4	717	11.1	21.2	7	5.96	< 9.4	< 9.4	1
Naphthalene (ug/Kg)	84,000	23.1	35.1	4	8.04	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1
1-Methylnaphthalene (ug/Kg)	--	< 18.8	< 19.9	4	0.806	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1
Acenaphthene (ug/Kg)	570,000	23.5	29.2	4	5.01	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1
Phenanthrene (ug/Kg)	--	531	1,090	4	509	14.6	32.0	7	11.8	< 9.4	< 9.4	1
Fluoranthene (ug/Kg)	4,300,000	2,483	4,890	4	1,987	33.4	122	7	46.1	< 9.4	< 9.4	1
Benzo(a)anthracene (ug/Kg)	2,000	1,518	2,720	4	1,098	14.1	33.3	7	11.0	< 9.4	< 9.4	1
Benzo(b)fluoranthene (ug/Kg)	5,000	2,655	4,270	4	1,937	16.9	40.9	7	15.7	< 9.4	< 9.4	1
Benzo(a)pyrene (ug/Kg)	8,000	1,421	2,370	4	1,050	11.8	28.2	7	7.86	< 9.4	< 9.4	1
Dibenzo(a,h)anthracene (ug/Kg)	2,000	305	527	4	216	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1
Unidentified Peaks	--	> 10	> 10	4	0.00	5.71	> 10	7	5.35	> 10	> 10	1

Notes
EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF
-- No Regulatory Standard
NA - not applicable
< - indicates not detected; for example <30 ug/L for Toluene indicates no Toluene was detected, with a 30 ug/L laboratory detection limit

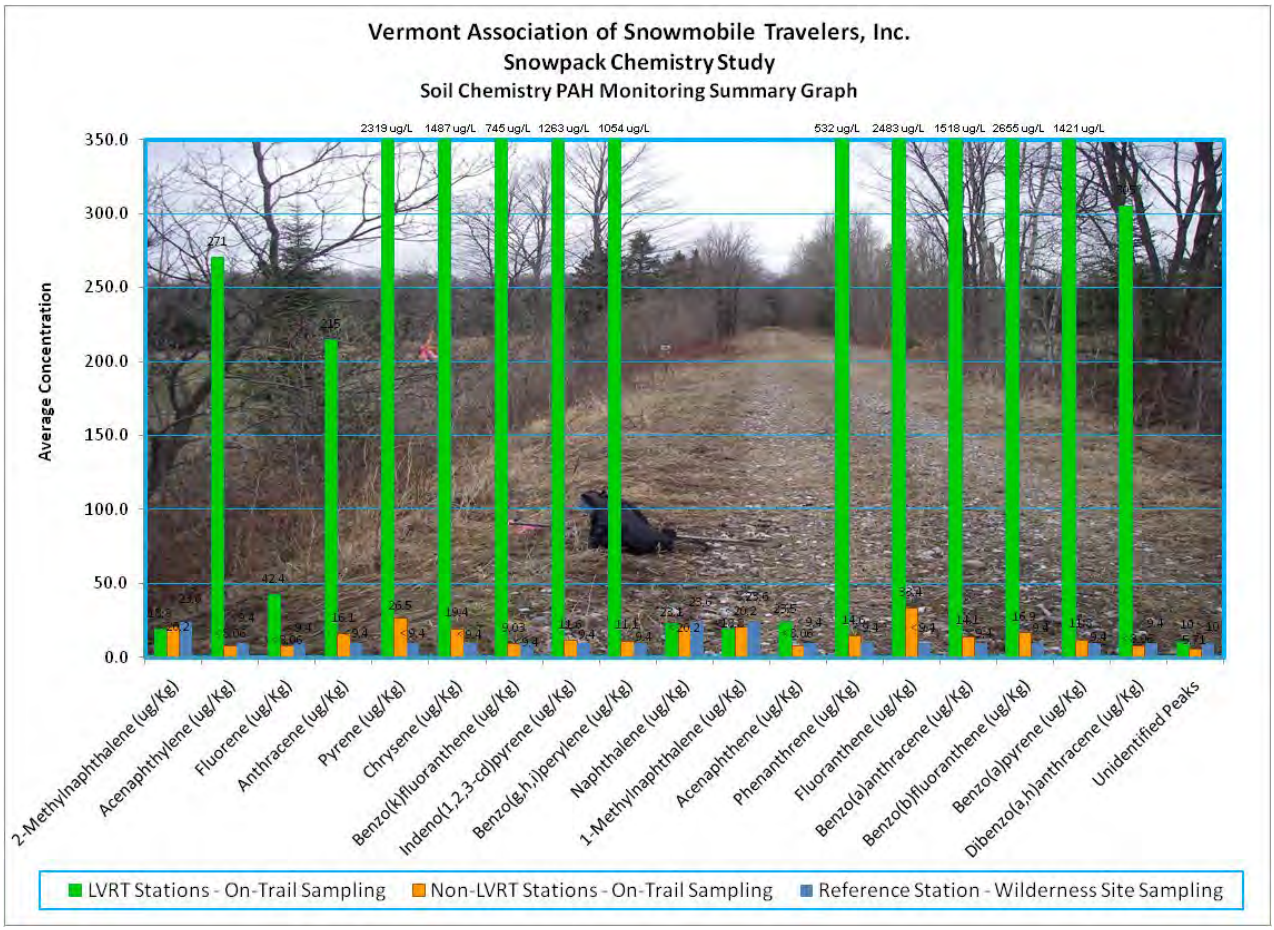


Figure 5: LVRT on-trail soil sampling stations versus non-LVRT on-trail soil sampling stations versus Lye Brook Wilderness soil sampling station - comparison of average PAH soil chemistry results.

Polycyclic aromatic hydrocarbons occur commonly as a result of incomplete combustion of wood, coal, oil, and most organic materials. PAHs were detected at six of the twelve sampling stations, including Stations A1, A2, A3, A4, B3, and C1. PAH concentrations were elevated at the LVRT Investigation Area sampling stations (A1, A2, A3, and A4) compared to other sampling stations. The levels of PAHs detected in the soil at all sampling stations were below the EPA Soil Screening Guidance Levels, with one exception: Benzo(a)anthracene was observed at Station A4 at a concentration of 2,720 ug/Kg, which is above the EPA guidance level of 2,000 ug/Kg. This station is located along the LVRT and is adjacent to VT Route 15, and near US Route

2, thus the PAH levels are most likely the result of the railroad and the highways. The elevated PAH levels detected within the LVRT Investigation Area are most likely associated with the former railroad usage at this area, as PAHs are ubiquitous at railroad sites due to creosote in railroad ties, historic coal use and cinders from trains, diesel fuel use, and because only trace levels of PAHs were detected at other investigation areas.

Unidentified peaks were also detected by the EPA method 8270C PAH test at nine of the sampling stations, including the Lye Brook Wilderness reference station, suggesting that snowmobile usage was not the source of these unidentified peaks.

Low levels of PAHs, below the EPA Soil Screening Guidance Levels, that were observed at non-LVRT sampling stations (Stations B3 and C1) may have been caused by the usage of snowmobiles or other motorized vehicles, as there was no detection of PAHs at the Lye Brook Wilderness reference station. However, it is also possible that historic activities or natural sources could be the causes of these trace PAH levels. Historic activities, such as use of logging equipment and trucks, may have contributed to the detected PAH levels. Some of the detected PAHs, such as indeno(1,2,3-cd) pyrene and phenanthrene, are known to be present in various kinds of tree leaves, spruce needles, and as a result of natural forest fires, and thus may have occurred naturally. The PAH sampling data indicate that snowmobile usage does not have a significant impact on levels of Polycyclic aromatic hydrocarbons within soil at the sites evaluated.

5.0 Conclusions

At the request of the Vermont Association of Snowmobile Travelers, VHB Pioneer has completed a snowpack chemistry study that has evaluated the potential environmental impacts associated with the use of snowmobiles on public lands in Vermont. This study was completed with the purpose of evaluating the presence or absence of impact from snowmobile traffic on the chemical composition of snowpack, soil, and runoff in the proximity of heavily traveled snowmobile trails in Vermont, and has provided scientifically valid conclusions about the impact that snowmobile usage has on snowpack, soil, and runoff chemistry at the sites evaluated.

Snowmobile trail usage monitoring has indicated that all sampling stations, except for the Lye Brook Wilderness reference station, were located along heavily used snowmobile trails; therefore, are appropriate for evaluation in this study. Snow samples were collected during the busy snowmobiling season to provide worst-case scenario data. Runoff and soil samples were collected after the end of the snowmobiling season, to capture the maximum amount of contaminants that would potentially have accumulated during the season.

Snowmelt and runoff chemistry monitoring indicated no detectable levels of volatile organic compounds or total petroleum hydrocarbons in surface waters that are located immediately downgradient of the snowmobile trails that were evaluated. Snowmelt samples that were taken immediately following the end of the snowmobile season did not differ in comparison with runoff samples that were taken at the beginning of the snowmobile season, which are considered representative of background water quality conditions. These data indicate that the snowmobile usage during the 2009/2010 season did not have any impact on the surface water quality in the vicinity of heavily used snowmobile trails.

Snowpack chemistry monitoring indicated that there were no detectable levels of volatile organic compounds or total petroleum hydrocarbons in background or on-trail snow sampling stations, with the exception of one chemical compound detected in an on-trail sample taken at Station B2, which is the most heavily used station in the study. 1,2,4-Trimethylbenzene was detected at a concentration of 1.3 ug/L; no regulatory standards apply to snow, but for comparison this concentration is below the drinking water standard of 5.0 ug/L. These data indicate that snowmobile usage during the 2009/2010 snowmobile season did not significantly impact snowpack chemistry in the vicinity of the heavily used snowmobile trails. Therefore, it appears that snowmobile usage has no significant impact on the chemistry of snowpack located on snowmobile trails, but may cause trace levels of volatile organic compounds within the snow, and these levels are likely to be low concentrations that meet regulatory water quality standards.

Soil chemistry monitoring indicated that there were no detectable levels of volatile organic compounds or total petroleum hydrocarbons in background or on-trail soil sampling stations, with the exception of one chemical compound detected in an on-trail sample taken at Station C1. Toluene was detected at a concentration of 24.4 ug/Kg, which is far below the EPA Soil Screening Guidance Level of 12,000 ug/Kg. At six on-trail soil sampling stations, soil chemistry monitoring also indicated detectable levels of polycyclic aromatic hydrocarbons, which most likely were present due to historic railroad use along the Lamoille Valley Rail Trail, other historic activities, and possible natural sources such as forest fires, and tree leaves and needles. All PAH levels in tested soil were below the EPA Soil Screening Guidance Levels with the exception of one exceedence at station A4 on the LVRT, which is most likely the result of the historic railroad use and the highway adjacent to this location. These data indicate that snowmobile usage does not have any significant impact on volatile organic compounds within soil in the vicinity of the heavily used snowmobile trails that were evaluated. Trail usage by snowmobiles and other motorized vehicles may result in low levels of VOCs and PAHs in soil, that are far below applicable regulatory levels and environmental screening levels.

REFERENCES

Agency of Natural Resources: Department of Environmental Conservation (2005), Environmental Protection Rules, Water Supply Rule, Chapter 21.

Ingersoll, G. P. 1998. Effects of Snowmobile Use on Snowpack Chemistry in Yellowstone National Park, 1998. U.S. Geological Survey. Water-Resources Investigations Report 99-4148.

U.S. Environmental Protection Agency 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response. May 1996.

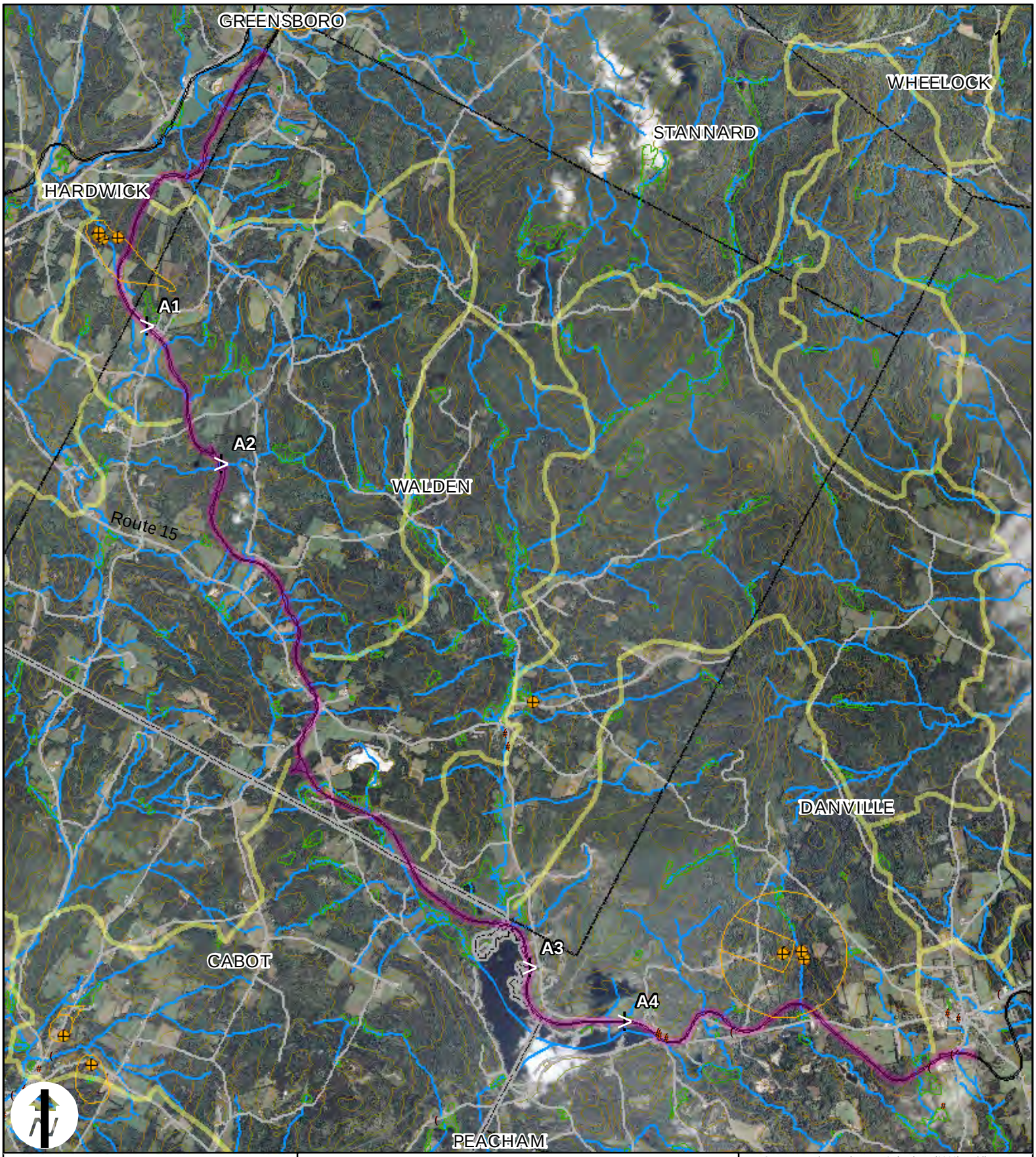
U.S. Environmental Protection Agency. 2001. EPA Requirements for Quality Assurance Project Plans. EPA QA/R-5. March 2001.

Vermont Department of Health – Division of Health Protection 2002. Drinking Water Guidance Document. December 2002.

Vermont Natural Resources Board, Water Resources Panel, 2008. Vermont Water Quality Standards (Effective January 1, 2008).

VHB Pioneer 2009. Snowpack Chemistry Quality Assurance Project Plan. VHB Pioneer. December 16, 2009.

APPENDIX 1



Legend

- Sampling Locations
- Snowmobile Trails (Approx Location)
- LVRT Investigation Area
- LVRT Right of Way
- Public Water Source
- Groundwater SPA
- Roads (e911)
- VSWI Wetland
- Underground Storage Tank
- Hazardous Waste Site
- Stream
- 100 ft. Contour

F:\57369.00\GIS\project\LVRT_Monitoring_Locations_Map_Updated.mxd

VAST Snow Chemistry Study
Lamoille Valley Rail Trail Investigation Area
East Hardwick to West Danville, Vermont
Sampling Station Location Map

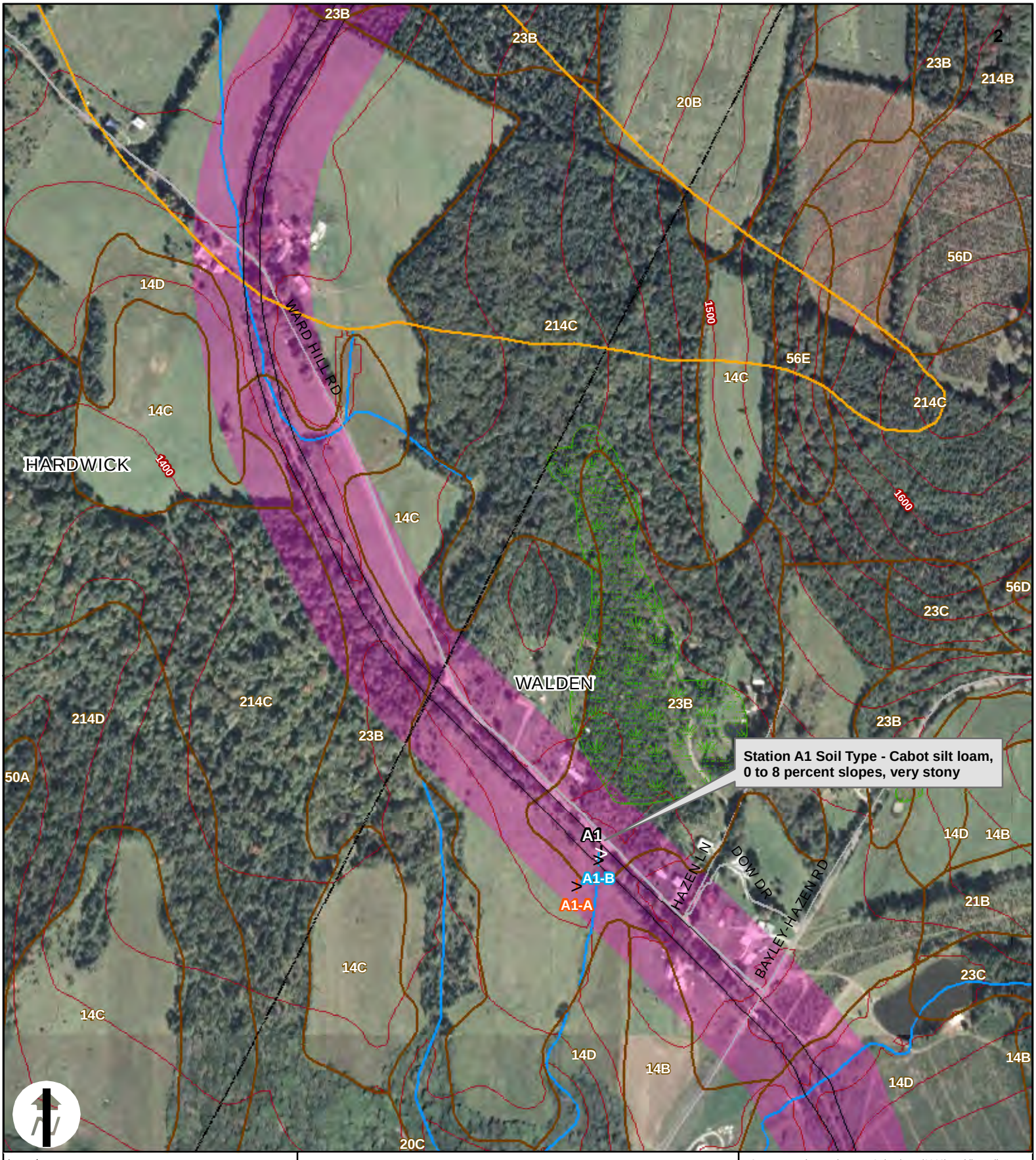
January 7, 2010

6,000 3,000 0 6,000 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Investigation Areas and Snowmobile Trails (approx locations) digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802.425.7799
www.vhb.com



Legend

- LVRT Investigation Area
- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Snowmobile Trails (Approx Location)
- LVRT Right of Way
- Public Water Source
- Groundwater SPA
- Soils Data
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\LVRT_Site_Location_Map_A1_Updated.mxd

VAST Snow Chemistry Study
Lamoille Valley Rail Trail Investigation Area
East Hardwick, Vermont
Sampling Station Location Map - A1

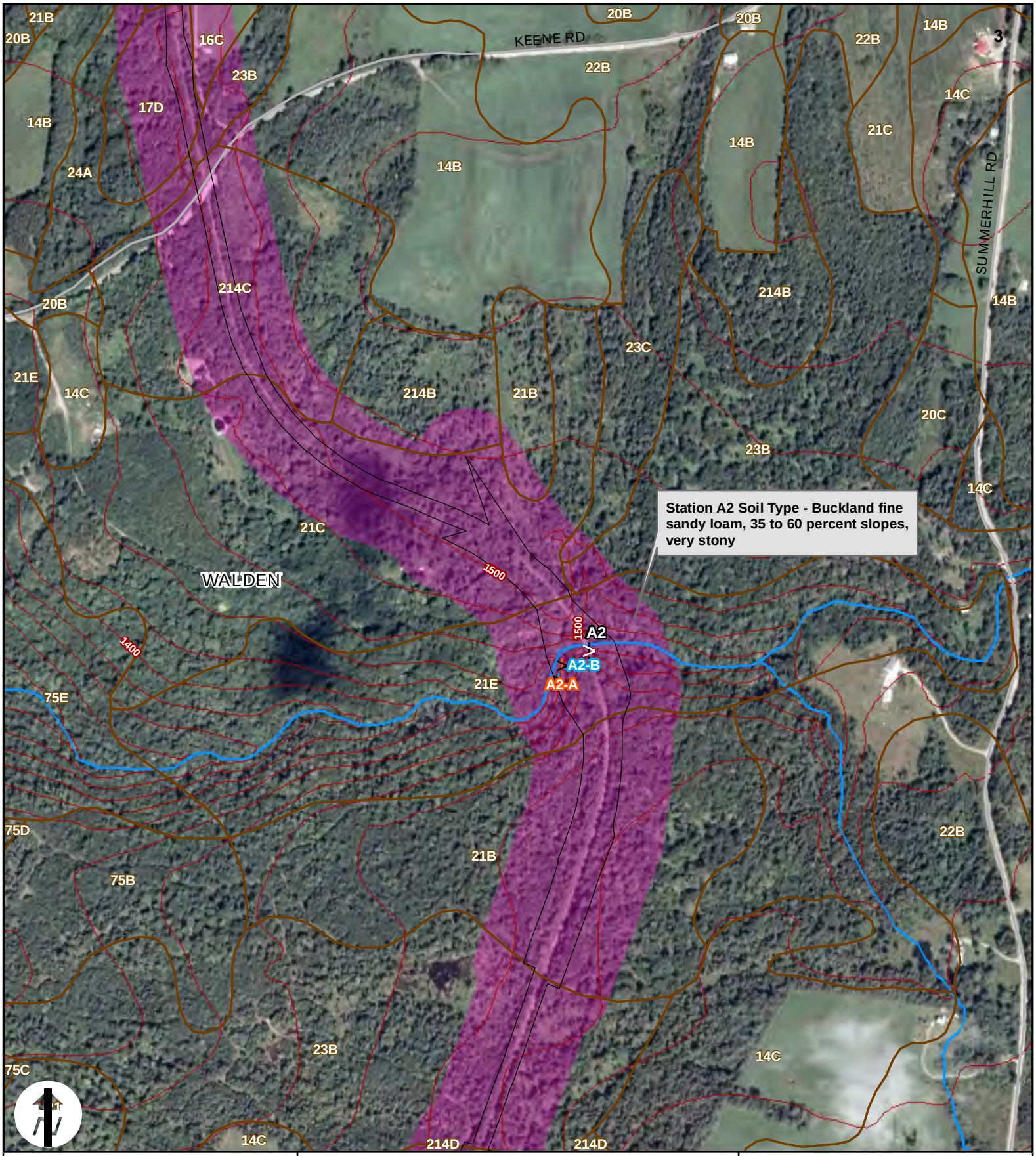
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- LVRT Investigation Area
- LVRT Right of Way
- Public Water Source
- Groundwater SPA
- Soils Data
- Roads (e911)
- VSWI Wetland
- Underground Storage Tank
- Hazardous Waste Site
- Stream
- 20' Contours

F:\57369.00\GIS\project\LVRT_Site_Location_Map_A2_Updated.mxd

VAST Snow Chemistry Study
Lamoille Valley Rail Trail Investigation Area
East Hardwick, Vermont
Sampling Station Location Map - A2

January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F802-425.7799
www.vhb.com

Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- LVRT Investigation Area
- LVRT Right of Way
- Public Water Source
- Groundwater SPA
- Soils Data
- Roads (e911)
- VSWI Wetland
- Underground Storage Tank
- Hazardous Waste Site
- Stream
- 20' Contours

F:\57369.00\GIS\project\LVRT_Site_Location_Map_A3_Updated.mxd

VAST Snow Chemistry Study
Lamoille Valley Rail Trail Investigation Area
East Hardwick, Vermont
Sampling Station Location Map - A3

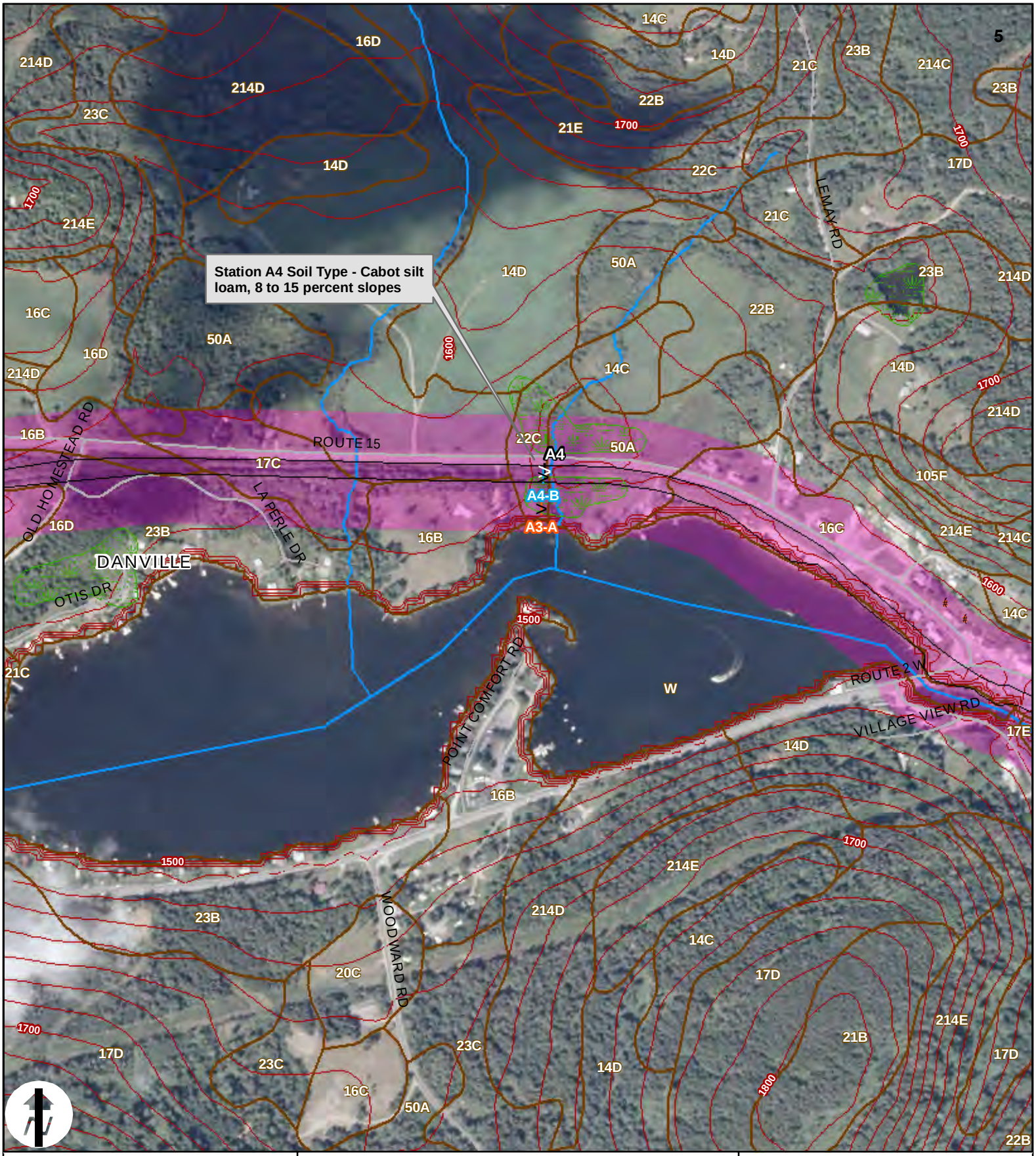
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Snowmobile Trails (Approx Location)
- LVRT Investigation Area
- LVRT Right of Way
- Publilc Water Source
- Groundwater SPA
- Soils Data
- Roads (e911)
- VSWI Wetland
- Underground Storage Tank
- Hazardous Waste Site
- Stream
- 20' Contours

F:\57369.00\GIS\project\LVRT_Site_Location_Map_A4_Updated.mxd

VAST Snow Chemistry Study
Lamoille Valley Rail Trail Investigation Area
East Hardwick, Vermont
Sampling Station Location Map - A4

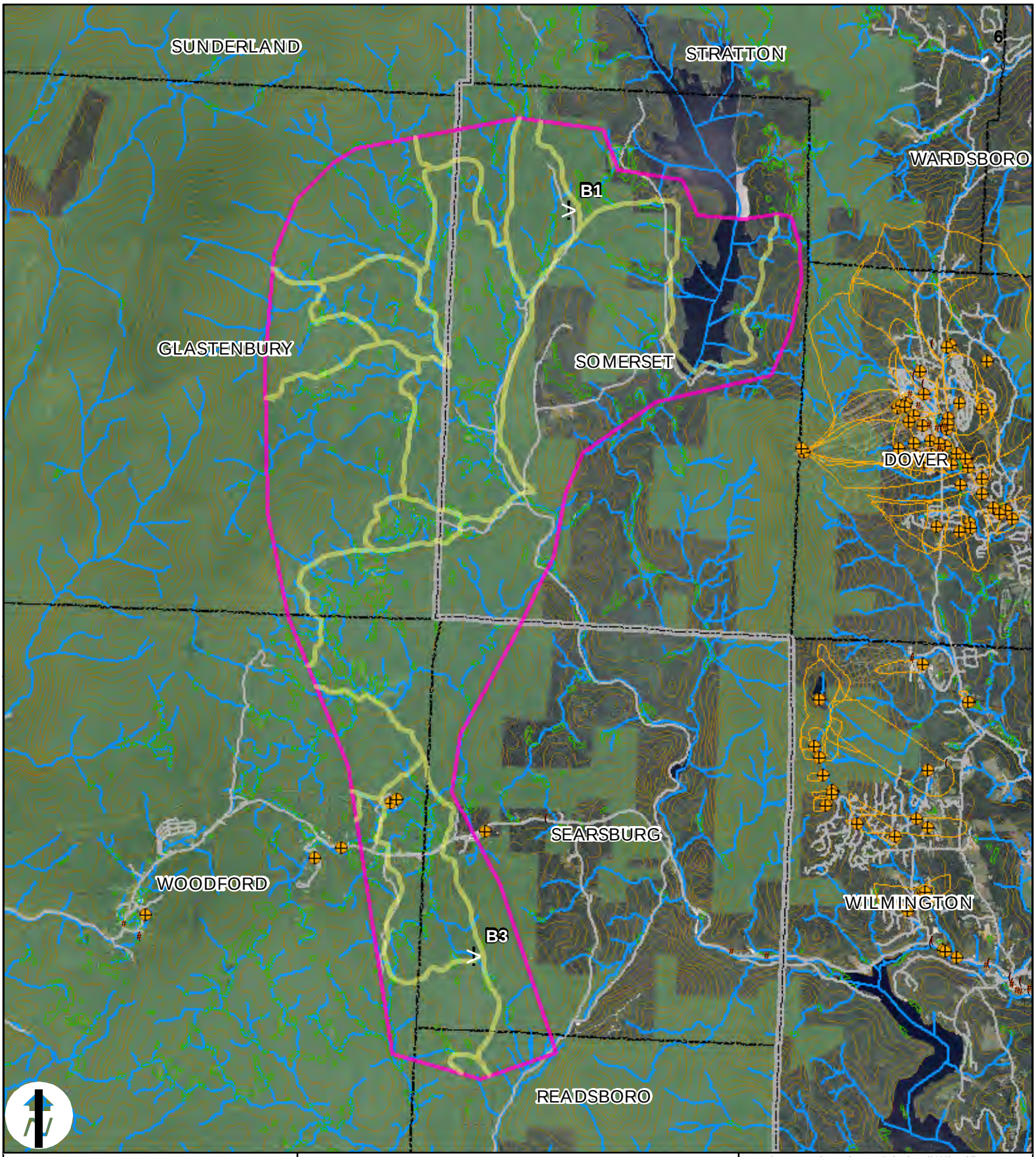
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

- Sampling Locations
- Snowmobile Trails (Approx Location)
- Investigation Area
- Public Water Source
- GroundWaterSPA
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 100 ft. Contour

VAST Snow Chemistry Study
Southern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map
Map 1 of 2

January 7, 2010

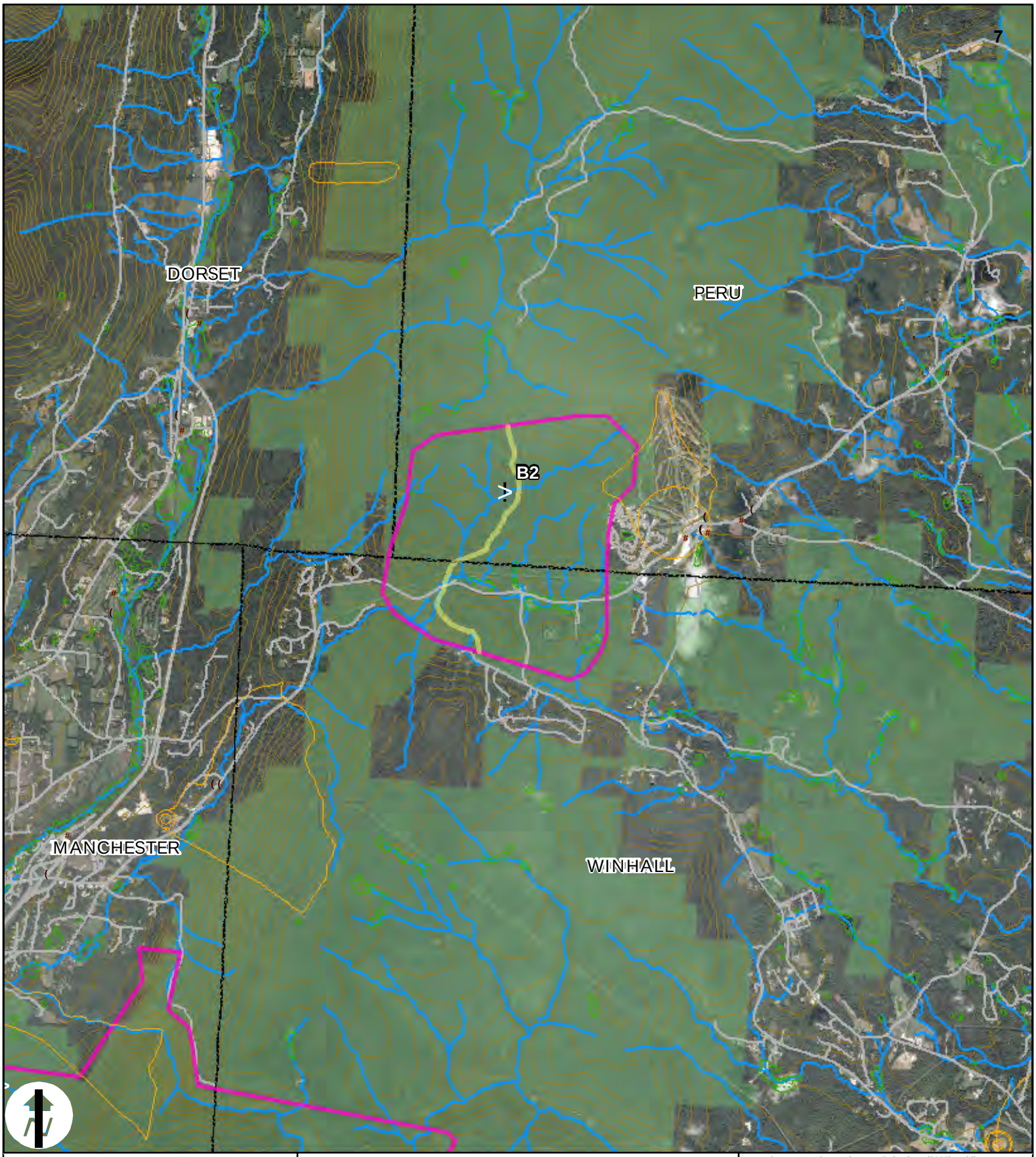
8,000 4,000 0 8,000 Feet

F:\57369.00\GIS\project\SouthernGMNF_Monitoring_Locations_Map_Updated.mxd

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005); Green Mountain National Forest Boudary from VCGI; Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged using a Trimble GPS by VHB Pioneer (2010); Snowmobile Trails (Approx Locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T 802.425.7788 F 802-425.7799
www.vhb.com



Legend

- Sampling Locations
- Snowmobile Trails (Approx Location)
- Investigation Area
- GroundWaterSPA
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 100 ft. Contour

F:\57369.00\GIS\project\SouthernGMNF_Monitoring_Locations_Map2_Updated.mxd

VAST Snow Chemistry Study
Southern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map
Map 2 of 2

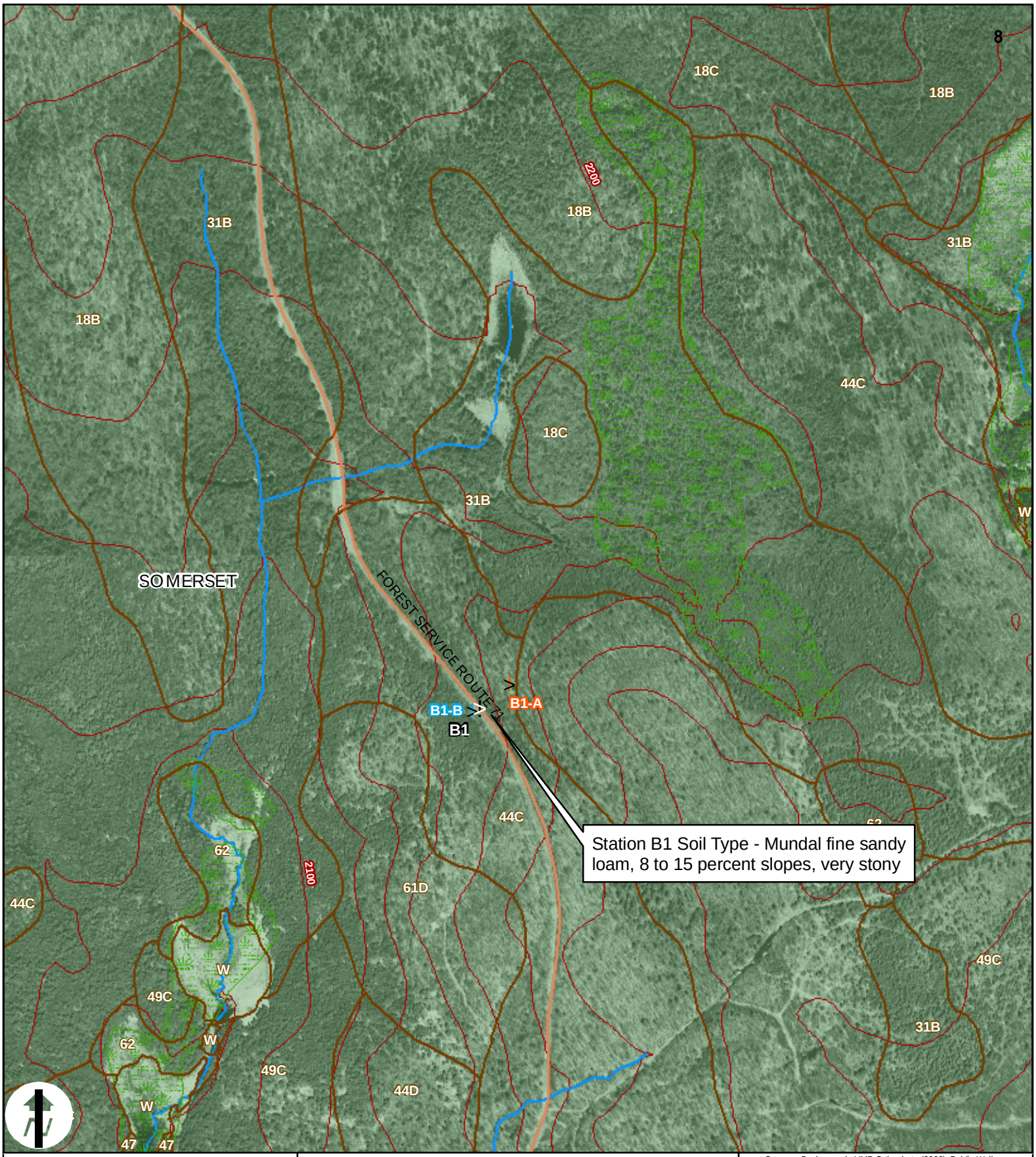
January 7, 2010

5,000 2,500 0 5,000 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005); Green Mountain National Forest Boudary from VCGI; Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Snowmobile Trails (Approx Locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T:802.425.7788 F:802.425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Investigation Area
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

VAST Snow Chemistry Study
Southern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map - B1

January 19, 2010

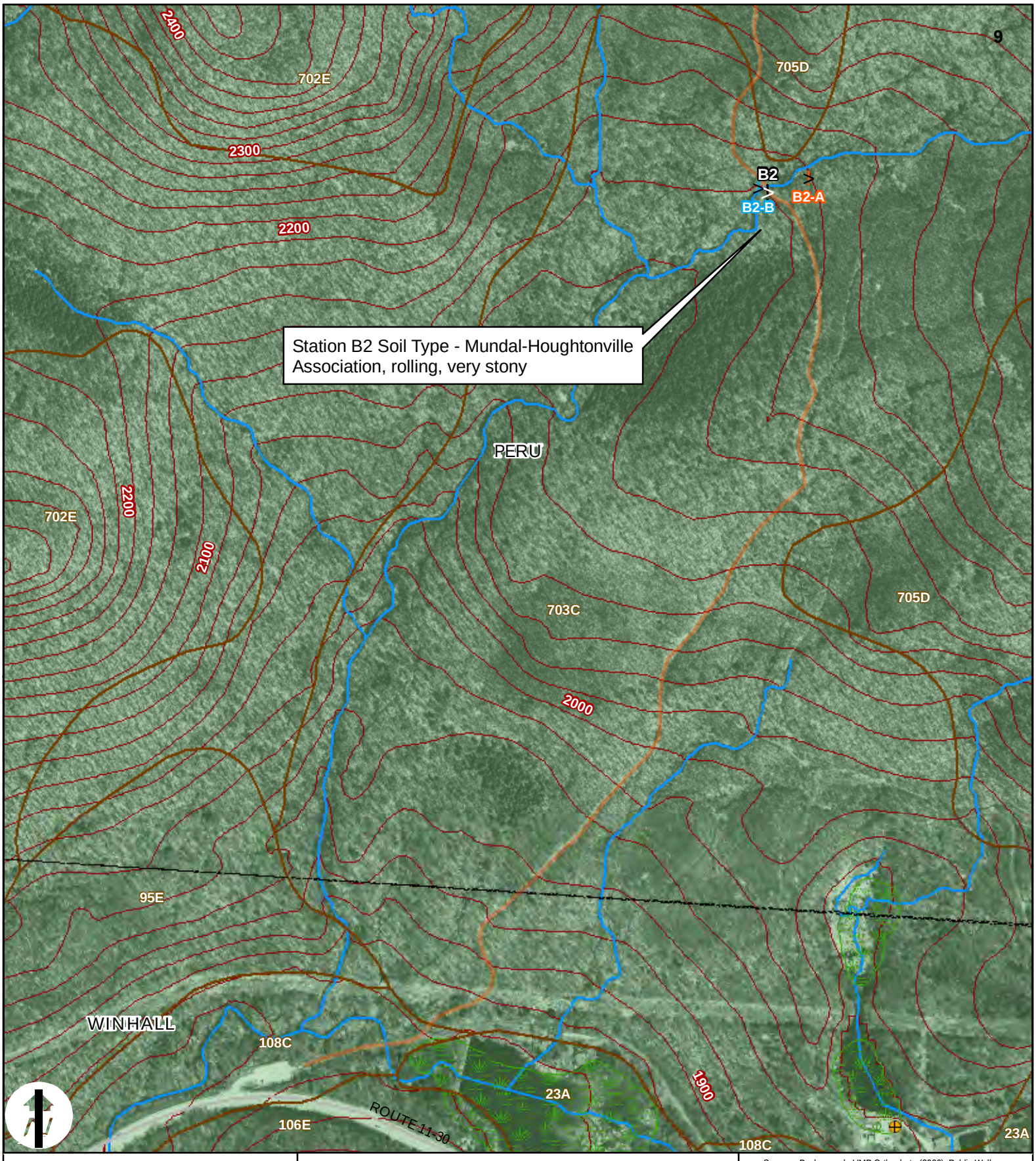
500 250 0 500 Feet

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Snowmobile Trails (approx locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802.425.7799
www.vhb.com

F:\57369.00\GIS\project\SouthernGMNF_Site_Location_Map_B1_Updated.mxd

Prepared by: GAS



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Investigation Area
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\SouthernGMNF_Site_Location_Map_B2_Updated.mxd

VAST Snow Chemistry Study
Southern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map - B2

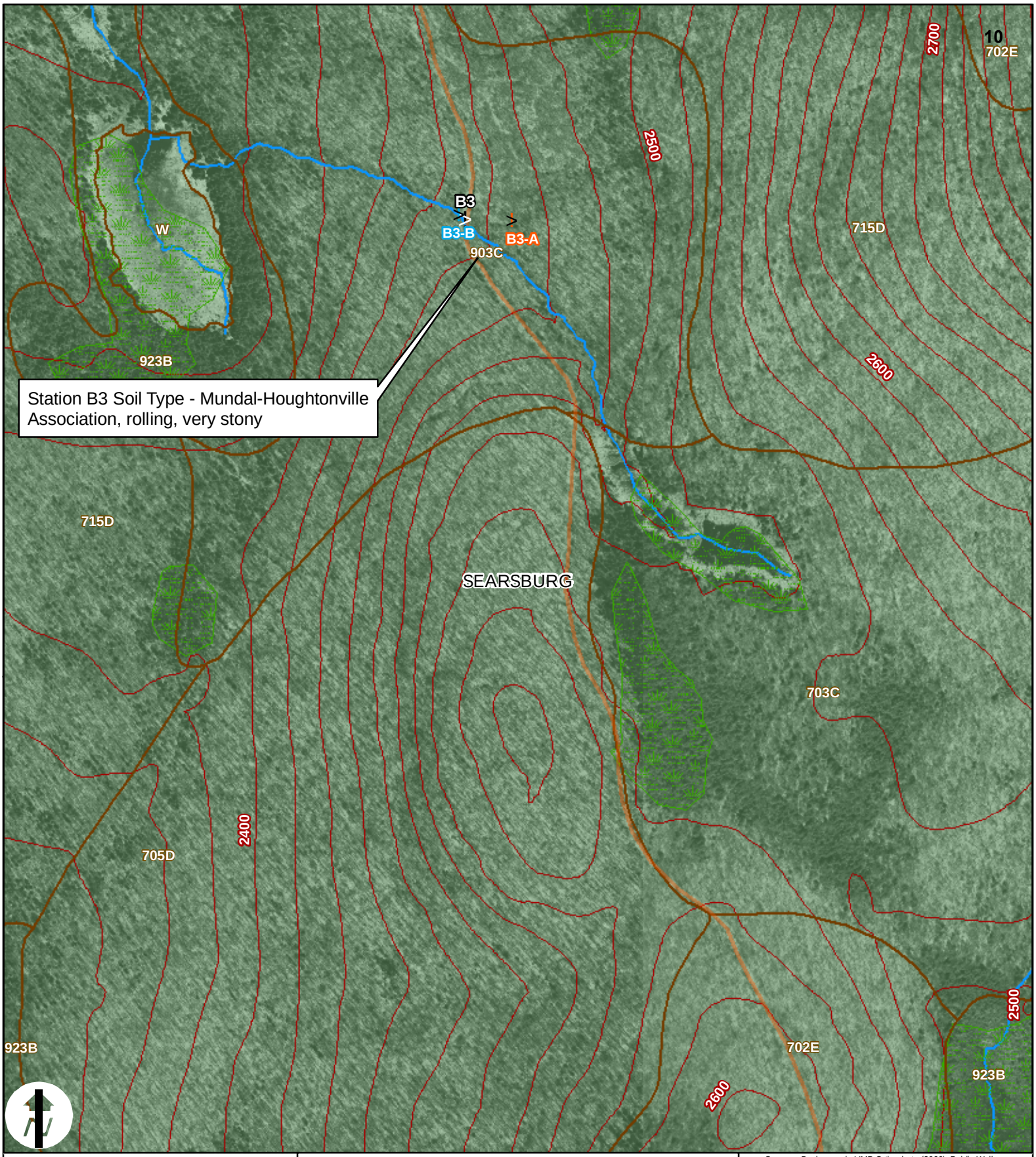
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Snowmobile Trails (approx locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7 PO Box 120
North Ferrisburgh, VT 05473
T 802.425.7788 F 802.425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Investigation Area
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\SouthernGMNF_Site_Location_Map_B3_Updated.mxd

VAST Snow Chemistry Study
Southern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map - B3

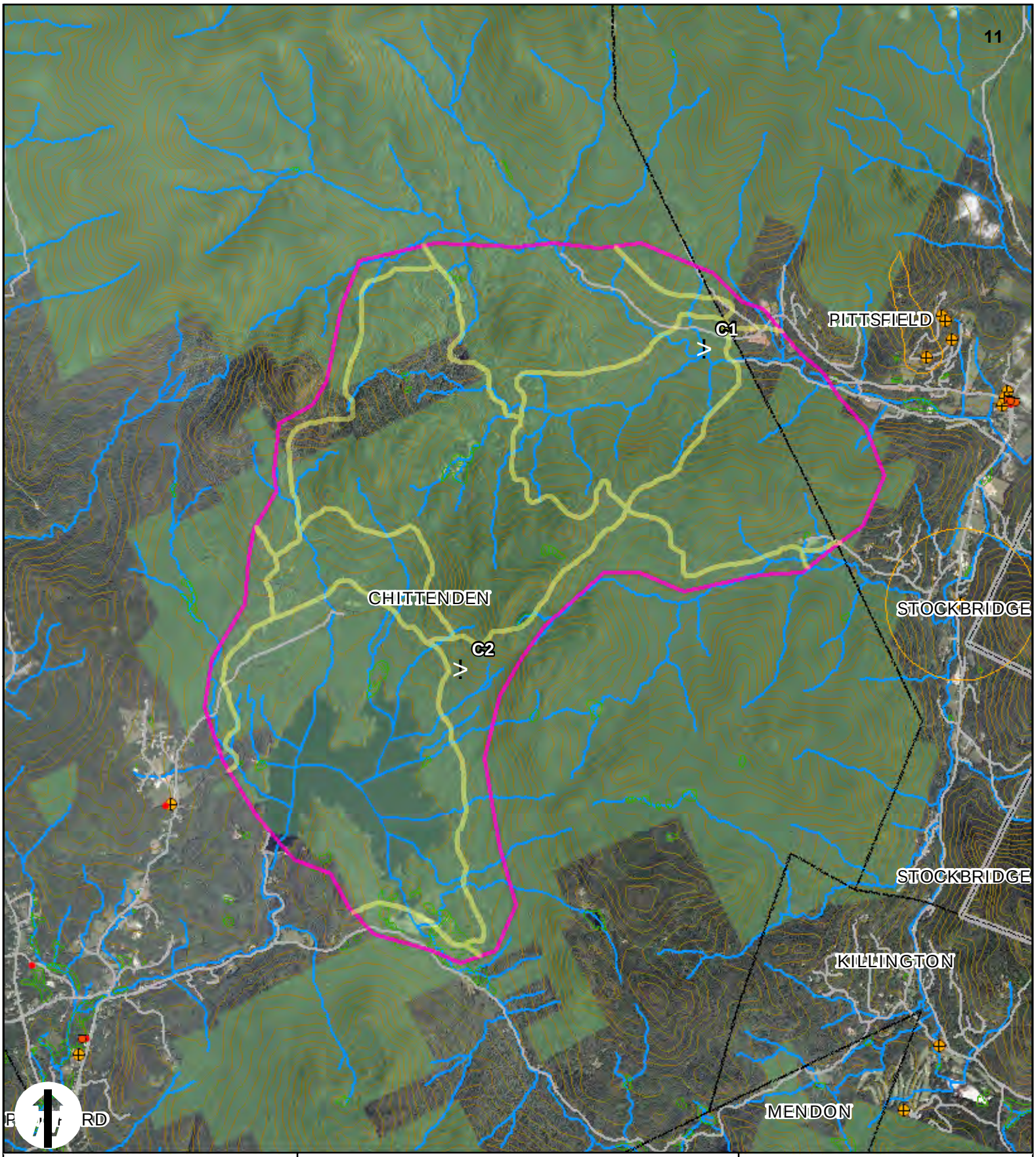
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Snowmobile Trails (aprrox locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T 802.425.7788 F 802-425.7799
www.vhb.com



Legend

- Sampling Locations
- Snowmobile Trails (Approx Location)
- Investigation Area
- Green Mountain National Forest
- Public Water Source
- Groundwater SPA
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 100 ft. Contour

VAST Snow Chemistry Study
Northern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map

January 7, 2010

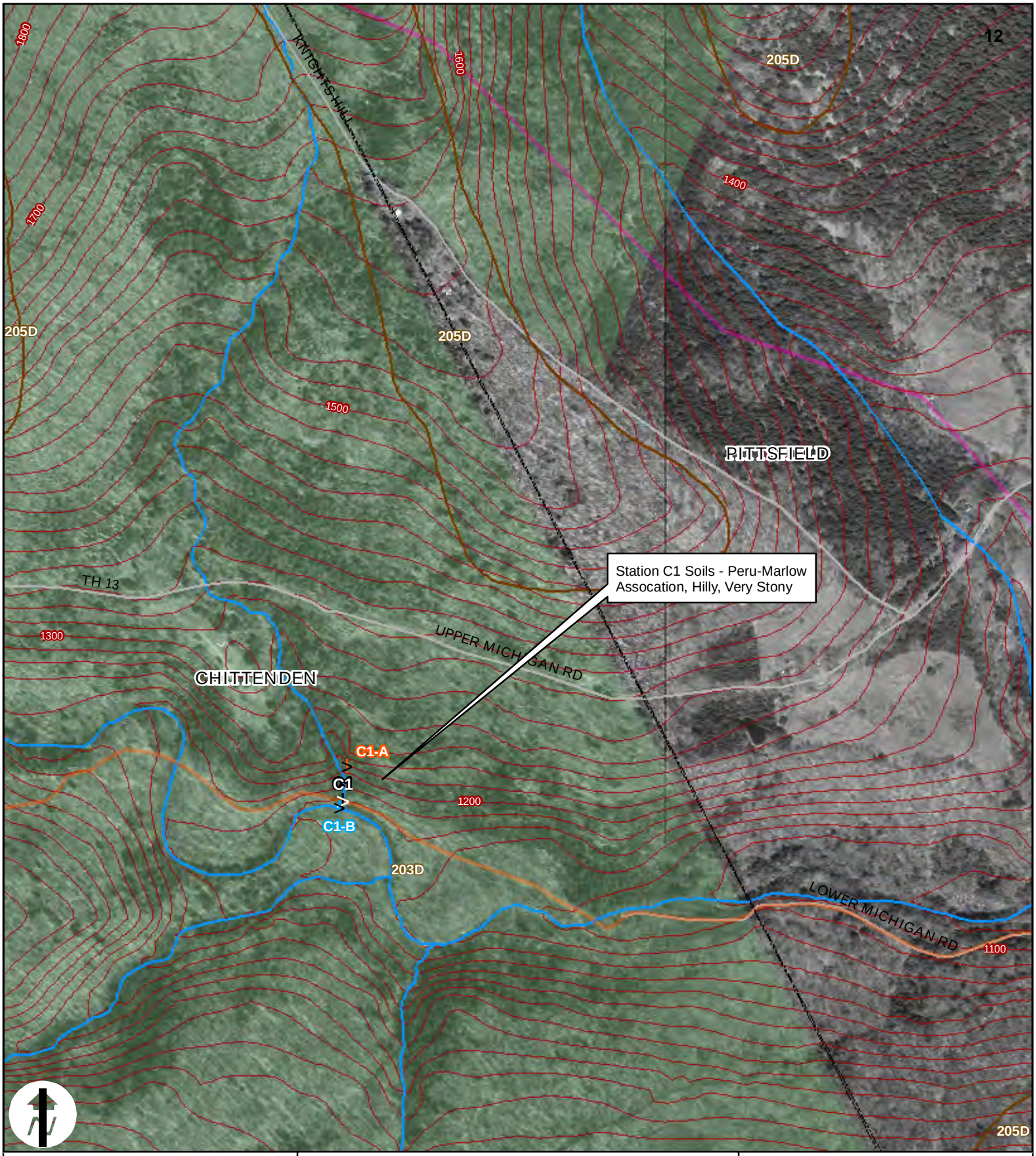
5,000 2,500 0 5,000 Feet

Prepared by: GAS

F:\57369.00\GIS\project\NorthernGMNF_Monitoring_Locations_Map_Updated.mxd

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI; Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Approximate Snowmobile Trail Locations and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802 425 7788 F.802-425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Investigation Area
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\NorthernGMNF_Site_Location_Map_C1_Updated.mxd

VAST Snow Chemistry Study
Northern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map - C1

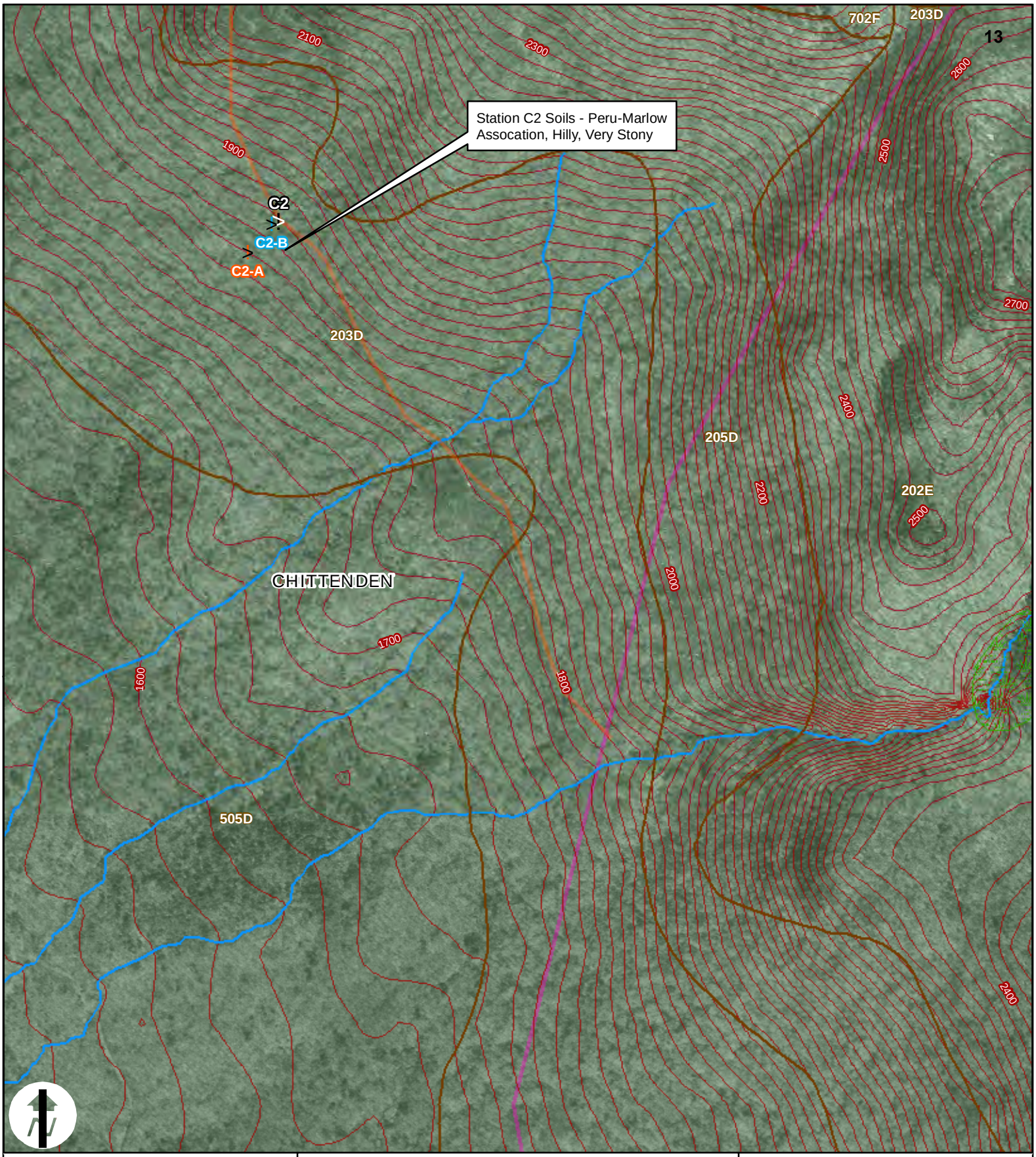
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Approx Snowmobile Trails and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Investigation Area
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\NorthernGMNF_Site_Location_Map_C2_Updated.mxd

VAST Snow Chemistry Study
Northern GMNF Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map - C2

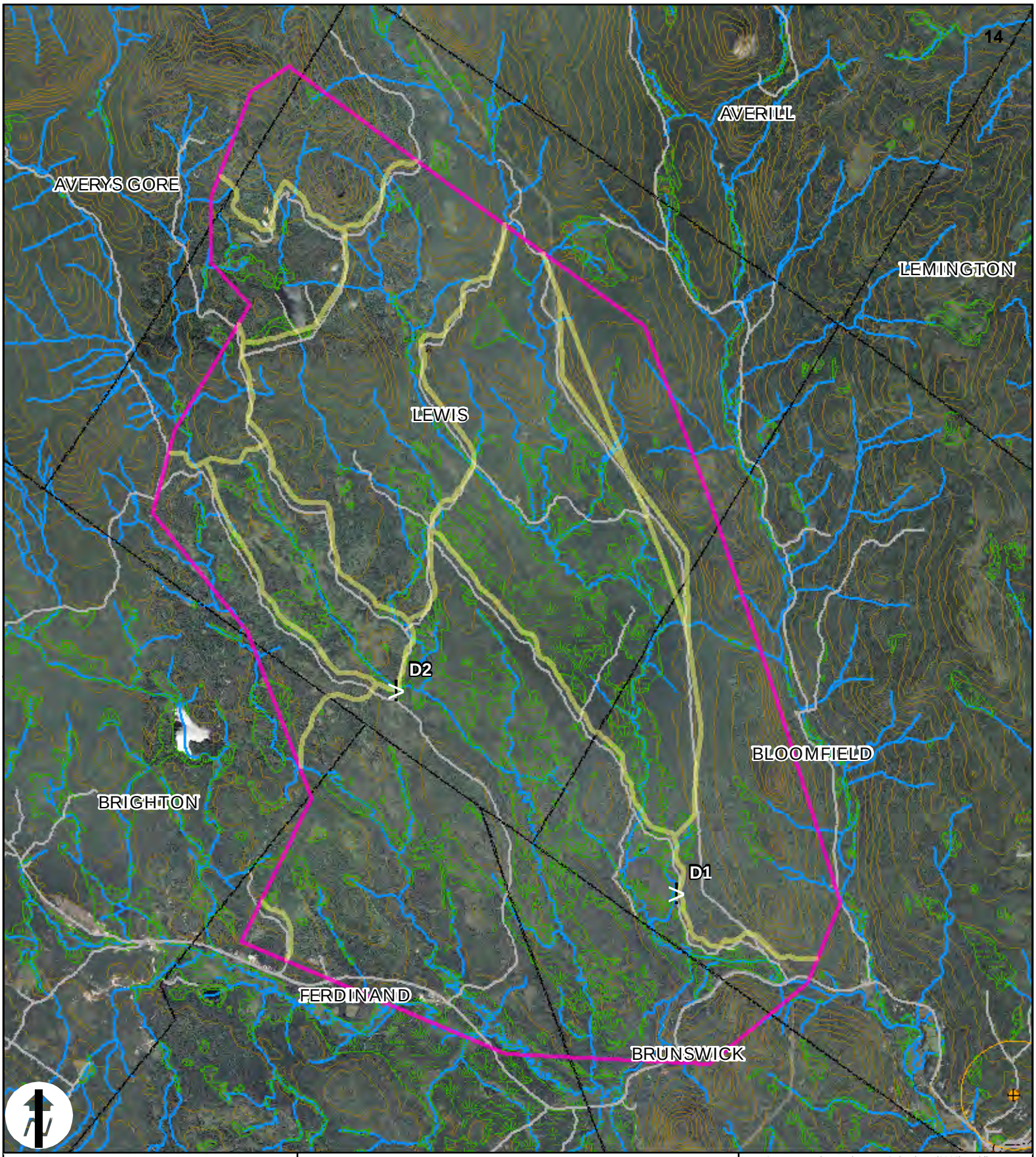
January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Approx Snowmobile Trails and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F802-425.7799
www.vhb.com



Legend

- Sampling Stations
- Snowmobile Trails (Approx Location)
- Investigation Area
- Public Water Source
- GroundWaterSPA
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 100 ft. Contour

F:\57369.00\GIS\project\Conte_Monitoring_Locations_Map_Updated.mxd

VAST Snow Chemistry Study
Silvio Conte Refuge Investigation Area
Northeast Kingdom, Vermont
Sampling Station Location Map

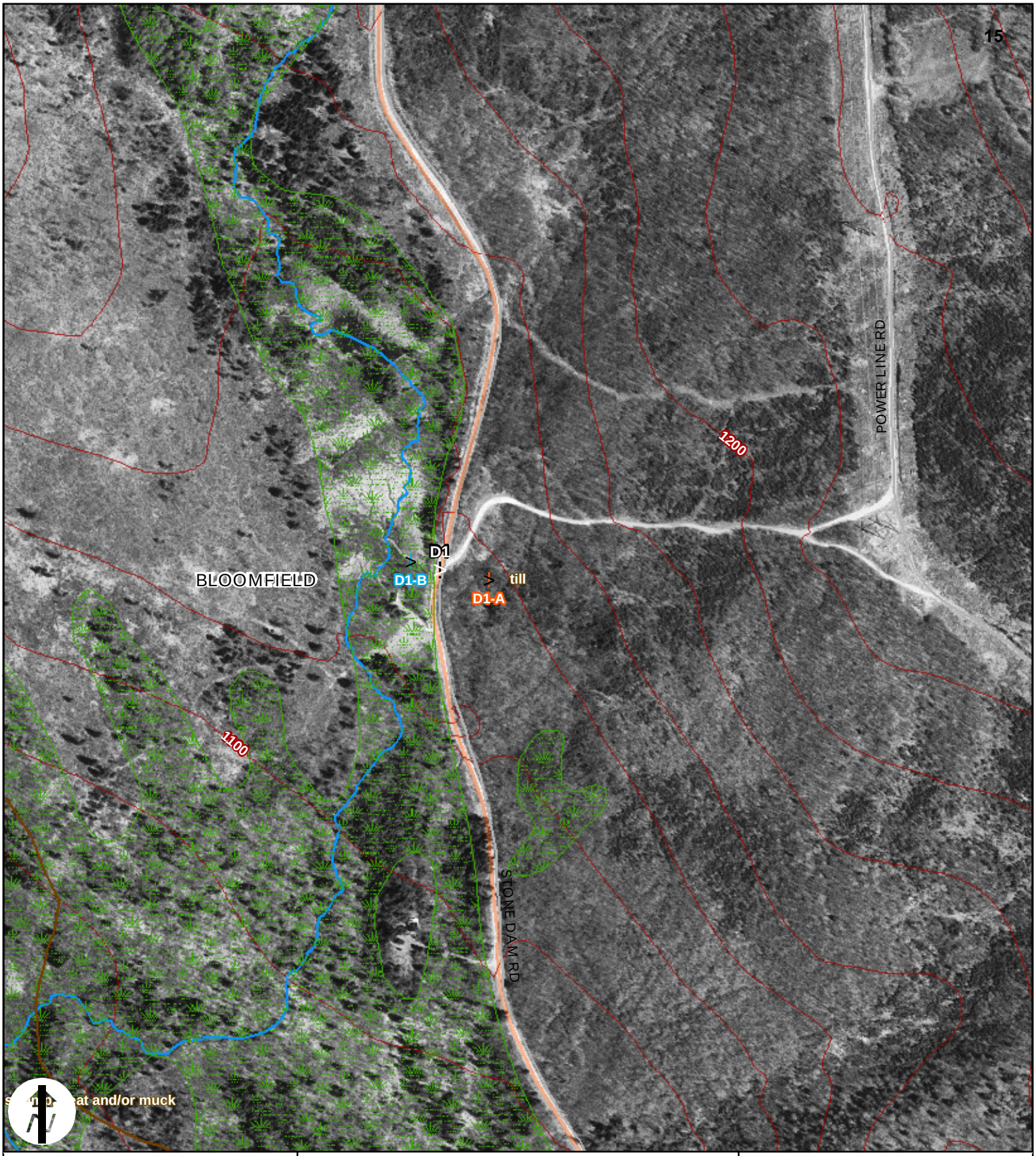
January 7, 2010

8,000 4,000 0 8,000 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Stations logged with Trimble GPS by VHB Pioneer (2010), Approx. Snowmobile Trails, and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

Sampling Stations

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Surficial Geology
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\Conte_Site_Location_Map_D1_Updated.mxd

VAST Snow Chemistry Study
Conte Refuge Investigation Area
Northeast Kingdom, Vermont
Sampling Station Location Map - D1

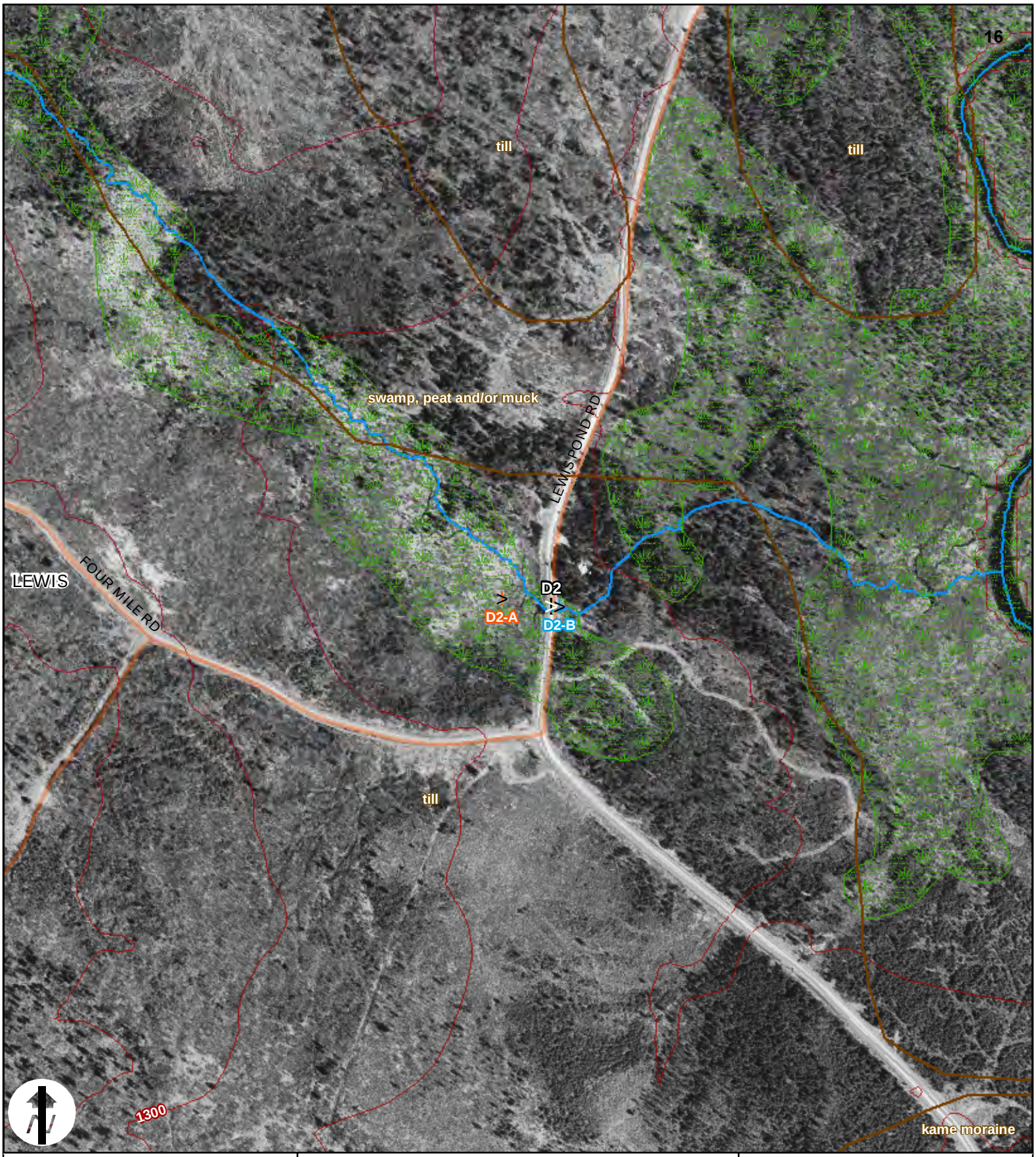
January 7, 2010

400 200 0 400 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Snowmobile Trails (Approx Location), 20 ft Contours,and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T 802 425 7788 F 802-425-7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Snowmobile Trails (Approx Locations)
- Public Water Source
- Groundwater SPA
- Surficial Geology
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

VAST Snow Chemistry Study
Conte Refuge Investigation Area
Northeast Kingdom, Vermont
Sampling Station Location Map - D2

January 7, 2010

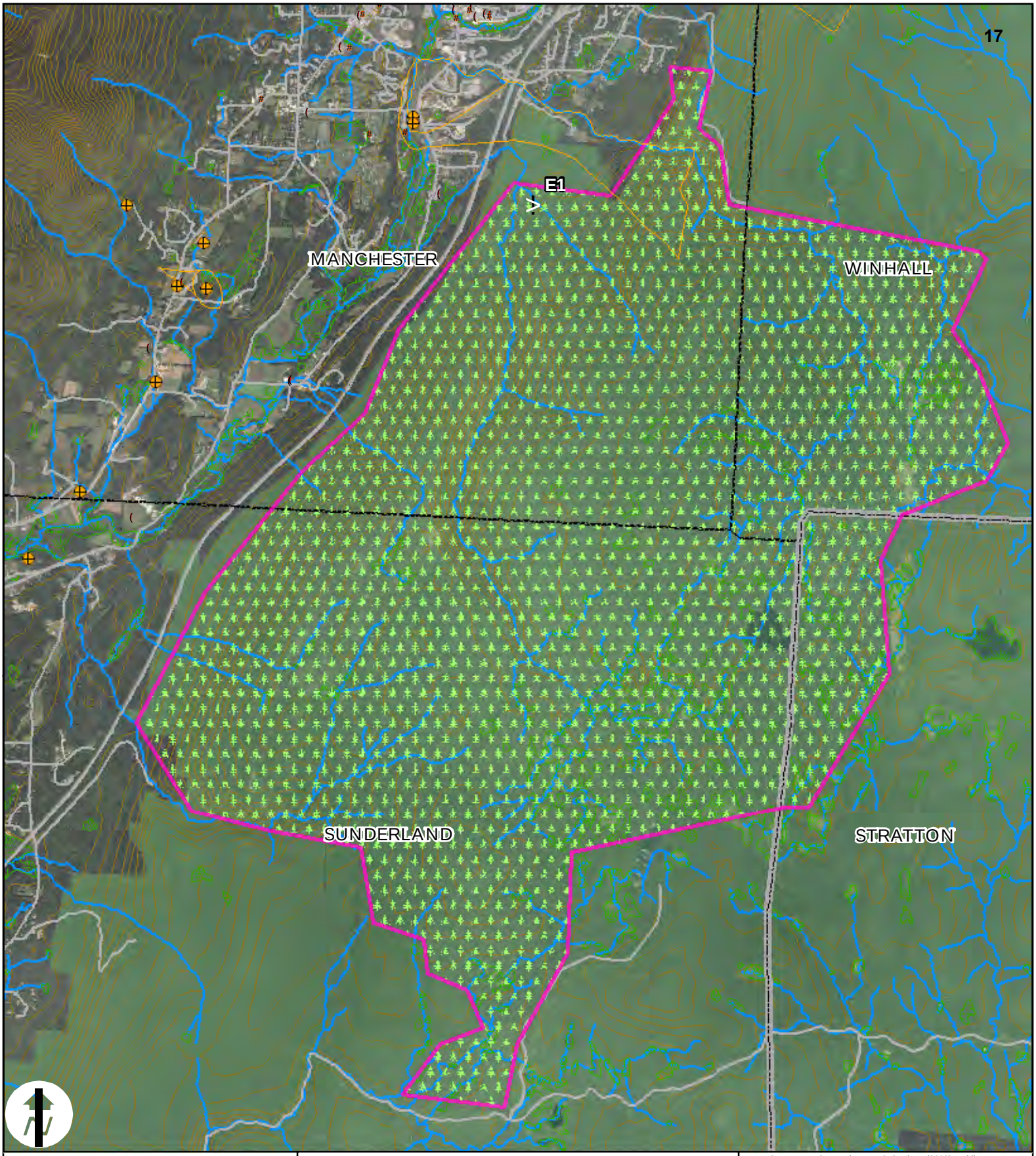
400 200 0 400 Feet

F:\57369.00\GIS\project\Conte_Site_Location_Map_D2_Updated.mxd

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Snowmobile Trails (Approx Location), 20 ft Contours, and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7,PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7788 F.802-425.7799
www.vhb.com



Legend

- Sampling Locations
- Snowmobile Trails (Approx Location)
- Investigation Area
- Lye Brook Wilderness Area
- LVRT Right of Way
- Public Water Source
- GroundWaterSPA
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 100 ft. Contour

F:\57369.00\GIS\project\LyeBrookWilderness_Monitoring_Locations_Map_Updated.mxd

VAST Snow Chemistry Study
Lye Brook Wilderness Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map

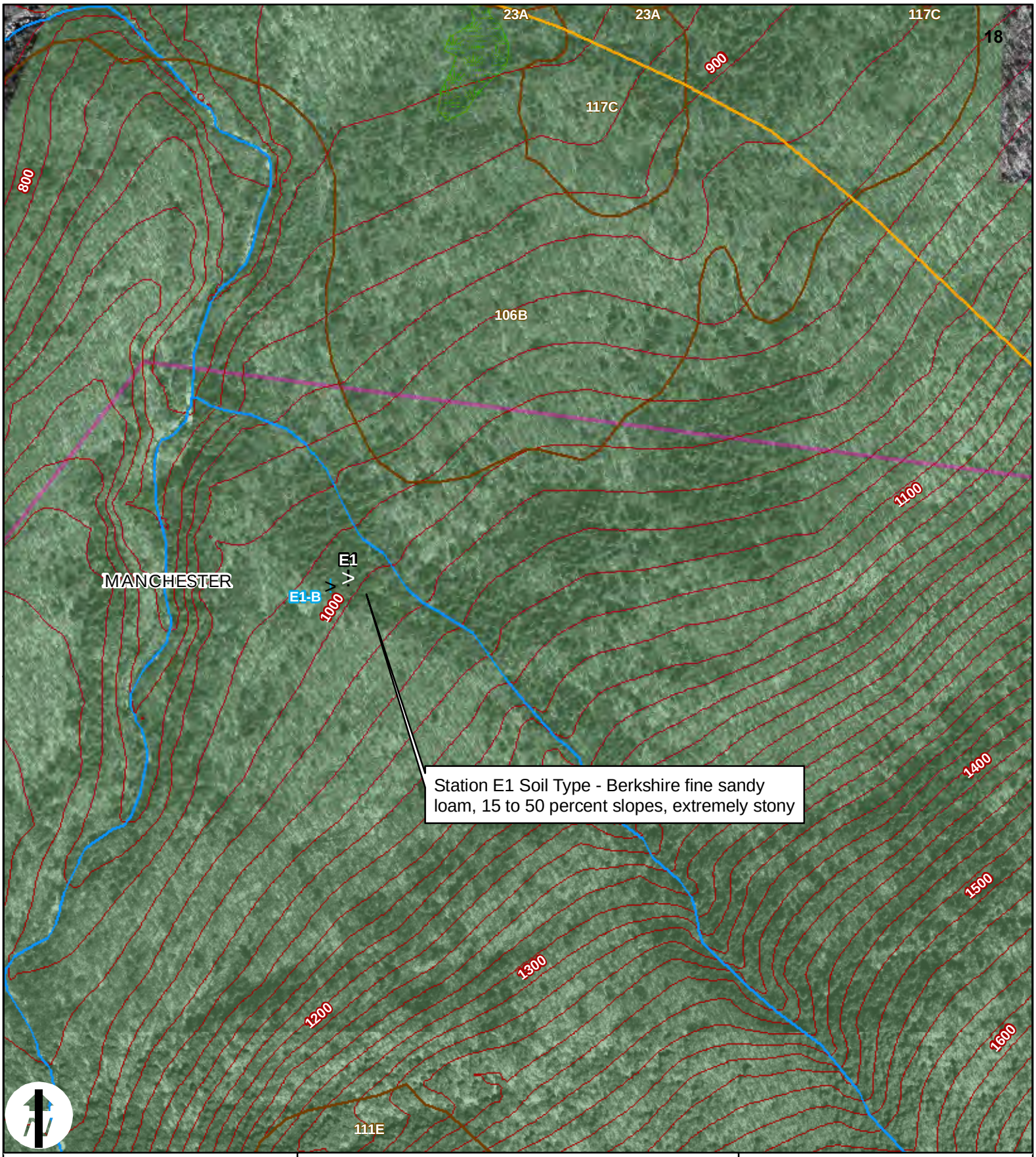
January 7, 2010

5,000 2,500 0 5,000 Feet

Prepared by: GAS

Sources: Background - NAIP Orthophoto (2003); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005); Green Mountain National Forest Boundary from VCGI; Streams and wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS by VHB Pioneer (2010); Snowmobile Trails (Approx Locations) and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T 802.425.7788 F 802-425.7799
www.vhb.com



Legend

- On Trail Stations (Snowpack/Soil)
- Off Trail Stations (Snowpack/Soil)
- Runoff/Snowmelt Sampling Stations
- Snowmobile Trails (Approx Location)
- Investigation Area
- LyeBrookWilderness_20ft_Contours
- Public Water Source
- Groundwater SPA
- Soils Data
- Green Mountain National Forest
- Roads (e911)
- VSWI Wetland
- Stream
- Underground Storage Tank
- Hazardous Waste Site
- 20' Contours

F:\57369.00\GIS\project\LyeBrookWilderness_Site_Location_Map_E1_Updated.mxd

VAST Snow Chemistry Study
Lye Brook Wilderness Investigation Area
Green Mountain National Forest, Vermont
Sampling Station Location Map
E1 (Reference Site)

January 19, 2010

500 250 0 500 Feet

Prepared by: GAS

Sources: Background - VMP Orthophoto (2006); Public Wells, Groundwater SPA, Hazardous Waste Sites, and USTs provided by VT ANR (2006); Roads are downloaded from e911 and VCGI (2005). Green Mountain National Forest boundary from VCGI, Streams, Soils and Wetlands from Vermont Hydrography Dataset and VCGI (2008); Sampling Station Locations logged with Trimble GPS unit by VHB Pioneer (2010); Approx Snowmobile Trails and Investigation Areas digitized by VHB Pioneer (2009).

VHB PIONEER
7056 US Route 7, PO Box 120
North Ferrisburgh, VT 05473
T.802.425.7738 F.802-425.7799
www.vhb.com

VAST Snow Chemistry Study QAPP
Monitoring Matrix
January 7, 2010

Monitoring Matrix				
Investigation Area	Stations	Sampling Schedule		
		Early Winter (January 2010)	Winter (February/March 2010)	Spring (April 2010)
LVRT	A1	R	SN1, SN2	R, SO
	A2	R	SN1, SN2	R, SO
	A3	R	SN1, SN2	R, SO
	A4	R	SN1, SN2	R, SO
Southern GMNF	B1	R	SN1, SN2	R, SO
	B2	R	SN1, SN2	R, SO
	B3	R	SN1, SN2	R, SO
Northern GMNF	C1	R	SN1, SN2	R, SO
	C2	R	SN1, SN2	R, SO
Conte NWR	D1	R	SN1, SN2	R, SO
	D2	R	SN1, SN2	R, SO
Lye Brook Wilderness	E1	R	SN1, SN2	R, SO

NOTES
R = Snowmelt/Runoff Sampling. One surface water runoff sample taken downstream of sampling station (laboratory analysis for VOCs and TPH-GRO).
SN1 = Snow Sampling. Two snow core samples taken - one in middle of snowmobile trail and one 50 meters to either side of trail (laboratory analysis for VOCs and TPH-GRO).
SN2 = Snow Sampling. One snow core sample taken in middle of snowmobile trail (laboratory analysis for VOCs and TPH-GRO).
SO = Soil Sampling. Two soil core samples taken - one in middle of snowmobile trail (laboratory analysis for PAHs, VOCs, and TPH-GRO); and on 50 meters to either side of trail (laboratory analysis for VOCs and TPH-GRO).

APPENDIX 2

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmobile Usage Monitoring

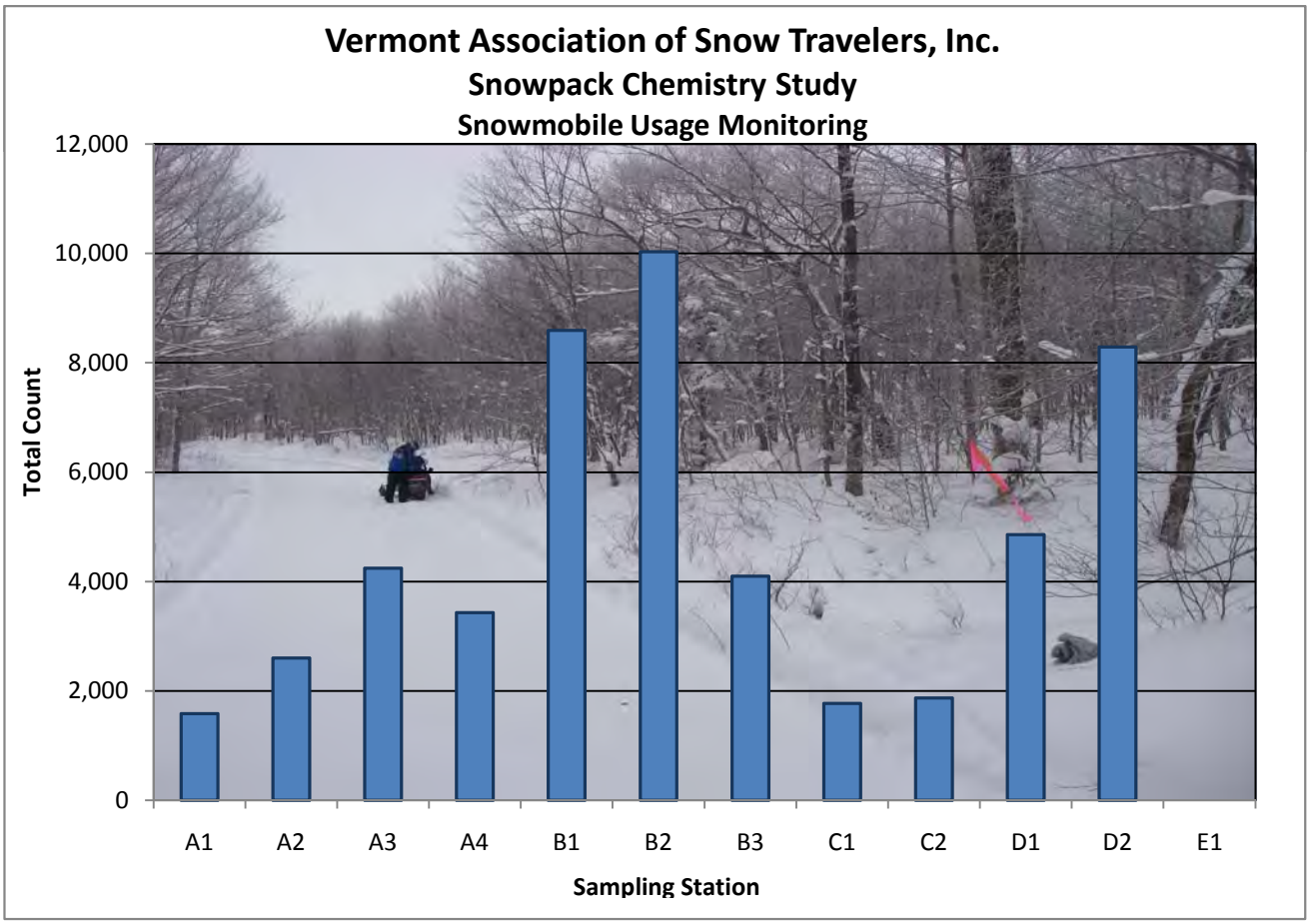
Snowmobile Usage Monitoring - Trail Counter Data				
Investigation Area	**Station**	**Recording Time (Days)**	**Total Count**	**Average per Day**
LVRT	A1	113	1,582	14
LVRT	A2	113	2,602	23
LVRT	A3	113	4,242	38
LVRT	A4	113	3,433	30
Southern GMNF	B1	127	8,594	68
Southern GMNF	B2	133	10,031	75
Southern GMNF	B3	127	4,095	32
Northern GMNF	C1	125	1,770	14
Northern GMNF	C2	104	1,868	18
Conte Refuge	D1	113	4,856	43
Conte Refuge	D2	113	8,290	73
Lye Brook Wilderness	E1	NA	0	0

Notes

Snowmobile usage data recorded with Trafx Infrared Trail Counters

No trail counter installed at reference site (Lye Brook Wilderness) as snowmobile is not allowed

NA - Not Applicable



Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
LVRT Investigation Area - Station A1-B

STATION A1-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Dates		STATISTICS		
		VWQS	VDWS (MCL)	VHA	1/4/2010*	4/8/2010**	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
LVRT Investigation Area - Station A2-B

STATION A2-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/4/2010***	**4/8/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
LVRT Investigation Area - Station A3-B

STATION A3-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/4/2010***	**4/8/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
LVRT Investigation Area - Station A4-B

STATION A4-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/4/2010***	**4/8/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Southern GMNF Investigation Area - Station B1-B

STATION B1-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Dates		STATISTICS		
		VWQS	VDWS (MCL)	VHA	1/5/2010*	4/22/2010**	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Southern GMNF Investigation Area - Station B2-B

STATION B2-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Dates		STATISTICS		
		VWQS	VDWS (MCL)	VHA	1/6/2010*	4/21/2010**	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Southern GMNF Investigation Area - Station B3-B

STATION B3-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Dates		STATISTICS		
		VWQS	VDWS (MCL)	VHA	1/5/2010*	4/22/2010**	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Northern GMNF Investigation Area - Station C1-B

STATION C1-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/6/2010***	**4/21/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Northern GMNF Investigation Area - Station C2-B

STATION C2-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/6/2010***	**4/21/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Conte Refuge Investigation Area - Station D1-B

STATION D1-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/4/2010***	**4/8/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Conte Refuge Investigation Area - Station D2-B

STATION D2-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/4/2010***	**4/8/2010****	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

** Sample representative of stream conditions immediately following the snowmobile season

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring
Lye Brook Wilderness Investigation Area - Station E1-B

STATION E1-B Snowmelt/Runoff Chemistry Monitoring									
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Water Standards**			**Sampling Dates**		**STATISTICS**		
		VWQS	**VDWS (MCL)**	**VHA**	**1/5/2010***	**4/21/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background stream conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snowmelt/Runoff Chemistry Monitoring

Pre-Season Summary Data Table

Snowmelt/Runoff Chemistry Monitoring Summary								
CHEMICAL COMPOUNDS	Regulatory Water Standards			Pre-Season/Reference Site				
	VWQS	VDWS	VHA	Mean	Min	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	13	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	13	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	13	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	13	0.0
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	13	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	13	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	13	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	13	0.0
Unidentified Peaks	--	--	--	0	0	0	13	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.2	< 0.20	13	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

< - indicates not detected with specified laboratory detection limit

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snowmelt/Runoff Chemistry Monitoring

End of Season Summary Data Table

Snowmelt/Runoff Chemistry Monitoring Summary								
CHEMICAL COMPOUNDS	Regulatory Water Standards			End of Season				
	VWQS	VDWS	VHA	Mean	Min	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	11	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	11	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	11	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	11	0.0
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	11	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	11	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	11	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	11	0.0
Unidentified Peaks	--	--	--	0	0	0	11	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.2	< 0.20	11	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

< - indicates not detected with specified laboratory detection limit

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snowmelt/Runoff Chemistry Monitoring

Overall Monitoring Summary

Snowmelt/Runoff Chemistry Monitoring Summary											
CHEMICAL COMPOUNDS	Regulatory Water Standards			Pre-Season/Wilderness				End-Season			
	VWQS	VDWS	VHA	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	13	0.0	< 1.0	< 0.5	11	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	13	0.0	< 2.0	< 1.0	11	0.0
Unidentified Peaks	--	--	--	0	0	13	0.0	0	0	11	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	13	0.0	< 0.20	< 0.10	11	0.0

Notes

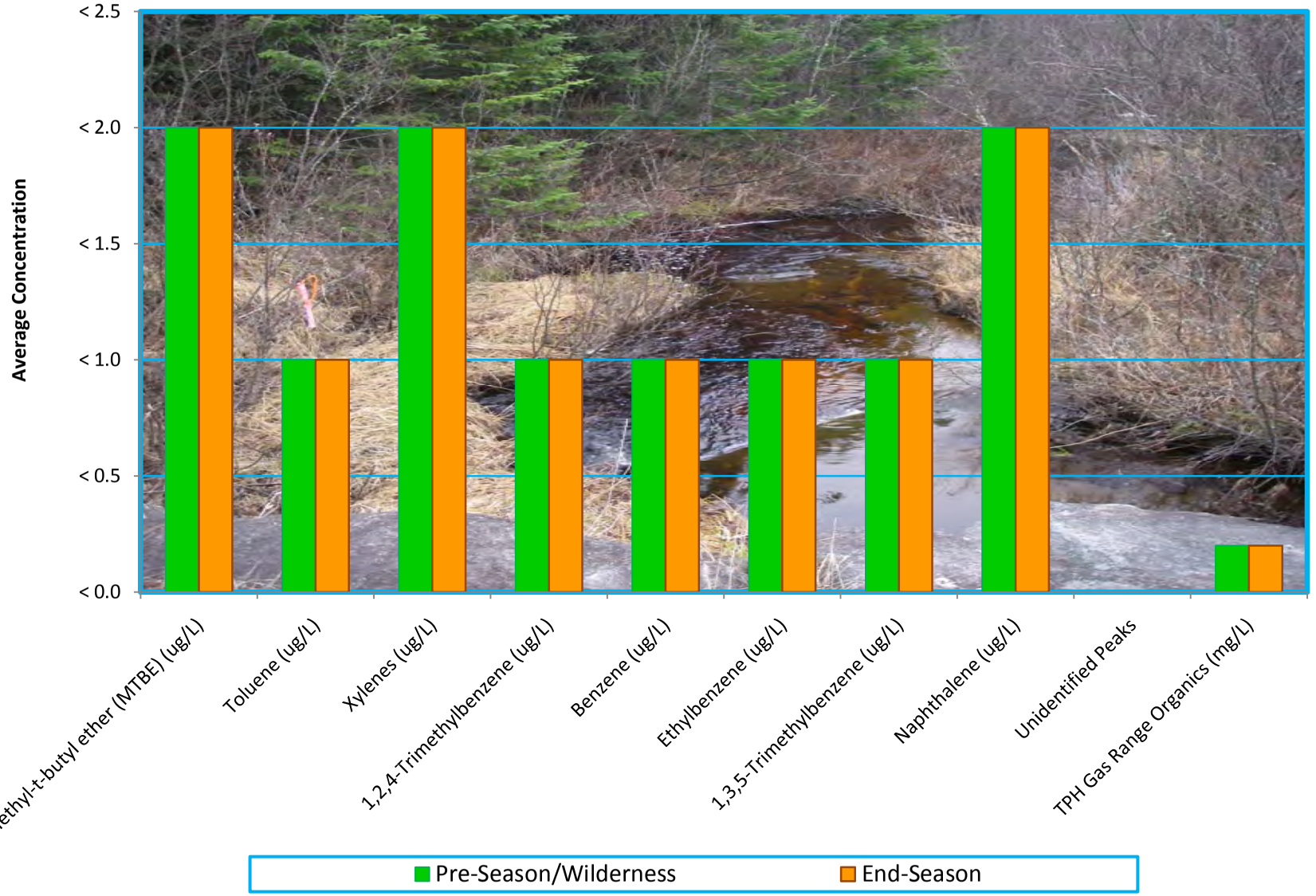
VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Vermont Association of Snowmobile Travelers, Inc.
Snowpack Chemistry Study
Snowmelt/Runoff Chemistry Monitoring Summary Graph



Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
LVRT Investigation Area - Station A1 (center of snowmobile trail)

STATION A1 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

LVRT Investigation Area - Station A1-A (150' away from snowmobile trail)

STATION A1-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
LVRT Investigation Area - Station A2 (center of snowmobile trail)

STATION A2 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

LVRT Investigation Area - Station A2-A (150' away from snowmobile trail)

STATION A2-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
LVRT Investigation Area - Station A3 (center of snowmobile trail)

STATION A3 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

LVRT Investigation Area - Station A3-A (150' away from snowmobile trail)

STATION A3-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
LVRT Investigation Area - Station A4 (center of snowmobile trail)

STATION A4 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

LVRT Investigation Area - Station A4-A (150' away from snowmobile trail)

STATION A4-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Southern GMNF Investigation Area - Station B1 (center of snowmobile trail)

STATION B1 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/23/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Southern GMNF Investigation Area - Station B1-A (150' away from snowmobile trail)

STATION B1-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	2/23/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Southern GMNF Investigation Area - Station B2 (center of snowmobile trail)

STATION B2 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/22/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	**1.3**	1.2	2	0.2
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Southern GMNF Investigation Area - Station B2-A (150' away from snowmobile trail)

STATION B2-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	2/22/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Southern GMNF Investigation Area - Station B3 (center of snowmobile trail)

STATION B3 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/23/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Southern GMNF Investigation Area - Station B3-A (150' away from snowmobile trail)

STATION B3-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	2/23/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Northern GMNF Investigation Area - Station C1 (center of snowmobile trail)

STATION C1 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/22/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Northern GMNF Investigation Area - Station C1-A (150' away from snowmobile trail)

STATION C1-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	2/22/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Northern GMNF Investigation Area - Station C2 (center of snowmobile trail)

STATION C2 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/23/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Northern GMNF Investigation Area - Station C2-A (150' away from snowmobile trail)

STATION C2-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	2/23/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Conte Refuge Investigation Area - Station D1 (center of snowmobile trail)

STATION D1 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Conte Refuge Investigation Area - Station D1-A (150' away from snowmobile trail)

STATION D1-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Conte Refuge Investigation Area - Station D2 (center of snowmobile trail)

STATION D2 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 3/3/2010		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Conte Refuge Investigation Area - Station D2-A (150' away from snowmobile trail)

STATION D2-A Snow Chemistry Monitoring								
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date	STATISTICS		
		VWQS	VDWS (MCL)	VHA	3/3/2010*	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	1	NA
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	1	NA
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	1	NA
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1	NA
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	1	NA
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	1	NA
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	1	NA
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	1	NA
	Unidentified Peaks	--	--	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring
Lye Brook Investigation Area - Station E1 (reference site)

STATION E1 Snow Chemistry Monitoring									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			Sampling Date 2/22/2010*		STATISTICS		
		VWQS	VDWS (MCL)	VHA	Sample #1	Sample #2	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	2	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	2	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	2	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	< 1.0	2	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	2	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	2	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	2	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	2	0.0
	Unidentified Peaks	--	--	--	0	0	0	2	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	2	0.0

Notes

* Sample representative of background snow conditions

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

On-Trail Summary Data Table

Sampling Stations: A1, A2, A3, A4, B1, B2, B3, C1, C2, D1, D2

Snow Chemistry Monitoring Summary									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			STATISTICS				
		VWQS	VDWS (MCL)	VHA	Mean	Min	Max	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	22	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	22	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	22	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	1.01	< 1.0	1.30	22	0.06
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	22	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	22	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	22	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	22	0.0
	Unidentified Peaks	--	--	--	0	0	0	22	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	22	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

150 feet Off-Trail/Wilderness Site - Reference Stations Summary Data Table

Sampling Stations: A1-A, A2-A, A3-A, A4-A, B1-A, B2-A, B3-A, C1-A, C2-A, D1-A, D2-A, E

Snow Chemistry Monitoring Summary									
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Water Standards			STATISTICS				
		VWQS	VDWS (MCL)	VHA	Mean	Min	Max	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	< 2.0	13	0.0
	Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	< 1.0	13	0.0
	Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	< 2.0	13	0.0
	1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	1.0	13	0.0
	Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	< 1.0	13	0.0
	Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	< 1.0	13	0.0
	1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	< 1.0	13	0.0
	Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	< 2.0	13	0.0
	Unidentified Peaks	--	--	--	0	0	0	13	0.0
TPH Method 8015B	TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	< 0.20	13	0.0

Notes

VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Snow Chemistry Monitoring

Overall Monitoring Summary

Snow Chemistry Monitoring Summary											
CHEMICAL COMPOUNDS	Regulatory Water Standards			Reference Station Sampling				On-Trail Sampling			
	VWQS	VDWS	VHA	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/L)	--	--	40.0	< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
Toluene (ug/L)	6,800	1,000		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Xylenes (ug/L)	--	10,000		< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
1,2,4-Trimethylbenzene (ug/L)	--	--	5.0	< 1.0	< 1.0	13	0.0	1.01	**1.30**	22	0.1
Benzene (ug/L)	1.2	5.0		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Ethylbenzene (ug/L)	3,100	700		< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
1,3,5-Trimethylbenzene (ug/L)	--	--	4.0	< 1.0	< 1.0	13	0.0	< 1.0	< 1.0	22	0.0
Naphthalene (ug/L)	--	--	20.0	< 2.0	< 2.0	13	0.0	< 2.0	< 2.0	22	0.0
Unidentified Peaks	--	--	--	0	0	13	0.0	0	0	22	0.0
TPH Gas Range Organics (mg/L)	--	--	--	< 0.20	< 0.20	13	0.0	< 0.20	< 0.20	22	0.0

Notes

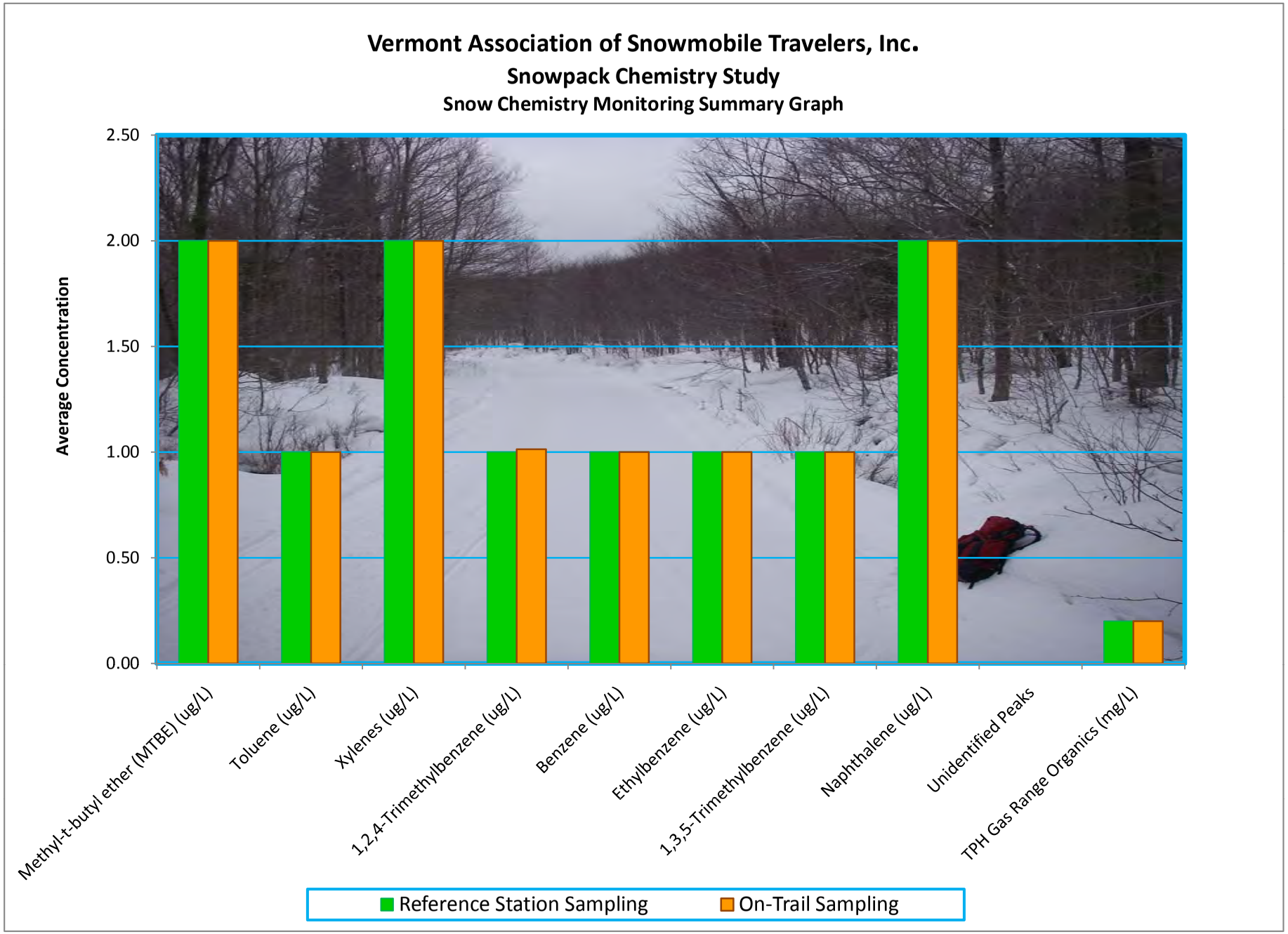
VWQS - Vermont Water Quality Standards 2008 - Water Quality Criteria for the Protection of Human Health, Consumption of Water & Organisms

VDWS - Vermont Drinking Water Standards (Maximum Contaminant Levels) - Vermont Water Supply Rule 2005

VHA - Vermont Heath Advisories - Vermont Department of Health Drinking Water Guidance 2002

-- No Regulatory Standard

NA - not applicable


Vermont Association of Snowmobile Travelers, Inc.
Snowpack Chemistry Study
Snow Chemistry Monitoring Summary Graph
Average Concentration
2.50
2.00
1.50
1.00
0.50
0.00
Methyl-t-butyl ether (MTBE) (ug/L)
Toluene (ug/L)
Xylenes (ug/L)
1,2,4-Trimethylbenzene (ug/L)
Benzene (ug/L)
Ethylbenzene (ug/L)
1,3,5-Trimethylbenzene (ug/L)
Naphthalene (ug/L)
Unidentified Peaks
TPH Gas Range Organics (mg/L)
Reference Station Sampling
On-Trail Sampling

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A1 (center of snowmobile trail)

STATION A1 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.60	< 1.60	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 18.7	< 18.7	1	NA
	Acenaphthylene (ug/Kg)	--	**230**	230	1	NA
	Fluorene (ug/Kg)	560,000	< 18.7	< 18.7	1	NA
	Anthracene (ug/Kg)	12,000,000	**150**	150	1	NA
	Pyrene (ug/Kg)	4,200,000	**1,570**	1,570	1	NA
	Chrysene (ug/Kg)	160,000	**1,090**	1,090	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**584**	584	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**1,120**	1,120	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**888**	888	1	NA
	Naphthalene (ug/Kg)	84,000	< 18.7	< 18.7	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 18.7	< 18.7	1	NA
	Acenaphthene (ug/Kg)	570,000	< 18.7	< 18.7	1	NA
	Phenanthrene (ug/Kg)	--	**166**	166	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**1,730**	1,730	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**1,220**	1,220	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**1,820**	1,820	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**997**	997	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	**239**	239	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A1-A (150' away from snowmobile trail)

STATION A1-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 120.0	< 120.0	1	NA
	Toluene (ug/Kg)	12,000	< 60.0	< 60.0	1	NA
	Xylenes (ug/Kg)	600,000	< 120.0	< 120.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Benzene (ug/Kg)	30	< 60.0	< 60.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 60.0	< 60.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 120.0	< 120.0	1	NA
	Unidentified Peaks	--	**7**	7	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 0.20	< 0.20	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A2 (center of snowmobile trail)

STATION A2 Soil Chemistry Monitoring						
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	Sampling Date	STATISTICS		
		EPA SSG	4/8/2010	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.60	< 1.60	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 19.9	< 19.9	1	NA
	Acenaphthylene (ug/Kg)	--	**20.2**	20.2	1	NA
	Fluorene (ug/Kg)	560,000	< 19.9	< 19.9	1	NA
	Anthracene (ug/Kg)	12,000,000	< 19.9	< 19.9	1	NA
	Pyrene (ug/Kg)	4,200,000	**205**	205	1	NA
	Chrysene (ug/Kg)	160,000	**177**	177	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**59.5**	59.5	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**152**	152	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**139**	139	1	NA
	Naphthalene (ug/Kg)	84,000	< 19.9	< 19.9	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 19.9	< 19.9	1	NA
	Acenaphthene (ug/Kg)	570,000	< 19.9	< 19.9	1	NA
	Phenanthrene (ug/Kg)	--	**38.9**	38.9	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**220**	220	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**150**	150	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**310**	310	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**135**	135	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	**33.7**	33.7	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A2-A (150' away from snowmobile trail)

STATION A2-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Toluene (ug/Kg)	12,000	< 20.0	< 20.0	1	NA
	Xylenes (ug/Kg)	600,000	< 40.0	< 40.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Benzene (ug/Kg)	30	< 20.0	< 20.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 20.0	< 20.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 40.0	< 40.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 2.20	< 2.20	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A3 (center of snowmobile trail)

STATION A3 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 25.0	< 25.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.50	< 1.50	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 18.3	< 18.3	1	NA
	Acenaphthylene (ug/Kg)	--	**383**	383	1	NA
	Fluorene (ug/Kg)	560,000	**68.7**	68.7	1	NA
	Anthracene (ug/Kg)	12,000,000	**406**	406	1	NA
	Pyrene (ug/Kg)	4,200,000	**3,520**	3,520	1	NA
	Chrysene (ug/Kg)	160,000	**2,020**	2,020	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**955**	955	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**1,640**	1,640	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**1,380**	1,380	1	NA
	Naphthalene (ug/Kg)	84,000	**18.6**	18.6	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 18.3	< 18.3	1	NA
	Acenaphthene (ug/Kg)	570,000	**29.2**	29.2	1	NA
	Phenanthrene (ug/Kg)	--	**831**	831	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**3,090**	3,090	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**1,980**	1,980	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**4,220**	4,220	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**2,180**	2,180	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	**420.0**	420.0	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A3-A (150' away from snowmobile trail)

STATION A3-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 80.0	< 80.0	1	NA
	Toluene (ug/Kg)	12,000	< 40.0	< 40.0	1	NA
	Xylenes (ug/Kg)	600,000	< 80.0	< 80.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Benzene (ug/Kg)	30	< 40.0	< 40.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 40.0	< 40.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 80.0	< 80.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 4.40	< 4.40	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Soil Chemistry Monitoring
LVRT Investigation Area - Station A4 (center of snowmobile trail)

STATION A4 Soil Chemistry Monitoring						
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	Sampling Date	STATISTICS		
		EPA SSG	4/8/2010	Mean	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 30.0	< 30.0	1	NA
	Unidentified Peaks	--	**1**	1	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.50	< 1.50	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	**18.1**	18.1	1	NA
	Acenaphthylene (ug/Kg)	--	**449**	449	1	NA
	Fluorene (ug/Kg)	560,000	**62.3**	62.3	1	NA
	Anthracene (ug/Kg)	12,000,000	**283**	283	1	NA
	Pyrene (ug/Kg)	4,200,000	**3,980**	3,980	1	NA
	Chrysene (ug/Kg)	160,000	**2,660**	2,660	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**1,380**	1,380	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**2,140**	2,140	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**1,810**	1,810	1	NA
	Naphthalene (ug/Kg)	84,000	**35.1**	35.1	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 18.1	< 18.1	1	NA
	Acenaphthene (ug/Kg)	570,000	**26.1**	26.1	1	NA
	Phenanthrene (ug/Kg)	--	**1,090**	1,090	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**4,890**	4,890	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**2,720**	2,720	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**4,270**	4,270	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**2,370**	2,370	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	**527**	527	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

value exceeds regulatory standard

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station A4-A (150' away from snowmobile trail)

STATION A4-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Toluene (ug/Kg)	12,000	< 30.0	< 30.0	1	NA
	Xylenes (ug/Kg)	600,000	< 60.0	< 60.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Benzene (ug/Kg)	30	< 30.0	< 30.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 30.0	< 30.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 60.0	< 60.0	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 4.40	< 4.40	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Southern GMNF Investigation Area - Station B1 (center of snowmobile trail)

STATION B1 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.20	< 1.20	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 17.4	< 17.4	1	NA
	Acenaphthylene (ug/Kg)	--	< 6.9	< 6.9	1	NA
	Fluorene (ug/Kg)	560,000	< 6.9	< 6.9	1	NA
	Anthracene (ug/Kg)	12,000,000	< 6.9	< 6.9	1	NA
	Pyrene (ug/Kg)	4,200,000	< 6.9	< 6.9	1	NA
	Chrysene (ug/Kg)	160,000	< 6.9	< 6.9	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 6.9	< 6.9	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 6.9	< 6.9	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 6.9	< 6.9	1	NA
	Naphthalene (ug/Kg)	84,000	< 17.4	< 17.4	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 17.4	< 17.4	1	NA
	Acenaphthene (ug/Kg)	570,000	< 6.9	< 6.9	1	NA
	Phenanthrene (ug/Kg)	--	< 6.9	< 6.9	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 6.9	< 6.9	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 6.9	< 6.9	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 6.9	< 6.9	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 6.9	< 6.9	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 6.9	< 6.9	1	NA
	Unidentified Peaks	--	0	0	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station B1-A (150' away from snowmobile trail)

STATION B1-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 80.0	< 80.0	1	NA
	Toluene (ug/Kg)	12,000	< 40.0	< 40.0	1	NA
	Xylenes (ug/Kg)	600,000	< 80.0	< 80.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Benzene (ug/Kg)	30	< 40.0	< 40.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 40.0	< 40.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 80.0	< 80.0	1	NA
	Unidentified Peaks	--	**> 10**	10	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 5.00	< 5.00	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Southern GMNF Investigation Area - Station B2 (center of snowmobile trail)

STATION B2 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/21/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Toluene (ug/Kg)	12,000	< 30.0	< 30.0	1	NA
	Xylenes (ug/Kg)	600,000	< 60.0	< 60.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Benzene (ug/Kg)	30	< 30.0	< 30.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 30.0	< 30.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 60.0	< 60.0	1	NA
	Unidentified Peaks	--	**6**	6	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 3.30	< 3.30	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 21.9	< 21.9	1	NA
	Acenaphthylene (ug/Kg)	--	< 8.7	< 8.7	1	NA
	Fluorene (ug/Kg)	560,000	< 8.7	< 8.7	1	NA
	Anthracene (ug/Kg)	12,000,000	< 8.7	< 8.7	1	NA
	Pyrene (ug/Kg)	4,200,000	< 8.7	< 8.7	1	NA
	Chrysene (ug/Kg)	160,000	< 8.7	< 8.7	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 8.7	< 8.7	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 8.7	< 8.7	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 8.7	< 8.7	1	NA
	Naphthalene (ug/Kg)	84,000	< 21.9	< 21.9	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 21.9	< 21.9	1	NA
	Acenaphthene (ug/Kg)	570,000	< 8.7	< 8.7	1	NA
	Phenanthrene (ug/Kg)	--	< 8.7	< 8.7	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 8.7	< 8.7	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 8.7	< 8.7	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 8.7	< 8.7	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 8.7	< 8.7	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 8.7	< 8.7	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station B2-A (150' away from snowmobile trail)

STATION B2-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/21/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 100.0	< 100.0	1	NA
	Toluene (ug/Kg)	12,000	< 50.0	< 50.0	1	NA
	Xylenes (ug/Kg)	600,000	< 100.0	< 100.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 50.0	< 50.0	1	NA
	Benzene (ug/Kg)	30	< 50.0	< 50.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 50.0	< 50.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 50.0	< 50.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 100.0	< 100.0	1	NA
	Unidentified Peaks	--	**> 10**	10	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 6.60	< 6.60	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Southern GMNF Investigation Area - Station B3 (center of snowmobile trail)

STATION B3 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Toluene (ug/Kg)	12,000	< 30.0	< 30.0	1	NA
	Xylenes (ug/Kg)	600,000	< 60.0	< 60.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Benzene (ug/Kg)	30	< 30.0	< 30.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 30.0	< 30.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 60.0	< 60.0	1	NA
	Unidentified Peaks	--	**6**	6	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 3.60	< 3.60	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 25.3	< 25.3	1	NA
	Acenaphthylene (ug/Kg)	--	< 10.1	< 10.1	1	NA
	Fluorene (ug/Kg)	560,000	< 10.1	< 10.1	1	NA
	Anthracene (ug/Kg)	12,000,000	**66.1**	66.1	1	NA
	Pyrene (ug/Kg)	4,200,000	**93.3**	93.3	1	NA
	Chrysene (ug/Kg)	160,000	**67.6**	67.6	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**11.1**	11.1	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**16.7**	16.7	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**18.2**	18.2	1	NA
	Naphthalene (ug/Kg)	84,000	< 25.3	< 25.3	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 25.3	< 25.3	1	NA
	Acenaphthene (ug/Kg)	570,000	< 10.1	10.1	1	NA
	Phenanthrene (ug/Kg)	--	**31.8**	31.8	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**122**	122	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**33.3**	33.3	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**40.9**	40.9	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**15.6**	15.6	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 10.1	< 10.1	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station B2-A (150' away from snowmobile trail)

STATION B2-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 80.0	< 80.0	1	NA
	Toluene (ug/Kg)	12,000	< 40.0	< 40.0	1	NA
	Xylenes (ug/Kg)	600,000	< 80.0	< 80.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Benzene (ug/Kg)	30	< 40.0	< 40.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 40.0	< 40.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 80.0	< 80.0	1	NA
	Unidentified Peaks	--	**6**	6	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 2.70	< 2.70	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Northern GMNF Investigation Area - Station C1 (center of snowmobile trail)

STATION C1 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/21/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	**24.4**	24.4	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	**5**	5	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 2.20	< 2.20	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 19.3	< 19.3	1	NA
	Acenaphthylene (ug/Kg)	--	< 7.7	< 7.7	1	NA
	Fluorene (ug/Kg)	560,000	< 7.7	< 7.7	1	NA
	Anthracene (ug/Kg)	12,000,000	< 7.7	< 7.7	1	NA
	Pyrene (ug/Kg)	4,200,000	**53.7**	53.7	1	NA
	Chrysene (ug/Kg)	160,000	**29.3**	29.3	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	**13.5**	13.5	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	**25.9**	25.9	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	**21.2**	21.2	1	NA
	Naphthalene (ug/Kg)	84,000	< 19.3	< 19.3	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 19.3	< 19.3	1	NA
	Acenaphthene (ug/Kg)	570,000	< 7.7	< 7.7	1	NA
	Phenanthrene (ug/Kg)	--	**32.0**	32.0	1	NA
	Fluoranthene (ug/Kg)	4,300,000	**73.4**	73.4	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	**26.6**	26.6	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	**38.6**	38.6	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	**28.2**	28.2	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 7.7	< 7.7	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station C1-A (150' away from snowmobile trail)

STATION C1-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 100.0	< 100.0	1	NA
	Toluene (ug/Kg)	12,000	< 50.0	< 50.0	1	NA
	Xylenes (ug/Kg)	600,000	< 100.0	< 100.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 50.0	< 50.0	1	NA
	Benzene (ug/Kg)	30	< 50.0	< 50.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 50.0	< 50.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 50.0	< 50.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 100.0	< 100.0	1	NA
	Unidentified Peaks	--	**5**	5	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 7.60	< 7.60	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Northern GMNF Investigation Area - Station C2 (center of snowmobile trail)

STATION C2 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/21/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Toluene (ug/Kg)	12,000	< 20.0	< 20.0	1	NA
	Xylenes (ug/Kg)	600,000	< 40.0	< 40.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Benzene (ug/Kg)	30	< 20.0	< 20.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 20.0	< 20.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 40.0	< 40.0	1	NA
	Unidentified Peaks	--	**5**	5	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 2.40	< 2.40	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 22.3	< 22.3	1	NA
	Acenaphthylene (ug/Kg)	--	< 8.9	< 8.9	1	NA
	Fluorene (ug/Kg)	560,000	< 8.9	< 8.9	1	NA
	Anthracene (ug/Kg)	12,000,000	< 8.9	< 8.9	1	NA
	Pyrene (ug/Kg)	4,200,000	< 8.9	< 8.9	1	NA
	Chrysene (ug/Kg)	160,000	< 8.9	< 8.9	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 8.9	< 8.9	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 8.9	< 8.9	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 8.9	< 8.9	1	NA
	Naphthalene (ug/Kg)	84,000	< 22.3	< 22.3	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 22.3	< 22.3	1	NA
	Acenaphthene (ug/Kg)	570,000	< 8.9	< 8.9	1	NA
	Phenanthrene (ug/Kg)	--	< 8.9	< 8.9	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 8.9	< 8.9	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 8.9	< 8.9	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 8.9	< 8.9	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 8.9	< 8.9	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 8.9	< 8.9	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station C2-A (150' away from snowmobile trail)

STATION C2-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/22/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 80.0	< 80.0	1	NA
	Toluene (ug/Kg)	12,000	< 40.0	< 40.0	1	NA
	Xylenes (ug/Kg)	600,000	< 80.0	< 80.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Benzene (ug/Kg)	30	< 40.0	< 40.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 40.0	< 40.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 80.0	< 80.0	1	NA
	Unidentified Peaks	--	**4**	4	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 6.00	< 6.00	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Conte Refuge Investigation Area - Station D1 (center of snowmobile trail)

STATION D1 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.30	< 1.30	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 17.8	< 17.8	1	NA
	Acenaphthylene (ug/Kg)	--	< 7.1	< 7.1	1	NA
	Fluorene (ug/Kg)	560,000	< 7.1	< 7.1	1	NA
	Anthracene (ug/Kg)	12,000,000	< 7.1	< 7.1	1	NA
	Pyrene (ug/Kg)	4,200,000	< 7.1	< 7.1	1	NA
	Chrysene (ug/Kg)	160,000	< 7.1	< 7.1	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 7.1	< 7.1	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 7.1	< 7.1	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 7.1	< 7.1	1	NA
	Naphthalene (ug/Kg)	84,000	< 17.8	< 17.8	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 17.8	< 17.8	1	NA
	Acenaphthene (ug/Kg)	570,000	< 7.1	< 7.1	1	NA
	Phenanthrene (ug/Kg)	--	< 7.1	< 7.1	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 7.1	< 7.1	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 7.1	< 7.1	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 7.1	< 7.1	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 7.1	< 7.1	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 7.1	< 7.1	1	NA
	Unidentified Peaks	--	0	0	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station D1-A (150' away from snowmobile trail)

STATION D1-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Toluene (ug/Kg)	12,000	< 30.0	< 30.0	1	NA
	Xylenes (ug/Kg)	600,000	< 60.0	< 60.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Benzene (ug/Kg)	30	< 30.0	< 30.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 30.0	< 30.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 60.0	< 60.0	1	NA
	Unidentified Peaks	--	**6**	6	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 2.90	< 2.90	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Conte Refuge Investigation Area - Station D2 (center of snowmobile trail)

STATION D2 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010**	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 20.0	< 20.0	1	NA
	Toluene (ug/Kg)	12,000	< 10.0	< 10.0	1	NA
	Xylenes (ug/Kg)	600,000	< 20.0	< 20.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Benzene (ug/Kg)	30	< 10.0	< 10.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 10.0	< 10.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 10.0	< 10.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 20.0	< 20.0	1	NA
	Unidentified Peaks	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.10	< 1.10	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 17.4	< 17.4	1	NA
	Acenaphthylene (ug/Kg)	--	< 7.0	< 7.0	1	NA
	Fluorene (ug/Kg)	560,000	< 7.0	< 7.0	1	NA
	Anthracene (ug/Kg)	12,000,000	< 7.0	< 7.0	1	NA
	Pyrene (ug/Kg)	4,200,000	< 7.0	< 7.0	1	NA
	Chrysene (ug/Kg)	160,000	< 7.0	< 7.0	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 7.0	< 7.0	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 7.0	< 7.0	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 7.0	< 7.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 17.4	< 17.4	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 17.4	< 17.4	1	NA
	Acenaphthene (ug/Kg)	570,000	< 7.0	< 7.0	1	NA
	Phenanthrene (ug/Kg)	--	< 7.0	< 7.0	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 7.0	< 7.0	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 7.0	< 7.0	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 7.0	< 7.0	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 7.0	< 7.0	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 7.0	< 7.0	1	NA
	Unidentified Peaks	--	0	0	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

LVRT Investigation Area - Station D2-A (150' away from snowmobile trail)

STATION D2-A Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/8/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 60.0	< 60.0	1	NA
	Toluene (ug/Kg)	12,000	< 30.0	< 30.0	1	NA
	Xylenes (ug/Kg)	600,000	< 60.0	< 60.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Benzene (ug/Kg)	30	< 30.0	< 30.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 30.0	< 30.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 30.0	< 30.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 60.0	< 60.0	1	NA
	Unidentified Peaks	--	**> 10**	10	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 3.60	< 3.60	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Lye Brook Wilderness Investigation Area - Station E1 (reference site)

STATION E1 Soil Chemistry Monitoring						
LAB ANALYSIS	**CHEMICAL COMPOUNDS**	**Regulatory Soil Standards**	**Sampling Date**	**STATISTICS**		
		EPA SSG	**4/21/2010***	**Mean**	**n**	**St Dev.**
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 80.0	< 80.0	1	NA
	Toluene (ug/Kg)	12,000	< 40.0	< 40.0	1	NA
	Xylenes (ug/Kg)	600,000	< 80.0	< 80.0	1	NA
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Benzene (ug/Kg)	30	< 40.0	< 40.0	1	NA
	Ethylbenzene (ug/Kg)	13,000	< 40.0	< 40.0	1	NA
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 40.0	< 40.0	1	NA
	Naphthalene (ug/Kg)	84,000	< 80.0	< 80.0	1	NA
	Unidentified Peaks	--	0	0	1	NA
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 3.70	< 3.70	1	NA
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 23.6	< 23.6	1	NA
	Acenaphthylene (ug/Kg)	--	< 9.4	< 9.4	1	NA
	Fluorene (ug/Kg)	560,000	< 9.4	< 9.4	1	NA
	Anthracene (ug/Kg)	12,000,000	< 9.4	< 9.4	1	NA
	Pyrene (ug/Kg)	4,200,000	< 9.4	< 9.4	1	NA
	Chrysene (ug/Kg)	160,000	< 9.4	< 9.4	1	NA
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 9.4	< 9.4	1	NA
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 9.4	< 9.4	1	NA
	Benzo(g,h,i)perylene (ug/Kg)	--	< 9.4	< 9.4	1	NA
	Naphthalene (ug/Kg)	84,000	< 23.6	< 23.6	1	NA
	1-Methylnaphthalene (ug/Kg)	--	< 23.6	< 23.6	1	NA
	Acenaphthene (ug/Kg)	570,000	< 9.4	< 9.4	1	NA
	Phenanthrene (ug/Kg)	--	< 9.4	< 9.4	1	NA
	Fluoranthene (ug/Kg)	4,300,000	< 9.4	< 9.4	1	NA
	Benzo(a)anthracene (ug/Kg)	2,000	< 9.4	< 9.4	1	NA
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 9.4	< 9.4	1	NA
	Benzo(a)pyrene (ug/Kg)	8,000	< 9.4	< 9.4	1	NA
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 9.4	< 9.4	1	NA
	Unidentified Peaks	--	**> 10**	> 10	1	NA

Notes

* Sample representative of background soil conditions

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

Bold denotes detected chemical compound

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

On-Trail VOC Summary Data Table

Sampling Stations A1, A2, A3, A4, B1, B2, B3, C1, C2, D1, D2

Soil Chemistry Monitoring Summary - VOCs							
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	STATISTICS				
		EPA SSG	Mean	Min	Max	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 29.1	< 20.0	< 60.0	11	16.4
	Toluene (ug/Kg)	12,000	15.9	< 10.0	< 30.0	11	8.55
	Xylenes (ug/Kg)	600,000	< 29.1	< 20.0	< 60.0	11	16.4
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 14.5	< 10.0	< 30.0	11	8.20
	Benzene (ug/Kg)	30	< 14.5	< 10.0	< 30.0	11	8.20
	Ethylbenzene (ug/Kg)	13,000	< 14.5	< 10.0	< 30.0	11	8.20
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 14.5	< 10.0	< 30.0	11	8.20
	Naphthalene (ug/Kg)	84,000	< 30.5	< 20.0	< 60.0	11	15.9
	Unidentified Peaks	--	2.36	0	6	11	2.54
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 1.94	< 1.10	< 3.60	11	0.846

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

150' Off Trail/Wilderness Site - Reference Station VOC Summary Data Table

Sampling Stations A1-A, A2-A, A3-A, A4-A, B1-A, B2-A, B3-A, C1-A, C2-A, D1-A, D2-A, E

Soil Chemistry Monitoring Summary - VOCs							
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	STATISTICS				
		EPA SSG	Mean	Min	Max	n	St Dev.
VOC Method 8021B	Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 78.3	< 40.0	< 120	12	21.7
	Toluene (ug/Kg)	12,000	< 39.2	< 20.0	< 60.0	12	10.8
	Xylenes (ug/Kg)	600,000	< 78.3	< 40.0	< 120	12	21.7
	1,2,4-Trimethylbenzene (ug/Kg)	--	< 39.2	< 20.0	< 60.0	12	10.8
	Benzene (ug/Kg)	30	< 39.2	< 20.0	< 60.0	12	10.8
	Ethylbenzene (ug/Kg)	13,000	< 39.2	< 20.0	< 60.0	12	10.8
	1,3,5-Trimethylbenzene (ug/Kg)	--	< 39.2	< 20.0	< 60.0	12	10.8
	Naphthalene (ug/Kg)	84,000	< 78.3	< 40.0	< 120	12	21.7
	Unidentified Peaks	--	5.83	0	10	12	3.76
TPH Method 8015B	TPH Gas Range Organics (mg/Kg)	--	< 4.11	< 0.200	< 7.60	12	2.04

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Overall Monitoring Summary

Soil Chemistry Monitoring Summary - VOC Analysis									
CHEMICAL COMPOUNDS	Regulatory Soil Standards	On-Trail Sampling				Reference Station Sampling			
	EPA SSG	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
Methyl-t-butyl ether (MTBE) (ug/Kg)	--	< 29.1	< 60.0	11	16.4	< 78.3	< 120	12	21.7
Toluene (ug/Kg)	12,000	15.9	< 30.0	11	8.55	< 39.2	< 60.0	12	10.8
Xylenes (ug/Kg)	600,000	< 29.1	< 60.0	11	16.4	< 78.3	< 120	12	21.7
1,2,4-Trimethylbenzene (ug/Kg)	--	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Benzene (ug/Kg)	30	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Ethylbenzene (ug/Kg)	13,000	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
1,3,5-Trimethylbenzene (ug/Kg)	--	< 14.5	< 30.0	11	8.20	< 39.2	< 60.0	12	10.8
Naphthalene (ug/Kg)	84,000	< 30.5	< 60.0	11	15.9	< 78.3	< 120	12	21.7
Unidentified Peaks	--	2.36	6	11	2.54	5.83	10	12	3.76
TPH Gas Range Organics (mg/Kg)	--	< 1.94	< 3.60	11	0.846	< 4.11	< 7.60	12	2.04

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

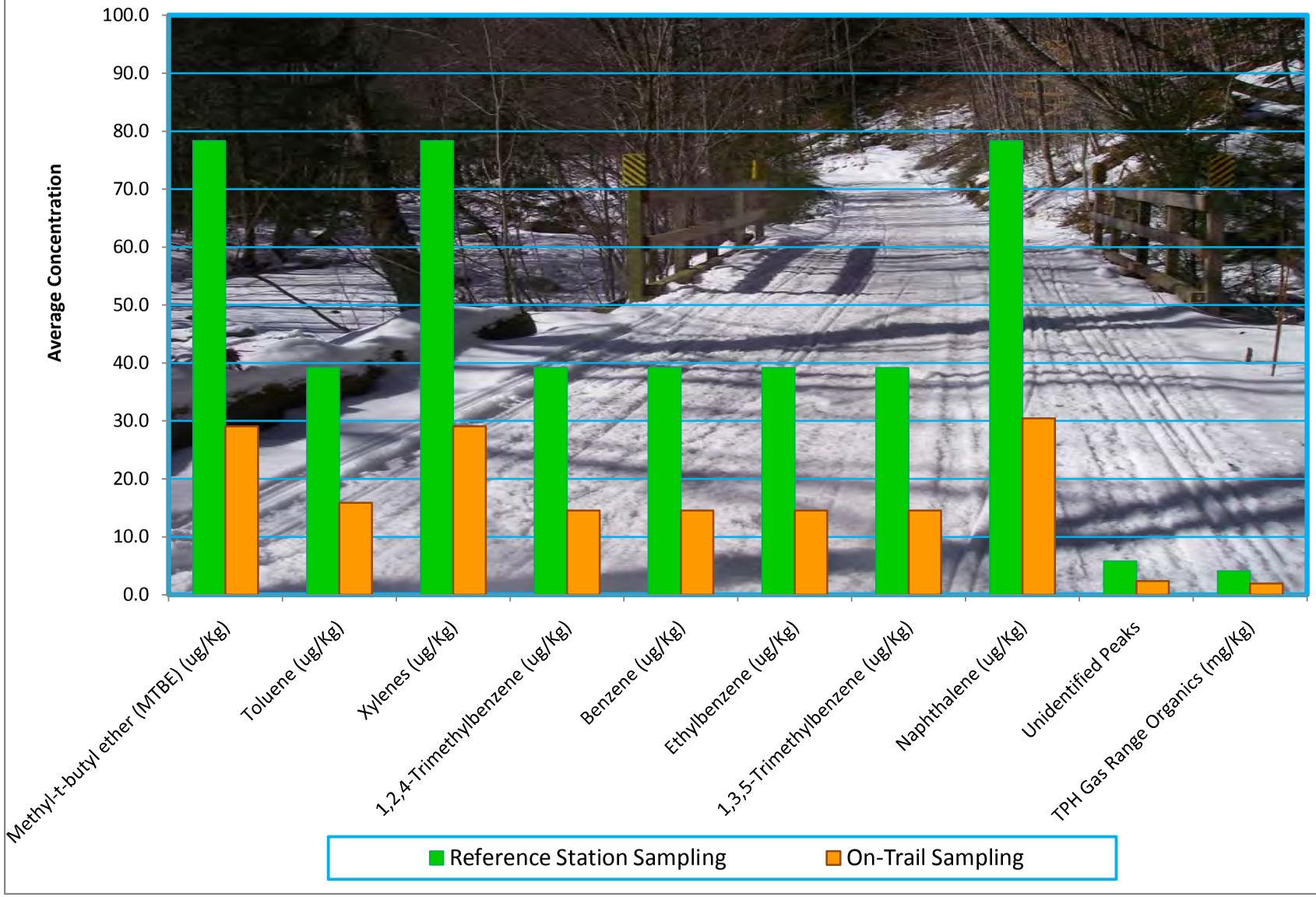
-- No Regulatory Standard

NA - not applicable

Vermont Association of Snowmobile Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry VOC Monitoring Summary Graph



Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Middle-of-Trail PAH Summary Data Table - LVRT Trails

Sampling Stations A1, A2, A3, A4

Soil Chemistry Monitoring Summary - PAHs							
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	STATISTICS				
		EPA SSG	Mean	Min	Max	n	St Dev.
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	18.8	18.1	19.9	4	0.806
	Acenaphthylene (ug/Kg)	--	271	< 20.2	449	4	190
	Fluorene (ug/Kg)	560,000	42.4	< 18.7	68.7	4	26.8
	Anthracene (ug/Kg)	12,000,000	215	< 19.9	406	4	167
	Pyrene (ug/Kg)	4,200,000	2319	205	3980	4	1754
	Chrysene (ug/Kg)	160,000	1487	177	2660	4	1085
	Benzo(k)fluoranthene (ug/Kg)	49,000	745	59.5	1380	4	561
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	1263	152	2140	4	850
	Benzo(g,h,i)perylene (ug/Kg)	--	1054	139	1810	4	717
	Naphthalene (ug/Kg)	84,000	23.1	< 18.6	35.1	4	8.04
	1-Methylnaphthalene (ug/Kg)	--	< 18.8	< 18.1	< 19.9	4	0.806
	Acenaphthene (ug/Kg)	570,000	23.5	< 18.7	29.2	4	5.01
	Phenanthrene (ug/Kg)	--	531	38.9	1090	4	509
	Fluoranthene (ug/Kg)	4,300,000	2483	220	4890	4	1987
	Benzo(a)anthracene (ug/Kg)	2,000	1518	150	2720	4	1098
	Benzo(b)fluoranthene (ug/Kg)	5,000	2655	310	4270	4	1937
	Benzo(a)pyrene (ug/Kg)	8,000	1421	135	2370	4	1050
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	305	33.7	527	4	216
	Unidentified Peaks	--	> 10	> 10	> 10	4	0.00

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Middle-of-Trail PAH Summary Data Table - Non-LVRT Trails

Sampling Stations B1, B2, B3, C1, C2, D1, D2

Soil Chemistry Monitoring Summary - PAHs							
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	STATISTICS				
		EPA SSG	Mean	Min	Max	n	St Dev.
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 20.2	< 17.4	< 25.3	7	3.04
	Acenaphthylene (ug/Kg)	--	< 8.06	< 6.90	< 10.1	7	1.21
	Fluorene (ug/Kg)	560,000	< 8.06	< 6.90	< 10.1	7	1.21
	Anthracene (ug/Kg)	12,000,000	16.1	< 6.90	66.1	7	22.1
	Pyrene (ug/Kg)	4,200,000	26.5	< 6.90	93.3	7	34.1
	Chrysene (ug/Kg)	160,000	19.4	< 6.90	67.6	7	22.8
	Benzo(k)fluoranthene (ug/Kg)	49,000	9.03	< 6.90	13.5	7	2.48
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	11.6	< 6.90	25.9	7	7.18
	Benzo(g,h,i)perylene (ug/Kg)	--	11.1	< 6.90	21.2	7	5.96
	Naphthalene (ug/Kg)	84,000	< 20.2	< 17.4	< 25.3	7	3.04
	1-Methylnaphthalene (ug/Kg)	--	< 20.2	< 17.4	< 25.3	7	3.04
	Acenaphthene (ug/Kg)	570,000	< 8.06	< 6.90	< 10.1	7	1.21
	Phenanthrene (ug/Kg)	--	14.6	< 6.90	32.0	7	11.8
	Fluoranthene (ug/Kg)	4,300,000	33.4	< 6.90	122	7	46.1
	Benzo(a)anthracene (ug/Kg)	2,000	14.1	< 6.90	33.3	7	11.0
	Benzo(b)fluoranthene (ug/Kg)	5,000	16.9	< 6.90	40.9	7	15.7
	Benzo(a)pyrene (ug/Kg)	8,000	11.8	< 6.90	28.2	7	7.86
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 8.06	< 6.90	< 10.1	7	1.21
	Unidentified Peaks	--	5.71	0	> 10	7	5.35

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry Monitoring

Wilderness Site PAH Summary Data Table

Sampling Station E1

Soil Chemistry Monitoring Summary - PAHs						
LAB ANALYSIS	CHEMICAL COMPOUNDS	Regulatory Soil Standards	STATISTICS			
		EPA SSG	Mean	Min	Max	n
PAH Method 8270C	2-Methylnaphthalene (ug/Kg)	--	< 23.6	< 23.6	< 23.6	1
	Acenaphthylene (ug/Kg)	--	< 9.4	< 9.4	< 9.4	1
	Fluorene (ug/Kg)	560,000	< 9.4	< 9.4	< 9.4	1
	Anthracene (ug/Kg)	12,000,000	< 9.4	< 9.4	< 9.4	1
	Pyrene (ug/Kg)	4,200,000	< 9.4	< 9.4	< 9.4	1
	Chrysene (ug/Kg)	160,000	< 9.4	< 9.4	< 9.4	1
	Benzo(k)fluoranthene (ug/Kg)	49,000	< 9.4	< 9.4	< 9.4	1
	Indeno(1,2,3-cd)pyrene (ug/Kg)	--	< 9.4	< 9.4	< 9.4	1
	Benzo(g,h,i)perylene (ug/Kg)	--	< 9.4	< 9.4	< 9.4	1
	Naphthalene (ug/Kg)	84,000	< 23.6	< 23.6	< 23.6	1
	1-Methylnaphthalene (ug/Kg)	--	< 23.6	< 23.6	< 23.6	1
	Acenaphthene (ug/Kg)	570,000	< 9.4	< 9.4	< 9.4	1
	Phenanthrene (ug/Kg)	--	< 9.4	< 9.4	< 9.4	1
	Fluoranthene (ug/Kg)	4,300,000	< 9.4	< 9.4	< 9.4	1
	Benzo(a)anthracene (ug/Kg)	2,000	< 9.4	< 9.4	< 9.4	1
	Benzo(b)fluoranthene (ug/Kg)	5,000	< 9.4	< 9.4	< 9.4	1
	Benzo(a)pyrene (ug/Kg)	8,000	< 9.4	< 9.4	< 9.4	1
	Dibenzo(a,h)anthracene (ug/Kg)	2,000	< 9.4	< 9.4	< 9.4	1
	Unidentified Peaks	--	> 10	> 10	> 10	1

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

-- No Regulatory Standard

NA - not applicable

Vermont Association of Snow Travelers, Inc.
Snowpack Chemistry Study
Soil Chemistry Monitoring
Overall PAH Monitoring Summary

Soil Chemistry Monitoring Summary - PAH Analysis													
CHEMICAL COMPOUNDS	Regulatory Soil Standards	LVRT Stations - On-Trail Sampling				Non-LVRT Stations - On-Trail Sampling				Reference Station - Wilderness Site Sampling			
	EPA SSG	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.	Mean	Max	n	St Dev.
2-Methylnaphthalene (ug/Kg)	--	18.8	19.9	4	0.806	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1	NA
Acenaphthylene (ug/Kg)	--	271	449	4	190	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1	NA
Fluorene (ug/Kg)	560,000	42.4	68.7	4	26.8	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1	NA
Anthracene (ug/Kg)	12,000,000	215	406	4	167	16.1	66.1	7	22.1	< 9.4	< 9.4	1	NA
Pyrene (ug/Kg)	4,200,000	2319	3980	4	1754	26.5	93.3	7	34.1	< 9.4	< 9.4	1	NA
Chrysene (ug/Kg)	160,000	1487	2660	4	1085	19.4	67.6	7	22.8	< 9.4	< 9.4	1	NA
Benzo(k)fluoranthene (ug/Kg)	49,000	745	1380	4	561	9.03	13.5	7	2.48	< 9.4	< 9.4	1	NA
Indeno(1,2,3-cd)pyrene (ug/Kg)	--	1263	2140	4	850	11.6	25.9	7	7.18	< 9.4	< 9.4	1	NA
Benzo(g,h,i)perylene (ug/Kg)	--	1054	1810	4	717	11.1	21.2	7	5.96	< 9.4	< 9.4	1	NA
Naphthalene (ug/Kg)	84,000	23.1	35.1	4	8.04	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1	NA
1-Methylnaphthalene (ug/Kg)	--	< 18.8	< 19.9	4	0.806	< 20.2	< 25.3	7	3.04	< 23.6	< 23.6	1	NA
Acenaphthene (ug/Kg)	570,000	23.5	29.2	4	5.01	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1	NA
Phenanthrene (ug/Kg)	--	531	1090	4	509	14.6	32.0	7	11.8	< 9.4	< 9.4	1	NA
Fluoranthene (ug/Kg)	4,300,000	2483	4890	4	1987	33.4	122	7	46.1	< 9.4	< 9.4	1	NA
Benzo(a)anthracene (ug/Kg)	2,000	1518	2720	4	1098	14.1	33.3	7	11.0	< 9.4	< 9.4	1	NA
Benzo(b)fluoranthene (ug/Kg)	5,000	2655	4270	4	1937	16.9	40.9	7	15.7	< 9.4	< 9.4	1	NA
Benzo(a)pyrene (ug/Kg)	8,000	1421	2370	4	1050	11.8	28.2	7	7.86	< 9.4	< 9.4	1	NA
Dibenzo(a,h)anthracene (ug/Kg)	2,000	305	527	4	216	< 8.06	< 10.1	7	1.21	< 9.4	< 9.4	1	NA
Unidentified Peaks	--	> 10	> 10	4	0.00	5.71	> 10	7	5.35	> 10	> 10	1	NA

Notes

EPA SSG - Environmental Protection Agency Soil Screening Guidance 1996 - Appendix A, Generic SSLs, 20 DAF

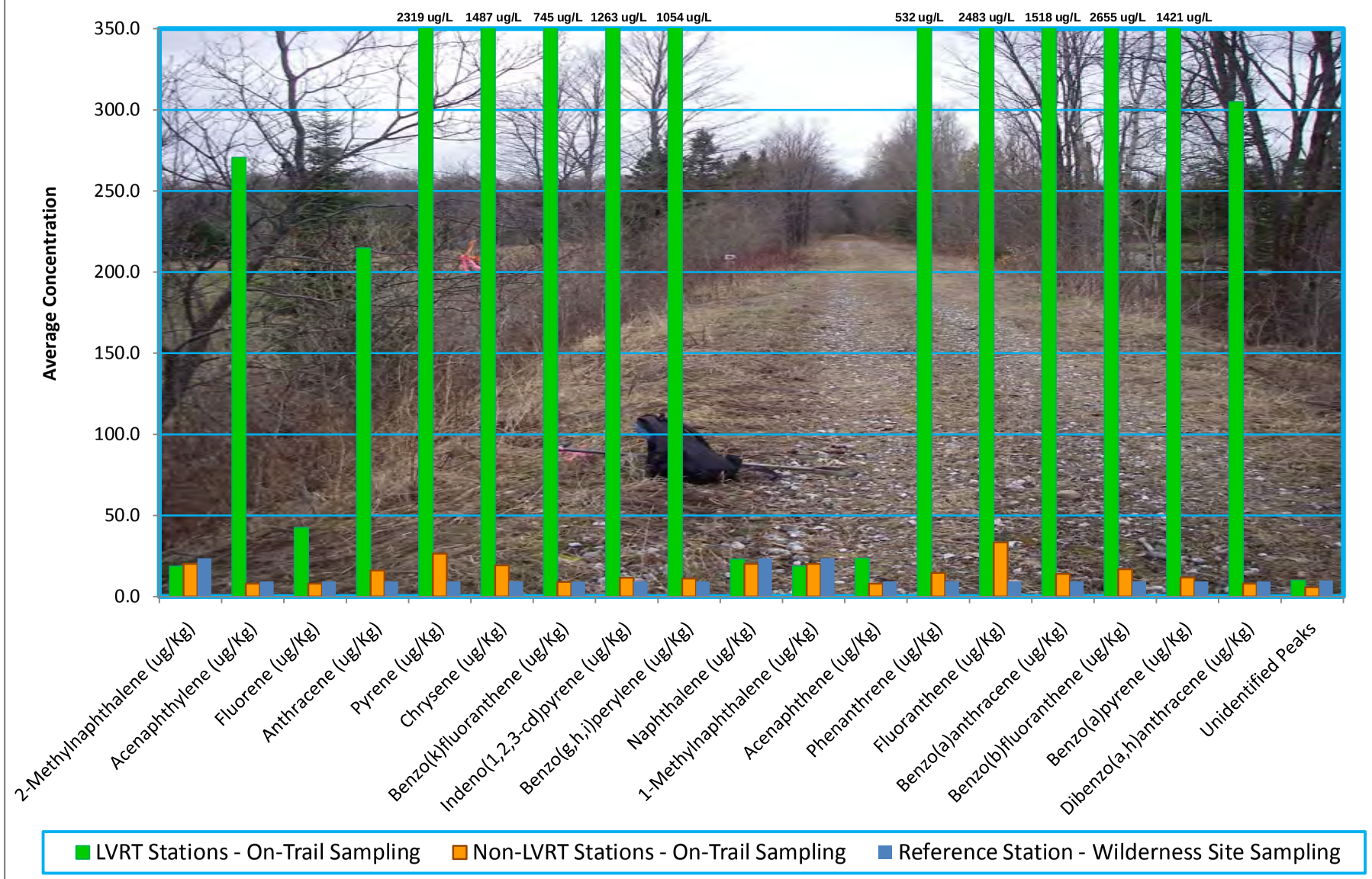
-- No Regulatory Standard

NA - not applicable

Vermont Association of Snowmobile Travelers, Inc.

Snowpack Chemistry Study

Soil Chemistry PAH Monitoring Summary Graph



F:\57369.00\ssheets\Soil_Chemistry, PAH Summary Graph, 6/2/2010

APPENDIX 3

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

VHB Pioneer 090395
PO Box 120
N. Ferrisburgh, VT 05473

Atten: Meddie Perry

PROJECT: VAST Snowpack Chemistry Study
WORK ORDER: **1001-00188**
DATE RECEIVED: January 06, 2010
DATE REPORTED: January 20, 2010
SAMPLER: Grahm Sexstone

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody located at the end of this report.

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.

This 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

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 1/20/2010

WORK ORDER: **1001-00188**
DATE RECEIVED: 01/06/2010

TEST METHOD: EPA 8015B

001 Site: A1-B Date Sampled: 1/4/10 09:45 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

001 Site: A1-B Date Sampled: 1/4/10 09:45 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	102	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

002 Site: A2-B Date Sampled: 1/4/10 10:43 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

002 Site: A2-B Date Sampled: 1/4/10 10:43 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

003 Site: A3-B Date Sampled: 1/4/10 12:03 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

003 Site: A3-B Date Sampled: 1/4/10 12:03 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	94	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 1/20/2010

WORK ORDER: **1001-00188**
DATE RECEIVED: 01/06/2010

TEST METHOD: EPA 8015B

004 Site: A4-B Date Sampled: 1/4/10 12:40 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

004 Site: A4-B Date Sampled: 1/4/10 12:40 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

005 Site: D1-B Date Sampled: 1/4/10 15:15 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

005 Site: D1-B Date Sampled: 1/4/10 15:15 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 3 (4-Bromofluorobenzene)	100	%	A	
Surr. 2 (Toluene d8)	104	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

006 Site: D2-B Date Sampled: 1/4/10 15:57 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

006 Site: D2-B Date Sampled: 1/4/10 15:57 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	101	%	A		Surr. 2 (Toluene d8)	103	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 1/20/2010

WORK ORDER: **1001-00188**
DATE RECEIVED: 01/06/2010

TEST METHOD: EPA 8015B

007 Site: B3-B Date Sampled: 1/5/10 11:25 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

007 Site: B3-B Date Sampled: 1/5/10 11:25 Analysis Date: 1/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	95	%	A		Surr. 2 (Toluene d8)	97	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

008 Site: B1-B Date Sampled: 1/5/10 12:35 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

008 Site: B1-B Date Sampled: 1/5/10 12:35 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 3 (4-Bromofluorobenzene)	98	%	A	
Surr. 2 (Toluene d8)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

009 Site: E1-B Date Sampled: 1/5/10 15:24 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

009 Site: E1-B Date Sampled: 1/5/10 15:24 Analysis Date: 1/14/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	101	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 1/20/2010

WORK ORDER: **1001-00188**
DATE RECEIVED: 01/06/2010

TEST METHOD: EPA 8015B

010 Site: B2-B Date Sampled: 1/6/10 10:38 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

010 Site: B2-B Date Sampled: 1/6/10 10:38 Analysis Date: 1/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	97	%	A	
Surr. 3 (4-Bromofluorobenzene)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

011 Site: C1-B Date Sampled: 1/6/10 13:24 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

011 Site: C1-B Date Sampled: 1/6/10 13:24 Analysis Date: 1/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

012 Site: C2-B Date Sampled: 1/6/10 14:15 Analysis Date: 1/11/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

012 Site: C2-B Date Sampled: 1/6/10 14:15 Analysis Date: 1/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	93	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

VHB Pioneer	090395
PO Box 120	
N. Ferrisburgh, VT 05473	

PROJECT: VAST Snowpack Chemistry Study
WORK ORDER: **1003-02394**
DATE RECEIVED: March 02, 2010
DATE REPORTED: March 09, 2010
SAMPLER: Graham Sexstone

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody located at the end of this report.

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.

This 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

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

001 Site: B1-#1 Date Sampled: 2/23/10 10:10 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

001 Site: B1-#1 Date Sampled: 2/23/10 10:10 Analysis Date: 3/3/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

002 Site: B1-#2 Date Sampled: 2/23/10 10:25 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

002 Site: B1-#2 Date Sampled: 2/23/10 10:25 Analysis Date: 3/3/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

003 Site: B1-A Date Sampled: 2/23/10 10:35 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

003 Site: B1-A Date Sampled: 2/23/10 10:35 Analysis Date: 3/3/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE:3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

004 Site: B2-#1 Date Sampled: 2/22/10 14:00 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

004 Site: B2-#1 Date Sampled: 2/22/10 14:00 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	100	%	A		Surr. 3 (4-Bromofluorobenzene)	94	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

005 Site: B2-#2 Date Sampled: 2/22/10 14:16 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

005 Site: B2-#2 Date Sampled: 2/22/10 14:16 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	1.3	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	95	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

006 Site: B2-A Date Sampled: 2/22/10 14:24 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

006 Site: B2-A Date Sampled: 2/22/10 14:24 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	94	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	99	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE:3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

007 Site: B3-#1 Date Sampled: 2/23/10 11:16 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

007 Site: B3-#1 Date Sampled: 2/23/10 11:16 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	94	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

008 Site: B3-#2 Date Sampled: 2/23/10 11:36 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

008 Site: B3-#2 Date Sampled: 2/23/10 11:36 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 3 (4-Bromofluorobenzene)	97	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

009 Site: B3-A Date Sampled: 2/23/10 11:45 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

009 Site: B3-A Date Sampled: 2/23/10 11:45 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE:3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

010 Site: C1-#1 Date Sampled: 2/22/10 11:00 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

010 Site: C1-#1 Date Sampled: 2/22/10 11:00 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

011 Site: C1-#2 Date Sampled: 2/23/10 11:39 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

011 Site: C1-#2 Date Sampled: 2/23/10 11:39 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

012 Site: C1-A Date Sampled: 2/23/10 11:49 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

012 Site: C1-A Date Sampled: 2/23/10 11:49 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE:3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

013 Site: C2-#1 Date Sampled: 2/23/10 15:01 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

013 Site: C2-#1 Date Sampled: 2/23/10 15:01 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	100	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

014 Site: C2-#2 Date Sampled: 2/23/10 15:15 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

014 Site: C2-#2 Date Sampled: 2/23/10 15:15 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	96	%	A	
Surr. 2 (Toluene d8)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

015 Site: C2-A Date Sampled: 2/23/10 15:25 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

015 Site: C2-A Date Sampled: 2/23/10 15:25 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/9/2010

WORK ORDER: **1003-02394**
DATE RECEIVED: 03/02/2010

TEST METHOD: EPA 8015B

016 Site: E1-#1 Date Sampled: 2/22/10 15:20 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

016 Site: E1-#1 Date Sampled: 2/22/10 15:20 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	98	%	A	
Surr. 2 (Toluene d8)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

017 Site: E1-#2 Date Sampled: 2/22/10 15:38 Analysis Date: 3/8/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

017 Site: E1-#2 Date Sampled: 2/22/10 15:38 Analysis Date: 3/4/10 W EEP

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	100	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Surr. 2 (Toluene d8)	101	%	A		Unidentified Peaks	0		U	

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

VHB Pioneer	090395
PO Box 120	
N. Ferrisburgh, VT 05473	

PROJECT: VAST Snowpack Chemistry Study
WORK ORDER: **1003-02858**
DATE RECEIVED: March 11, 2010
DATE REPORTED: March 17, 2010
SAMPLER: Graham Sexstone

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody located at the end of this report.

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.

This 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

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

001 Site: A1-#1 Date Sampled: 3/3/10 15:23 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

001 Site: A1-#1 Date Sampled: 3/3/10 15:23 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

002 Site: A1-#2 Date Sampled: 3/3/10 15:32 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

002 Site: A1-#2 Date Sampled: 3/3/10 15:32 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	95	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

003 Site: A1-A Date Sampled: 3/3/10 15:38 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

003 Site: A1-A Date Sampled: 3/3/10 15:38 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

004 Site: A2-#1 Date Sampled: 3/3/10 15:56 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

004 Site: A2-#1 Date Sampled: 3/3/10 15:56 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

005 Site: A2-#2 Date Sampled: 3/3/10 16:05 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

005 Site: A2-#2 Date Sampled: 3/3/10 16:05 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

006 Site: A2-A Date Sampled: 3/3/10 16:15 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

006 Site: A2-A Date Sampled: 3/3/10 16:15 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	96	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE:3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

007 Site: A3-#1 Date Sampled: 3/3/10 13:45 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

007 Site: A3-#1 Date Sampled: 3/3/10 13:45 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

008 Site: A3-#2 Date Sampled: 3/3/10 13:52 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

008 Site: A3-#2 Date Sampled: 3/3/10 13:52 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	103	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

009 Site: A3-A Date Sampled: 3/3/10 13:58 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

009 Site: A3-A Date Sampled: 3/3/10 13:58 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	97	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

010 Site: A4-#1 Date Sampled: 3/3/10 14:20 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

010 Site: A4-#1 Date Sampled: 3/3/10 14:20 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

011 Site: A4-#2 Date Sampled: 3/3/10 14:31 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

011 Site: A4-#2 Date Sampled: 3/3/10 14:31 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

012 Site: A4-A Date Sampled: 3/3/10 14:40 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

012 Site: A4-A Date Sampled: 3/3/10 14:40 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 3 (4-Bromofluorobenzene)	99	%	A	
Surr. 2 (Toluene d8)	102	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

013 Site: D1-#1 Date Sampled: 3/3/10 10:00 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

013 Site: D1-#1 Date Sampled: 3/3/10 10:00 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

014 Site: D1-#2 Date Sampled: 3/3/10 10:10 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

014 Site: D1-#2 Date Sampled: 3/3/10 10:10 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	98	%	A		Surr. 2 (Toluene d8)	101	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

015 Site: D1-A Date Sampled: 3/3/10 10:15 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

015 Site: D1-A Date Sampled: 3/3/10 10:15 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry Study
REPORT DATE: 3/17/2010

WORK ORDER: **1003-02858**
DATE RECEIVED: 03/11/2010

TEST METHOD: EPA 8015B

016 Site: D2-#1 Date Sampled: 3/3/10 10:58 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

016 Site: D2-#1 Date Sampled: 3/3/10 10:58 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	100	%	A		Surr. 2 (Toluene d8)	104	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

017 Site: D2-#2 Date Sampled: 3/3/10 11:07 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

017 Site: D2-#2 Date Sampled: 3/3/10 11:07 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	102	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

018 Site: D2-A Date Sampled: 3/3/10 11:15 Analysis Date: 3/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

018 Site: D2-A Date Sampled: 3/3/10 11:15 Analysis Date: 3/12/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	102	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

VHB Pioneer	090395
PO Box 120	
N. Ferrisburgh, VT 05473	

PROJECT: VAST Snowpack Chemistry
WORK ORDER: **1004-04331**
DATE RECEIVED: April 09, 2010
DATE REPORTED: April 23, 2010
SAMPLER: Graham Sexstone

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody located at the end of this report.

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.

This 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

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

001 Site: A1 Date Sampled: 4/8/10 14:11 Analysis Date: 4/21/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 20.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	97	%	A	
Surr. 2 (Toluene d8)	98	%	A		Surr. 3 (4-Bromofluorobenzene)	103	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

001 Site: A1 Date Sampled: 4/8/10 14:11 Analysis Date: 4/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.60	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

001 Site: A1 Date Sampled: 4/8/10 14:11 Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 18.7	ug/Kg, dry	A	
2-Methylnaphthalene	< 18.7	ug/Kg, dry	N		1-Methylnaphthalene	< 18.7	ug/Kg, dry	U	
Acenaphthylene	230	ug/Kg, dry	A		Acenaphthene	< 18.7	ug/Kg, dry	A	
Fluorene	< 18.7	ug/Kg, dry	A		Phenanthrene	166	ug/Kg, dry	A	
Anthracene	150	ug/Kg, dry	A		Fluoranthene	1,730	ug/Kg, dry	A	
Pyrene	1,570	ug/Kg, dry	A		Benzo(a)anthracene	1,220	ug/Kg, dry	A	
Chrysene	1,090	ug/Kg, dry	A		Benzo(b)fluoranthene	1,820	ug/Kg, dry	A	
Benzo(k)fluoranthene	584	ug/Kg, dry	A		Benzo(a)pyrene	997	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	1,120	ug/Kg, dry	A		Dibenzo(a,h)anthracene	239	ug/Kg, dry	A	
Benzo(g,h,i)perylene	888	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	50	%	A	
B/N Surr.2 2-Fluorobiphenyl	56	%	A		B/N Surr.3 Terphenyl-d14	69	%	A	
Unidentified Peaks	> 10		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

002 Site: A2 Date Sampled: 4/8/10 13:40 Analysis Date: 4/21/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 20.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	93	%	A	
Surr. 2 (Toluene d8)	98	%	A		Surr. 3 (4-Bromofluorobenzene)	98	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

002 Site: A2 Date Sampled: 4/8/10 13:40 Analysis Date: 4/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.60	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

002 Site: A2 Date Sampled: 4/8/10 13:40 Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 19.9	ug/Kg, dry	A	
2-Methylnaphthalene	< 19.9	ug/Kg, dry	N		1-Methylnaphthalene	< 19.9	ug/Kg, dry	U	
Acenaphthylene	20.2	ug/Kg, dry	A		Acenaphthene	< 19.9	ug/Kg, dry	A	
Fluorene	< 19.9	ug/Kg, dry	A		Phenanthrene	38.9	ug/Kg, dry	A	
Anthracene	< 19.9	ug/Kg, dry	A		Fluoranthene	220	ug/Kg, dry	A	
Pyrene	205	ug/Kg, dry	A		Benzo(a)anthracene	150	ug/Kg, dry	A	
Chrysene	177	ug/Kg, dry	A		Benzo(b)fluoranthene	310	ug/Kg, dry	A	
Benzo(k)fluoranthene	59.5	ug/Kg, dry	A		Benzo(a)pyrene	135	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	152	ug/Kg, dry	A		Dibenzo(a,h)anthracene	33.7	ug/Kg, dry	A	
Benzo(g,h,i)perylene	139	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	69	%	A	
B/N Surr.2 2-Fluorobiphenyl	71	%	A		B/N Surr.3 Terphenyl-d14	90	%	A	
Unidentified Peaks	> 10		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

003 | Site: A3 | Date Sampled: 4/8/10 12:18 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 25.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	98	%	A	
Surr. 2 (Toluene d8)	98	%	A		Surr. 3 (4-Bromofluorobenzene)	101	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

003 | Site: A3 | Date Sampled: 4/8/10 12:18 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.50	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

003 | Site: A3 | Date Sampled: 4/8/10 12:18 | Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	18.6	ug/Kg, dry	A	
2-Methylnaphthalene	< 18.3	ug/Kg, dry	N		1-Methylnaphthalene	< 18.3	ug/Kg, dry	U	
Acenaphthylene	383	ug/Kg, dry	A		Acenaphthene	29.2	ug/Kg, dry	A	
Fluorene	68.7	ug/Kg, dry	A		Phenanthrene	831	ug/Kg, dry	A	
Anthracene	406	ug/Kg, dry	A		Fluoranthene	3,090	ug/Kg, dry	A	
Pyrene	3,520	ug/Kg, dry	A		Benzo(a)anthracene	1,980	ug/Kg, dry	A	
Chrysene	2,020	ug/Kg, dry	A		Benzo(b)fluoranthene	4,220	ug/Kg, dry	A	
Benzo(k)fluoranthene	955	ug/Kg, dry	A		Benzo(a)pyrene	2,180	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	1,640	ug/Kg, dry	A		Dibenzo(a,h)anthracene	420	ug/Kg, dry	A	
Benzo(g,h,i)perylene	1,380	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	70	%	A	
B/N Surr.2 2-Fluorobiphenyl	78	%	A		B/N Surr.3 Terphenyl-d14	103	%	A	
Unidentified Peaks	> 10		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

004 | Site: A4 | Date Sampled: 4/8/10 12:49 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 30.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	96	%	A	
Surr. 2 (Toluene d8)	101	%	A		Surr. 3 (4-Bromofluorobenzene)	101	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

004 | Site: A4 | Date Sampled: 4/8/10 12:49 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.50	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

004 | Site: A4 | Date Sampled: 4/8/10 12:49 | Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	35.1	ug/Kg, dry	A	
2-Methylnaphthalene	18.1	ug/Kg, dry	N		1-Methylnaphthalene	< 18.1	ug/Kg, dry	U	
Acenaphthylene	449	ug/Kg, dry	A		Acenaphthene	26.1	ug/Kg, dry	A	
Fluorene	62.3	ug/Kg, dry	A		Phenanthrene	1,090	ug/Kg, dry	A	
Anthracene	283	ug/Kg, dry	A		Fluoranthene	4,890	ug/Kg, dry	A	
Pyrene	3,980	ug/Kg, dry	A		Benzo(a)anthracene	2,720	ug/Kg, dry	A	
Chrysene	2,660	ug/Kg, dry	A		Benzo(b)fluoranthene	4,270	ug/Kg, dry	A	
Benzo(k)fluoranthene	1,380	ug/Kg, dry	A		Benzo(a)pyrene	2,370	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	2,140	ug/Kg, dry	A		Dibenzo(a,h)anthracene	527	ug/Kg, dry	A	
Benzo(g,h,i)perylene	1,810	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	61	%	A	
B/N Surr.2 2-Fluorobiphenyl	70	%	A		B/N Surr.3 Terphenyl-d14	97	%	A	
Unidentified Peaks	> 10		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

005 | Site: D1 | Date Sampled: 4/8/10 09:06 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 20.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	101	%	A	
Surr. 2 (Toluene d8)	100	%	A		Surr. 3 (4-Bromofluorobenzene)	103	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

005 | Site: D1 | Date Sampled: 4/8/10 09:06 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.30	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

005 | Site: D1 | Date Sampled: 4/8/10 09:06 | Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 17.8	ug/Kg, dry	A	
2-Methylnaphthalene	< 17.8	ug/Kg, dry	N		1-Methylnaphthalene	< 17.8	ug/Kg, dry	U	
Acenaphthylene	< 7.1	ug/Kg, dry	A		Acenaphthene	< 7.1	ug/Kg, dry	A	
Fluorene	< 7.1	ug/Kg, dry	A		Phenanthrene	< 7.1	ug/Kg, dry	A	
Anthracene	< 7.1	ug/Kg, dry	A		Fluoranthene	< 7.1	ug/Kg, dry	A	
Pyrene	< 7.1	ug/Kg, dry	A		Benzo(a)anthracene	< 7.1	ug/Kg, dry	A	
Chrysene	< 7.1	ug/Kg, dry	A		Benzo(b)fluoranthene	< 7.1	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 7.1	ug/Kg, dry	A		Benzo(a)pyrene	< 7.1	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 7.1	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 7.1	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 7.1	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	73	%	A	
B/N Surr.2 2-Fluorobiphenyl	70	%	A		B/N Surr.3 Terphenyl-d14	106	%	A	
Unidentified Peaks	0		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

006 | Site: D2 | Date Sampled: 4/8/10 09:50 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 50.0	ug/Kg, Dry	N		Chloromethane	< 30.0	ug/Kg, Dry	A	
Vinyl chloride	< 20.0	ug/Kg, Dry	A		Bromomethane	< 50.0	ug/Kg, Dry	A	QA-
Chloroethane	< 50.0	ug/Kg, Dry	A		Trichlorofluoromethane	< 20.0	ug/Kg, Dry	N	
Diethyl ether	< 50.0	ug/Kg, Dry	U		1,1-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Acetone	< 100	ug/Kg, Dry	N		Carbon disulfide	< 50.0	ug/Kg, Dry	N	
Methylene chloride	< 50.0	ug/Kg, Dry	A		t-Butanol	< 200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 20.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 10.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 20.0	ug/Kg, Dry	U		2-Butanone	< 100	ug/Kg, Dry	A	
2,2-Dichloropropane	< 20.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 10.0	ug/Kg, Dry	N	
Bromochloromethane	< 20.0	ug/Kg, Dry	N		Chloroform	< 10.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 100	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 10.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 10.0	ug/Kg, Dry	N	
Benzene	< 10.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 20.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 10.0	ug/Kg, Dry	A		Trichloroethene	< 10.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 20.0	ug/Kg, Dry	A		Dibromomethane	< 20.0	ug/Kg, Dry	N	
Bromodichloromethane	< 5.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 10.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 100	ug/Kg, Dry	N		Toluene	< 10.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 10.0	ug/Kg, Dry	A	
Tetrachloroethene	< 10.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 10.0	ug/Kg, Dry	N	
2-Hexanone	< 100	ug/Kg, Dry	N		Dibromochloromethane	< 20.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 10.0	ug/Kg, Dry	N		Chlorobenzene	< 10.0	ug/Kg, Dry	A	
Ethylbenzene	< 10.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	N	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		Styrene	< 10.0	ug/Kg, Dry	N	
Bromoform	< 20.0	ug/Kg, Dry	A		Isopropylbenzene	< 10.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 20.0	ug/Kg, Dry	A		Bromobenzene	< 10.0	ug/Kg, Dry	N	
n-Propylbenzene	< 10.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 20.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 10.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 10.0	ug/Kg, Dry	N		t-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		s-Butylbenzene	< 10.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 10.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 10.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		n-Butylbenzene	< 10.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 10.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 20.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 20.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 20.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 5.0	ug/Kg, Dry	N		Naphthalene	< 20.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 20.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	98	%	A	
Surr. 2 (Toluene d8)	99	%	A		Surr. 3 (4-Bromofluorobenzene)	98	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

006 | Site: D2 | Date Sampled: 4/8/10 09:50 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.10	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8270C

006 | Site: D2 | Date Sampled: 4/8/10 09:50 | Analysis Date: 4/14/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 17.4	ug/Kg, dry	A	
2-Methylnaphthalene	< 17.4	ug/Kg, dry	N		1-Methylnaphthalene	< 17.4	ug/Kg, dry	U	
Acenaphthylene	< 7.0	ug/Kg, dry	A		Acenaphthene	< 7.0	ug/Kg, dry	A	
Fluorene	< 7.0	ug/Kg, dry	A		Phenanthrene	< 7.0	ug/Kg, dry	A	
Anthracene	< 7.0	ug/Kg, dry	A		Fluoranthene	< 7.0	ug/Kg, dry	A	
Pyrene	< 7.0	ug/Kg, dry	A		Benzo(a)anthracene	< 7.0	ug/Kg, dry	A	
Chrysene	< 7.0	ug/Kg, dry	A		Benzo(b)fluoranthene	< 7.0	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 7.0	ug/Kg, dry	A		Benzo(a)pyrene	< 7.0	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 7.0	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 7.0	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 7.0	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	69	%	A	
B/N Surr.2 2-Fluorobiphenyl	67	%	A		B/N Surr.3 Terphenyl-d14	107	%	A	
Unidentified Peaks	0		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

007 | Site: A1-A | Date Sampled: 4/8/10 14:22 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 300	ug/Kg, Dry	N		Chloromethane	< 180	ug/Kg, Dry	A	
Vinyl chloride	< 120	ug/Kg, Dry	A		Bromomethane	< 300	ug/Kg, Dry	A	QA-
Chloroethane	< 300	ug/Kg, Dry	A		Trichlorofluoromethane	< 120	ug/Kg, Dry	N	
Diethyl ether	< 300	ug/Kg, Dry	U		1,1-Dichloroethene	< 60.0	ug/Kg, Dry	A	
Acetone	< 600	ug/Kg, Dry	N		Carbon disulfide	< 300	ug/Kg, Dry	N	
Methylene chloride	< 300	ug/Kg, Dry	A		t-Butanol	< 1,200	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 120	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 60.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 120	ug/Kg, Dry	U		1,1-Dichloroethane	< 60.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 120	ug/Kg, Dry	U		2-Butanone	< 600	ug/Kg, Dry	A	
2,2-Dichloropropane	< 120	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 60.0	ug/Kg, Dry	N	
Bromochloromethane	< 120	ug/Kg, Dry	N		Chloroform	< 60.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 600	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 60.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 60.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 60.0	ug/Kg, Dry	N	
Benzene	< 60.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 120	ug/Kg, Dry	U	
1,2-Dichloroethane	< 60.0	ug/Kg, Dry	A		Trichloroethene	< 60.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 120	ug/Kg, Dry	A		Dibromomethane	< 120	ug/Kg, Dry	N	
Bromodichloromethane	< 30.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 60.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 600	ug/Kg, Dry	N		Toluene	< 60.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 120	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 60.0	ug/Kg, Dry	A	
Tetrachloroethene	< 60.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 60.0	ug/Kg, Dry	N	
2-Hexanone	< 600	ug/Kg, Dry	N		Dibromochloromethane	< 120	ug/Kg, Dry	A	
1,2-Dibromoethane	< 60.0	ug/Kg, Dry	N		Chlorobenzene	< 60.0	ug/Kg, Dry	A	
Ethylbenzene	< 60.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 120	ug/Kg, Dry	N	
Xylenes, Total	< 120	ug/Kg, Dry	A		Styrene	< 60.0	ug/Kg, Dry	N	
Bromoform	< 120	ug/Kg, Dry	A		Isopropylbenzene	< 60.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 120	ug/Kg, Dry	A		Bromobenzene	< 60.0	ug/Kg, Dry	N	
n-Propylbenzene	< 60.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 120	ug/Kg, Dry	N	
2-Chlorotoluene	< 60.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 60.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 60.0	ug/Kg, Dry	N		t-Butylbenzene	< 60.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 60.0	ug/Kg, Dry	A		s-Butylbenzene	< 60.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 60.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 60.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 60.0	ug/Kg, Dry	A		n-Butylbenzene	< 60.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 60.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 120	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 120	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 120	ug/Kg, Dry	U	
Hexachlorobutadiene	< 30.0	ug/Kg, Dry	N		Naphthalene	< 120	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 120	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	101	%	A	
Surr. 2 (Toluene d8)	102	%	A		Surr. 3 (4-Bromofluorobenzene)	100	%	A	
Unidentified Peaks	7		U						

TEST METHOD: EPA 8015B

007 | Site: A1-A | Date Sampled: 4/8/10 14:22 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 8.30	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

008 | Site: A2-A | Date Sampled: 4/8/10 13:47 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 100	ug/Kg, Dry	N		Chloromethane	< 60.0	ug/Kg, Dry	A	
Vinyl chloride	< 40.0	ug/Kg, Dry	A		Bromomethane	< 100	ug/Kg, Dry	A	QA-
Chloroethane	< 100	ug/Kg, Dry	A		Trichlorofluoromethane	< 40.0	ug/Kg, Dry	N	
Diethyl ether	< 100	ug/Kg, Dry	U		1,1-Dichloroethene	< 20.0	ug/Kg, Dry	A	
Acetone	< 200	ug/Kg, Dry	N		Carbon disulfide	< 100	ug/Kg, Dry	N	
Methylene chloride	< 100	ug/Kg, Dry	A		t-Butanol	< 400	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 40.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 20.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 40.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 20.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 40.0	ug/Kg, Dry	U		2-Butanone	< 200	ug/Kg, Dry	A	
2,2-Dichloropropane	< 40.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 20.0	ug/Kg, Dry	N	
Bromochloromethane	< 40.0	ug/Kg, Dry	N		Chloroform	< 20.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 200	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 20.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 20.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 20.0	ug/Kg, Dry	N	
Benzene	< 20.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 40.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 20.0	ug/Kg, Dry	A		Trichloroethene	< 20.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 40.0	ug/Kg, Dry	A		Dibromomethane	< 40.0	ug/Kg, Dry	N	
Bromodichloromethane	< 10.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 20.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 200	ug/Kg, Dry	N		Toluene	< 20.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 40.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 20.0	ug/Kg, Dry	A	
Tetrachloroethene	< 20.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 20.0	ug/Kg, Dry	N	
2-Hexanone	< 200	ug/Kg, Dry	N		Dibromochloromethane	< 40.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 20.0	ug/Kg, Dry	N		Chlorobenzene	< 20.0	ug/Kg, Dry	A	
Ethylbenzene	< 20.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 40.0	ug/Kg, Dry	N	
Xylenes, Total	< 40.0	ug/Kg, Dry	A		Styrene	< 20.0	ug/Kg, Dry	N	
Bromoform	< 40.0	ug/Kg, Dry	A		Isopropylbenzene	< 20.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 40.0	ug/Kg, Dry	A		Bromobenzene	< 20.0	ug/Kg, Dry	N	
n-Propylbenzene	< 20.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 40.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 20.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 20.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 20.0	ug/Kg, Dry	N		t-Butylbenzene	< 20.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 20.0	ug/Kg, Dry	A		s-Butylbenzene	< 20.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 20.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 20.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 20.0	ug/Kg, Dry	A		n-Butylbenzene	< 20.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 20.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 40.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 40.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 40.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 10.0	ug/Kg, Dry	N		Naphthalene	< 40.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 40.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	103	%	A	
Surr. 2 (Toluene d8)	106	%	A		Surr. 3 (4-Bromofluorobenzene)	97	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

008 | Site: A2-A | Date Sampled: 4/8/10 13:47 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 2.20	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

009 | Site: A3-A | Date Sampled: 4/8/10 12:28 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 200	ug/Kg, Dry	N		Chloromethane	< 120	ug/Kg, Dry	A	
Vinyl chloride	< 80.0	ug/Kg, Dry	A		Bromomethane	< 200	ug/Kg, Dry	A	QA-
Chloroethane	< 200	ug/Kg, Dry	A		Trichlorofluoromethane	< 80.0	ug/Kg, Dry	N	
Diethyl ether	< 200	ug/Kg, Dry	U		1,1-Dichloroethene	< 40.0	ug/Kg, Dry	A	
Acetone	< 400	ug/Kg, Dry	N		Carbon disulfide	< 200	ug/Kg, Dry	N	
Methylene chloride	< 200	ug/Kg, Dry	A		t-Butanol	< 800	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 80.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 40.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 80.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 40.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 80.0	ug/Kg, Dry	U		2-Butanone	< 400	ug/Kg, Dry	A	
2,2-Dichloropropane	< 80.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 40.0	ug/Kg, Dry	N	
Bromochloromethane	< 80.0	ug/Kg, Dry	N		Chloroform	< 40.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 400	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 40.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 40.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 40.0	ug/Kg, Dry	N	
Benzene	< 40.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 80.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 40.0	ug/Kg, Dry	A		Trichloroethene	< 40.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 80.0	ug/Kg, Dry	A		Dibromomethane	< 80.0	ug/Kg, Dry	N	
Bromodichloromethane	< 20.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 40.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 400	ug/Kg, Dry	N		Toluene	< 40.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 80.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 40.0	ug/Kg, Dry	A	
Tetrachloroethene	< 40.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 40.0	ug/Kg, Dry	N	
2-Hexanone	< 400	ug/Kg, Dry	N		Dibromochloromethane	< 80.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 40.0	ug/Kg, Dry	N		Chlorobenzene	< 40.0	ug/Kg, Dry	A	
Ethylbenzene	< 40.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 80.0	ug/Kg, Dry	N	
Xylenes, Total	< 80.0	ug/Kg, Dry	A		Styrene	< 40.0	ug/Kg, Dry	N	
Bromoform	< 80.0	ug/Kg, Dry	A		Isopropylbenzene	< 40.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 80.0	ug/Kg, Dry	A		Bromobenzene	< 40.0	ug/Kg, Dry	N	
n-Propylbenzene	< 40.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 80.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 40.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 40.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 40.0	ug/Kg, Dry	N		t-Butylbenzene	< 40.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 40.0	ug/Kg, Dry	A		s-Butylbenzene	< 40.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 40.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 40.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 40.0	ug/Kg, Dry	A		n-Butylbenzene	< 40.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 40.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 80.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 80.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 80.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 20.0	ug/Kg, Dry	N		Naphthalene	< 80.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 80.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	105	%	A	
Surr. 2 (Toluene d8)	102	%	A		Surr. 3 (4-Bromofluorobenzene)	101	%	A	
Unidentified Peaks	1		U						

TEST METHOD: EPA 8015B

009 | Site: A3-A | Date Sampled: 4/8/10 12:28 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 4.40	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

010 | Site: A4-A | Date Sampled: 4/8/10 12:55 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 150	ug/Kg, Dry	N		Chloromethane	< 90.0	ug/Kg, Dry	A	
Vinyl chloride	< 60.0	ug/Kg, Dry	A		Bromomethane	< 150	ug/Kg, Dry	A	QA-
Chloroethane	< 150	ug/Kg, Dry	A		Trichlorofluoromethane	< 60.0	ug/Kg, Dry	N	
Diethyl ether	< 150	ug/Kg, Dry	U		1,1-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Acetone	< 300	ug/Kg, Dry	N		Carbon disulfide	< 150	ug/Kg, Dry	N	
Methylene chloride	< 150	ug/Kg, Dry	A		t-Butanol	< 600	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 60.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 60.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 30.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 60.0	ug/Kg, Dry	U		2-Butanone	< 300	ug/Kg, Dry	A	
2,2-Dichloropropane	< 60.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	N	
Bromochloromethane	< 60.0	ug/Kg, Dry	N		Chloroform	< 30.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 300	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 30.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 30.0	ug/Kg, Dry	N	
Benzene	< 30.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 60.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 30.0	ug/Kg, Dry	A		Trichloroethene	< 30.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 60.0	ug/Kg, Dry	A		Dibromomethane	< 60.0	ug/Kg, Dry	N	
Bromodichloromethane	< 15.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 30.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 300	ug/Kg, Dry	N		Toluene	< 30.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 60.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Tetrachloroethene	< 30.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 30.0	ug/Kg, Dry	N	
2-Hexanone	< 300	ug/Kg, Dry	N		Dibromochloromethane	< 60.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 30.0	ug/Kg, Dry	N		Chlorobenzene	< 30.0	ug/Kg, Dry	A	
Ethylbenzene	< 30.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	N	
Xylenes, Total	< 60.0	ug/Kg, Dry	A		Styrene	< 30.0	ug/Kg, Dry	N	
Bromoform	< 60.0	ug/Kg, Dry	A		Isopropylbenzene	< 30.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	A		Bromobenzene	< 30.0	ug/Kg, Dry	N	
n-Propylbenzene	< 30.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 60.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 30.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 30.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 30.0	ug/Kg, Dry	N		t-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 30.0	ug/Kg, Dry	A		s-Butylbenzene	< 30.0	ug/Kg, Dry	A	
4-Isopropyltoluene	112	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 30.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		n-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 60.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 60.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 60.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 15.0	ug/Kg, Dry	N		Naphthalene	< 60.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 60.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	103	%	A	
Surr. 2 (Toluene d8)	98	%	A		Surr. 3 (4-Bromofluorobenzene)	95	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

010 | Site: A4-A | Date Sampled: 4/8/10 12:55 | Analysis Date: 4/12/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	4.36	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

011 | Site: D1-A | Date Sampled: 4/8/10 09:11 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 150	ug/Kg, Dry	N		Chloromethane	< 90.0	ug/Kg, Dry	A	
Vinyl chloride	< 60.0	ug/Kg, Dry	A		Bromomethane	< 150	ug/Kg, Dry	A	QA-
Chloroethane	< 150	ug/Kg, Dry	A		Trichlorofluoromethane	< 60.0	ug/Kg, Dry	N	
Diethyl ether	< 150	ug/Kg, Dry	U		1,1-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Acetone	< 300	ug/Kg, Dry	N		Carbon disulfide	< 150	ug/Kg, Dry	N	
Methylene chloride	< 150	ug/Kg, Dry	A		t-Butanol	< 600	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 60.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 60.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 30.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 60.0	ug/Kg, Dry	U		2-Butanone	< 300	ug/Kg, Dry	A	
2,2-Dichloropropane	< 60.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	N	
Bromochloromethane	< 60.0	ug/Kg, Dry	N		Chloroform	< 30.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 300	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 30.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 30.0	ug/Kg, Dry	N	
Benzene	< 30.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 60.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 30.0	ug/Kg, Dry	A		Trichloroethene	< 30.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 60.0	ug/Kg, Dry	A		Dibromomethane	< 60.0	ug/Kg, Dry	N	
Bromodichloromethane	< 15.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 30.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 300	ug/Kg, Dry	N		Toluene	< 30.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 60.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Tetrachloroethene	< 30.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 30.0	ug/Kg, Dry	N	
2-Hexanone	< 300	ug/Kg, Dry	N		Dibromochloromethane	< 60.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 30.0	ug/Kg, Dry	N		Chlorobenzene	< 30.0	ug/Kg, Dry	A	
Ethylbenzene	< 30.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	N	
Xylenes, Total	< 60.0	ug/Kg, Dry	A		Styrene	< 30.0	ug/Kg, Dry	N	
Bromoform	< 60.0	ug/Kg, Dry	A		Isopropylbenzene	< 30.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	A		Bromobenzene	< 30.0	ug/Kg, Dry	N	
n-Propylbenzene	< 30.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 60.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 30.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 30.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 30.0	ug/Kg, Dry	N		t-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 30.0	ug/Kg, Dry	A		s-Butylbenzene	< 30.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 30.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 30.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		n-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 60.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 60.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 60.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 15.0	ug/Kg, Dry	N		Naphthalene	< 60.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 60.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	111	%	A	
Surr. 2 (Toluene d8)	102	%	A		Surr. 3 (4-Bromofluorobenzene)	103	%	A	
Unidentified Peaks	6		U						

TEST METHOD: EPA 8015B

011 | Site: D1-A | Date Sampled: 4/8/10 09:11 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 2.90	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

012 | Site: D2-A | Date Sampled: 4/8/10 09:59 | Analysis Date: 4/21/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 150	ug/Kg, Dry	N		Chloromethane	< 90.0	ug/Kg, Dry	A	
Vinyl chloride	< 60.0	ug/Kg, Dry	A		Bromomethane	< 150	ug/Kg, Dry	A	QA-
Chloroethane	< 150	ug/Kg, Dry	A		Trichlorofluoromethane	< 60.0	ug/Kg, Dry	N	
Diethyl ether	< 150	ug/Kg, Dry	U		1,1-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Acetone	< 300	ug/Kg, Dry	N		Carbon disulfide	< 150	ug/Kg, Dry	N	
Methylene chloride	< 150	ug/Kg, Dry	A		t-Butanol	< 600	ug/Kg, Dry	N	
Methyl-t-butyl ether (MTBE)	< 60.0	ug/Kg, Dry	A		trans-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	A	
Di-isopropyl ether (DIPE)	< 60.0	ug/Kg, Dry	U		1,1-Dichloroethane	< 30.0	ug/Kg, Dry	A	
Ethyl-t-butyl ether (ETBE)	< 60.0	ug/Kg, Dry	U		2-Butanone	< 300	ug/Kg, Dry	A	
2,2-Dichloropropane	< 60.0	ug/Kg, Dry	N		cis-1,2-Dichloroethene	< 30.0	ug/Kg, Dry	N	
Bromochloromethane	< 60.0	ug/Kg, Dry	N		Chloroform	< 30.0	ug/Kg, Dry	A	
Tetrahydrofuran	< 300	ug/Kg, Dry	U		1,1,1-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Carbon tetrachloride	< 30.0	ug/Kg, Dry	A		1,1-Dichloropropene	< 30.0	ug/Kg, Dry	N	
Benzene	< 30.0	ug/Kg, Dry	A		t-Amylmethyl ether (TAME)	< 60.0	ug/Kg, Dry	U	
1,2-Dichloroethane	< 30.0	ug/Kg, Dry	A		Trichloroethene	< 30.0	ug/Kg, Dry	A	
1,2-Dichloropropane	< 60.0	ug/Kg, Dry	A		Dibromomethane	< 60.0	ug/Kg, Dry	N	
Bromodichloromethane	< 15.0	ug/Kg, Dry	A		cis-1,3-Dichloropropene	< 30.0	ug/Kg, Dry	A	
4-Methyl-2-pentanone (MIBK)	< 300	ug/Kg, Dry	N		Toluene	< 30.0	ug/Kg, Dry	A	
trans-1,3-Dichloropropene	< 60.0	ug/Kg, Dry	A		1,1,2-Trichloroethane	< 30.0	ug/Kg, Dry	A	
Tetrachloroethene	< 30.0	ug/Kg, Dry	A		1,3-Dichloropropane	< 30.0	ug/Kg, Dry	N	
2-Hexanone	< 300	ug/Kg, Dry	N		Dibromochloromethane	< 60.0	ug/Kg, Dry	A	
1,2-Dibromoethane	< 30.0	ug/Kg, Dry	N		Chlorobenzene	< 30.0	ug/Kg, Dry	A	
Ethylbenzene	< 30.0	ug/Kg, Dry	A		1,1,1,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	N	
Xylenes, Total	< 60.0	ug/Kg, Dry	A		Styrene	< 30.0	ug/Kg, Dry	N	
Bromoform	< 60.0	ug/Kg, Dry	A		Isopropylbenzene	< 30.0	ug/Kg, Dry	A	
1,1,2,2-Tetrachloroethane	< 60.0	ug/Kg, Dry	A		Bromobenzene	< 30.0	ug/Kg, Dry	N	
n-Propylbenzene	< 30.0	ug/Kg, Dry	A		1,2,3-Trichloropropane	< 60.0	ug/Kg, Dry	N	
2-Chlorotoluene	< 30.0	ug/Kg, Dry	N		1,3,5-Trimethylbenzene	< 30.0	ug/Kg, Dry	A	
4-Chlorotoluene	< 30.0	ug/Kg, Dry	N		t-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 30.0	ug/Kg, Dry	A		s-Butylbenzene	< 30.0	ug/Kg, Dry	A	
4-Isopropyltoluene	< 30.0	ug/Kg, Dry	N		1,3-Dichlorobenzene	< 30.0	ug/Kg, Dry	A	
1,4-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		n-Butylbenzene	< 30.0	ug/Kg, Dry	A	
1,2-Dichlorobenzene	< 30.0	ug/Kg, Dry	A		1,2-Dibromo-3-Chloropropane	< 60.0	ug/Kg, Dry	N	
1,2,4-Trichlorobenzene	< 60.0	ug/Kg, Dry	N		1,3,5-Trichlorobenzene	< 60.0	ug/Kg, Dry	U	
Hexachlorobutadiene	< 15.0	ug/Kg, Dry	N		Naphthalene	< 60.0	ug/Kg, Dry	A	
1,2,3-Trichlorobenzene	< 60.0	ug/Kg, Dry	U		Surr. 1 (Dibromofluoromethane	100	%	A	
Surr. 2 (Toluene d8)	101	%	A		Surr. 3 (4-Bromofluorobenzene)	101	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

012 | Site: D2-A | Date Sampled: 4/8/10 09:59 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 3.60	mg/Kg, dry	A						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

013 | Site: A1-B | Date Sampled: 4/8/10 14:38 | Analysis Date: 4/15/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 10.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	105	%	A	
Surr. 2 (Toluene d8)	105	%	A		Surr. 3 (4-Bromofluorobenzene)	99	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

013 | Site: A1-B | Date Sampled: 4/8/10 14:38 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

014 | Site: A2-B | Date Sampled: 4/8/10 13:52 | Analysis Date: 4/15/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 10.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	106	%	A	
Surr. 2 (Toluene d8)	103	%	A		Surr. 3 (4-Bromofluorobenzene)	100	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

014 | Site: A2-B | Date Sampled: 4/8/10 13:52 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

015 | Site: A3-B | Date Sampled: 4/8/10 12:34 | Analysis Date: 4/15/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 20.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	108	%	A	
Surr. 2 (Toluene d8)	103	%	A		Surr. 3 (4-Bromofluorobenzene)	102	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

015 | Site: A3-B | Date Sampled: 4/8/10 12:34 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

016 | Site: A4-B | Date Sampled: 4/8/10 13:04 | Analysis Date: 4/15/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 10.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	106	%	A	
Surr. 2 (Toluene d8)	102	%	A		Surr. 3 (4-Bromofluorobenzene)	100	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

016 | Site: A4-B | Date Sampled: 4/8/10 13:04 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

017 | Site: D1-B | Date Sampled: 4/8/10 09:16 | Analysis Date: 4/15/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 10.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	105	%	A	
Surr. 2 (Toluene d8)	103	%	A		Surr. 3 (4-Bromofluorobenzene)	99	%	A	
Unidentified Peaks	0		U						

TEST METHOD: EPA 8015B

017 | Site: D1-B | Date Sampled: 4/8/10 09:16 | Analysis Date: 4/13/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

TEST METHOD: EPA 8260B

018 | Site: D2-B | Date Sampled: 4/8/10 10:06 | Analysis Date: 4/15/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Dichlorodifluoromethane	< 5.0	ug/L	A		Chloromethane	< 3.0	ug/L	A	
Vinyl chloride	< 2.0	ug/L	A		Bromomethane	< 5.0	ug/L	A	
Chloroethane	< 5.0	ug/L	A		Trichlorofluoromethane	< 2.0	ug/L	N	
Diethyl ether	< 5.0	ug/L	U		1,1-Dichloroethene	< 1.0	ug/L	A	
Acetone	< 10.0	ug/L	N		Carbon disulfide	< 5.0	ug/L	N	
Methylene chloride	< 5.0	ug/L	A		t-Butanol	< 20.0	ug/L	N	
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		trans-1,2-Dichloroethene	< 1.0	ug/L	A	
Di-isopropyl ether (DIPE)	< 2.0	ug/L	N		1,1-Dichloroethane	< 1.0	ug/L	A	
Ethyl-t-butyl ether (ETBE)	< 2.0	ug/L	N		2-Butanone	< 10.0	ug/L	A	
2,2-Dichloropropane	< 2.0	ug/L	N		cis-1,2-Dichloroethene	< 1.0	ug/L	N	
Bromochloromethane	< 2.0	ug/L	N		Chloroform	< 1.0	ug/L	A	
Tetrahydrofuran	< 10.0	ug/L	U		1,1,1-Trichloroethane	< 1.0	ug/L	A	
Carbon tetrachloride	< 1.0	ug/L	A		1,1-Dichloropropene	< 1.0	ug/L	N	
Benzene	< 1.0	ug/L	A		t-Amylmethyl ether (TAME)	< 2.0	ug/L	N	
1,2-Dichloroethane	< 1.0	ug/L	A		Trichloroethene	< 1.0	ug/L	A	
1,2-Dichloropropane	< 2.0	ug/L	A		Dibromomethane	< 2.0	ug/L	N	
Bromodichloromethane	< 0.5	ug/L	A		cis-1,3-Dichloropropene	< 1.0	ug/L	A	
4-Methyl-2-pentanone (MIBK)	< 10.0	ug/L	N		Toluene	< 1.0	ug/L	A	
trans-1,3-Dichloropropene	< 2.0	ug/L	A		1,1,2-Trichloroethane	< 1.0	ug/L	A	
Tetrachloroethene	< 1.0	ug/L	A		1,3-Dichloropropane	< 1.0	ug/L	N	
2-Hexanone	< 10.0	ug/L	N		Dibromochloromethane	< 2.0	ug/L	A	
1,2-Dibromoethane	< 1.0	ug/L	N		Chlorobenzene	< 1.0	ug/L	A	
Ethylbenzene	< 1.0	ug/L	A		1,1,1,2-Tetrachloroethane	< 2.0	ug/L	N	
Xylenes, Total	< 2.0	ug/L	A		Styrene	< 1.0	ug/L	N	
Bromoform	< 2.0	ug/L	A		Isopropylbenzene	< 1.0	ug/L	N	
1,1,2,2-Tetrachloroethane	< 2.0	ug/L	A		Bromobenzene	< 1.0	ug/L	U	
n-Propylbenzene	< 1.0	ug/L	A		1,2,3-Trichloropropane	< 2.0	ug/L	N	
2-Chlorotoluene	< 1.0	ug/L	U		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
4-Chlorotoluene	< 1.0	ug/L	U		t-Butylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		s-Butylbenzene	< 1.0	ug/L	A	
4-Isopropyltoluene	< 1.0	ug/L	A		1,3-Dichlorobenzene	< 1.0	ug/L	A	
1,4-Dichlorobenzene	< 1.0	ug/L	A		n-Butylbenzene	< 1.0	ug/L	A	
1,2-Dichlorobenzene	< 1.0	ug/L	A		1,2-Dibromo-3-Chloropropane	< 2.0	ug/L	N	
1,2,4-Trichlorobenzene	< 2.0	ug/L	N		1,3,5-Trichlorobenzene	< 2.0	ug/L	U	
Hexachlorobutadiene	< 0.5	ug/L	N		Naphthalene	< 2.0	ug/L	A	
1,2,3-Trichlorobenzene	< 2.0	ug/L	N		Surr. 1 (Dibromofluoromethane	106	%	A	
Surr. 2 (Toluene d8)	105	%	A		Surr. 3 (4-Bromofluorobenzene)	99	%	A	
Unidentified Peaks	0		U						

TEST METHOD:

018 | Site: D2-B | Date Sampled: 4/8/10 10:06 | Analysis Date: 4/13/10 | W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Chemistry
REPORT DATE: 4/23/2010

WORK ORDER: **1004-04331**
DATE RECEIVED: 04/09/2010

Report Summary of Qualifiers and Notes

QA-: QA/QC associated with this analysis did not meet laboratory acceptance limits indicating the results may be biased low.

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

VHB Pioneer	090395
PO Box 120	
N. Ferrisburgh, VT 05473	

PROJECT: VAST Snowpack Study - Revised
WORK ORDER: **1004-04995**
DATE RECEIVED: April 23, 2010
DATE REPORTED: May 12, 2010
SAMPLER: Graham Sexstone

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody located at the end of this report.

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.

This 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

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE:5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

001 Site: C1-A Date Sampled: 4/21/10 13:20 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 7.60	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

001 Site: C1-A Date Sampled: 4/21/10 13:20 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 100	ug/Kg, Dry	A		Benzene	< 50.0	ug/Kg, Dry	A	
Toluene	< 50.0	ug/Kg, Dry	A		Ethylbenzene	< 50.0	ug/Kg, Dry	A	
Xylenes, Total	< 100	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 50.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 50.0	ug/Kg, Dry	A		Naphthalene	< 100	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	113	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	5		U	

TEST METHOD: EPA 8015B

002 Site: C2-A Date Sampled: 4/21/10 11:56 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 6.00	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

002 Site: C2-A Date Sampled: 4/21/10 11:56 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 80.0	ug/Kg, Dry	A		Benzene	< 40.0	ug/Kg, Dry	A	
Toluene	< 40.0	ug/Kg, Dry	A		Ethylbenzene	< 40.0	ug/Kg, Dry	A	
Xylenes, Total	< 80.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 40.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 40.0	ug/Kg, Dry	A		Naphthalene	< 80.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	110	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	95	%	A		Unidentified Peaks	4		U	

TEST METHOD: EPA 8015B

003 Site: B1-B Date Sampled: 4/22/10 12:31 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

003 Site: B1-B Date Sampled: 4/22/10 12:31 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	106	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	96	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE:5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

004 Site: B2-B Date Sampled: 4/21/10 16:11 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

004 Site: B2-B Date Sampled: 4/21/10 16:11 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	109	%	A		Surr. 2 (Toluene d8)	104	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

005 Site: B3-B Date Sampled: 4/22/10 10:38 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

005 Site: B3-B Date Sampled: 4/22/10 10:38 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	110	%	A		Surr. 2 (Toluene d8)	104	%	A	
Surr. 3 (4-Bromofluorobenzene)	96	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

006 Site: C1-B Date Sampled: 4/21/10 01:35 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

006 Site: C1-B Date Sampled: 4/21/10 01:35 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	110	%	A		Surr. 2 (Toluene d8)	103	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE:5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

007 Site: C2-B Date Sampled: 4/21/10 11:45 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

007 Site: C2-B Date Sampled: 4/21/10 11:45 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	114	%	A		Surr. 2 (Toluene d8)	104	%	A	
Surr. 3 (4-Bromofluorobenzene)	95	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

008 Site: E1-B Date Sampled: 4/21/10 17:33 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 0.20	mg/L	U						

TEST METHOD: EPA 8260B

008 Site: E1-B Date Sampled: 4/21/10 17:33 Analysis Date: 5/1/10 W MMW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 1.0	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	< 1.0	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	< 1.0	ug/L	A	
1,2,4-Trimethylbenzene	< 1.0	ug/L	A		Naphthalene	< 2.0	ug/L	A	
Surr. 1 (Dibromofluoromethane	112	%	A		Surr. 2 (Toluene d8)	106	%	A	
Surr. 3 (4-Bromofluorobenzene)	98	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8270C

009 Site: B1 Date Sampled: 4/22/10 12:11 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 17.4	ug/Kg, dry	A	
2-Methylnaphthalene	< 17.4	ug/Kg, dry	N		1-Methylnaphthalene	< 17.4	ug/Kg, dry	U	
Acenaphthylene	< 6.9	ug/Kg, dry	A		Acenaphthene	< 6.9	ug/Kg, dry	A	
Fluorene	< 6.9	ug/Kg, dry	A		Phenanthrene	< 6.9	ug/Kg, dry	A	
Anthracene	< 6.9	ug/Kg, dry	A		Fluoranthene	< 6.9	ug/Kg, dry	A	
Pyrene	< 6.9	ug/Kg, dry	A		Benzo(a)anthracene	< 6.9	ug/Kg, dry	A	
Chrysene	< 6.9	ug/Kg, dry	A		Benzo(b)fluoranthene	< 6.9	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 6.9	ug/Kg, dry	A		Benzo(a)pyrene	< 6.9	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 6.9	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 6.9	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 6.9	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	80	%	A	
B/N Surr.2 2-Fluorobiphenyl	83	%	A		B/N Surr.3 Terphenyl-d14	121	%	A	
Unidentified Peaks	0		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE: 5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

009 Site: B1 Date Sampled: 4/22/10 12:11 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 1.20	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

009 Site: B1 Date Sampled: 4/22/10 12:11 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		Benzene	< 10.0	ug/Kg, Dry	A	
Toluene	< 10.0	ug/Kg, Dry	A		Ethylbenzene	< 10.0	ug/Kg, Dry	A	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		Naphthalene	< 20.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	114	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	90	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8270C

010 Site: B2 Date Sampled: 4/21/10 15:50 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 21.9	ug/Kg, dry	A	
2-Methylnaphthalene	< 21.9	ug/Kg, dry	N		1-Methylnaphthalene	< 21.9	ug/Kg, dry	U	
Acenaphthylene	< 8.7	ug/Kg, dry	A		Acenaphthene	< 8.7	ug/Kg, dry	A	
Fluorene	< 8.7	ug/Kg, dry	A		Phenanthrene	< 8.7	ug/Kg, dry	A	
Anthracene	< 8.7	ug/Kg, dry	A		Fluoranthene	< 8.7	ug/Kg, dry	A	
Pyrene	< 8.7	ug/Kg, dry	A		Benzo(a)anthracene	< 8.7	ug/Kg, dry	A	
Chrysene	< 8.7	ug/Kg, dry	A		Benzo(b)fluoranthene	< 8.7	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 8.7	ug/Kg, dry	A		Benzo(a)pyrene	< 8.7	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 8.7	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 8.7	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 8.7	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	80	%	A	
B/N Surr.2 2-Fluorobiphenyl	76	%	A		B/N Surr.3 Terphenyl-d14	115	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

010 Site: B2 Date Sampled: 4/21/10 15:50 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 3.30	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

010 Site: B2 Date Sampled: 4/21/10 15:50 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 60.0	ug/Kg, Dry	A		Benzene	< 30.0	ug/Kg, Dry	A	
Toluene	< 30.0	ug/Kg, Dry	A		Ethylbenzene	< 30.0	ug/Kg, Dry	A	
Xylenes, Total	< 60.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 30.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 30.0	ug/Kg, Dry	A		Naphthalene	< 60.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	110	%	A		Surr. 2 (Toluene d8)	107	%	A	
Surr. 3 (4-Bromofluorobenzene)	94	%	A		Unidentified Peaks	6		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE: 5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8270C

011 Site: B3 Date Sampled: 4/22/10 10:11 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 25.3	ug/Kg, dry	A	
2-Methylnaphthalene	< 25.3	ug/Kg, dry	N		1-Methylnaphthalene	< 25.3	ug/Kg, dry	U	
Acenaphthylene	< 10.1	ug/Kg, dry	A		Acenaphthene	< 10.1	ug/Kg, dry	A	
Fluorene	< 10.1	ug/Kg, dry	A		Phenanthrene	31.8	ug/Kg, dry	A	
Anthracene	66.1	ug/Kg, dry	A		Fluoranthene	122	ug/Kg, dry	A	
Pyrene	93.3	ug/Kg, dry	A		Benzo(a)anthracene	33.3	ug/Kg, dry	A	
Chrysene	67.6	ug/Kg, dry	A		Benzo(b)fluoranthene	40.9	ug/Kg, dry	A	
Benzo(k)fluoranthene	11.1	ug/Kg, dry	A		Benzo(a)pyrene	15.6	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	16.7	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 10.1	ug/Kg, dry	A	
Benzo(g,h,i)perylene	18.2	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	55	%	A	
B/N Surr.2 2-Fluorobiphenyl	60	%	A		B/N Surr.3 Terphenyl-d14	123	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

011 Site: B3 Date Sampled: 4/22/10 10:11 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 3.60	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

011 Site: B3 Date Sampled: 4/22/10 10:11 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 60.0	ug/Kg, Dry	A		Benzene	< 30.0	ug/Kg, Dry	A	
Toluene	< 30.0	ug/Kg, Dry	A		Ethylbenzene	< 30.0	ug/Kg, Dry	A	
Xylenes, Total	< 60.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 30.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 30.0	ug/Kg, Dry	A		Naphthalene	< 60.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	112	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	6		U	

TEST METHOD: EPA 8270C

012 Site: C1 Date Sampled: 4/21/10 13:29 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 19.3	ug/Kg, dry	A	
2-Methylnaphthalene	< 19.3	ug/Kg, dry	N		1-Methylnaphthalene	< 19.3	ug/Kg, dry	U	
Acenaphthylene	< 7.7	ug/Kg, dry	A		Acenaphthene	< 7.7	ug/Kg, dry	A	
Fluorene	< 7.7	ug/Kg, dry	A		Phenanthrene	32.0	ug/Kg, dry	A	
Anthracene	< 7.7	ug/Kg, dry	A		Fluoranthene	73.4	ug/Kg, dry	A	
Pyrene	53.7	ug/Kg, dry	A		Benzo(a)anthracene	26.6	ug/Kg, dry	A	
Chrysene	29.3	ug/Kg, dry	A		Benzo(b)fluoranthene	38.6	ug/Kg, dry	A	
Benzo(k)fluoranthene	13.5	ug/Kg, dry	A		Benzo(a)pyrene	28.2	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	25.9	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 7.7	ug/Kg, dry	A	
Benzo(g,h,i)perylene	21.2	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	79	%	A	
B/N Surr.2 2-Fluorobiphenyl	78	%	A		B/N Surr.3 Terphenyl-d14	116	%	A	
Unidentified Peaks	> 10		U						

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE: 5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

012 Site: C1 Date Sampled: 4/21/10 13:29 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 2.20	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

012 Site: C1 Date Sampled: 4/21/10 13:29 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 20.0	ug/Kg, Dry	A		Benzene	< 10.0	ug/Kg, Dry	A	
Toluene	24.4	ug/Kg, Dry	A		Ethylbenzene	< 10.0	ug/Kg, Dry	A	
Xylenes, Total	< 20.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 10.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 10.0	ug/Kg, Dry	A		Naphthalene	< 20.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	115	%	A		Surr. 2 (Toluene d8)	112	%	A	
Surr. 3 (4-Bromofluorobenzene)	92	%	A		Unidentified Peaks	5		U	

TEST METHOD: EPA 8270C

013 Site: C2 Date Sampled: 4/21/10 11:32 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 22.3	ug/Kg, dry	A	
2-Methylnaphthalene	< 22.3	ug/Kg, dry	N		1-Methylnaphthalene	< 22.3	ug/Kg, dry	U	
Acenaphthylene	< 8.9	ug/Kg, dry	A		Acenaphthene	< 8.9	ug/Kg, dry	A	
Fluorene	< 8.9	ug/Kg, dry	A		Phenanthrene	< 8.9	ug/Kg, dry	A	
Anthracene	< 8.9	ug/Kg, dry	A		Fluoranthene	< 8.9	ug/Kg, dry	A	
Pyrene	< 8.9	ug/Kg, dry	A		Benzo(a)anthracene	< 8.9	ug/Kg, dry	A	
Chrysene	< 8.9	ug/Kg, dry	A		Benzo(b)fluoranthene	< 8.9	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 8.9	ug/Kg, dry	A		Benzo(a)pyrene	< 8.9	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 8.9	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 8.9	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 8.9	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	73	%	A	
B/N Surr.2 2-Fluorobiphenyl	70	%	A		B/N Surr.3 Terphenyl-d14	109	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

013 Site: C2 Date Sampled: 4/21/10 11:32 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 2.40	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

013 Site: C2 Date Sampled: 4/21/10 11:32 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 40.0	ug/Kg, Dry	A		Benzene	< 20.0	ug/Kg, Dry	A	
Toluene	< 20.0	ug/Kg, Dry	A		Ethylbenzene	< 20.0	ug/Kg, Dry	A	
Xylenes, Total	< 40.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 20.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 20.0	ug/Kg, Dry	A		Naphthalene	< 40.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	111	%	A		Surr. 2 (Toluene d8)	114	%	A	
Surr. 3 (4-Bromofluorobenzene)	93	%	A		Unidentified Peaks	5		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE: 5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8270C

014 Site: E1 Date Sampled: 4/21/10 17:21 Analysis Date: 4/23/10 W KAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		Naphthalene	< 23.6	ug/Kg, dry	A	
2-Methylnaphthalene	< 23.6	ug/Kg, dry	N		1-Methylnaphthalene	< 23.6	ug/Kg, dry	U	
Acenaphthylene	< 9.4	ug/Kg, dry	A		Acenaphthene	< 9.4	ug/Kg, dry	A	
Fluorene	< 9.4	ug/Kg, dry	A		Phenanthrene	< 9.4	ug/Kg, dry	A	
Anthracene	< 9.4	ug/Kg, dry	A		Fluoranthene	< 9.4	ug/Kg, dry	A	
Pyrene	< 9.4	ug/Kg, dry	A		Benzo(a)anthracene	< 9.4	ug/Kg, dry	A	
Chrysene	< 9.4	ug/Kg, dry	A		Benzo(b)fluoranthene	< 9.4	ug/Kg, dry	A	
Benzo(k)fluoranthene	< 9.4	ug/Kg, dry	A		Benzo(a)pyrene	< 9.4	ug/Kg, dry	A	
Indeno(1,2,3-cd)pyrene	< 9.4	ug/Kg, dry	A		Dibenzo(a,h)anthracene	< 9.4	ug/Kg, dry	A	
Benzo(g,h,i)perylene	< 9.4	ug/Kg, dry	A		B/N Surr.1 Nitrobenzene-d5	67	%	A	
B/N Surr.2 2-Fluorobiphenyl	62	%	A		B/N Surr.3 Terphenyl-d14	104	%	A	
Unidentified Peaks	> 10		U						

TEST METHOD: EPA 8015B

014 Site: E1 Date Sampled: 4/21/10 17:21 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 3.70	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

014 Site: E1 Date Sampled: 4/21/10 17:21 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 80.0	ug/Kg, Dry	A		Benzene	< 40.0	ug/Kg, Dry	A	
Toluene	< 40.0	ug/Kg, Dry	A		Ethylbenzene	< 40.0	ug/Kg, Dry	A	
Xylenes, Total	< 80.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 40.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 40.0	ug/Kg, Dry	A		Naphthalene	< 80.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	99	%	A		Surr. 2 (Toluene d8)	105	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

015 Site: B1-A Date Sampled: 4/22/10 12:23 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 5.00	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

015 Site: B1-A Date Sampled: 4/22/10 12:23 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 80.0	ug/Kg, Dry	A		Benzene	< 40.0	ug/Kg, Dry	A	
Toluene	< 40.0	ug/Kg, Dry	A		Ethylbenzene	< 40.0	ug/Kg, Dry	A	
Xylenes, Total	< 80.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 40.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 40.0	ug/Kg, Dry	A		Naphthalene	< 80.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	91	%	A		Surr. 2 (Toluene d8)	108	%	A	
Surr. 3 (4-Bromofluorobenzene)	97	%	A		Unidentified Peaks	0		U	

CLIENT: VHB Pioneer
PROJECT: VAST Snowpack Study - Revised
REPORT DATE:5/12/2010

WORK ORDER: **1004-04995**
DATE RECEIVED: 04/23/2010

TEST METHOD: EPA 8015B

016 Site: B2-A Date Sampled: 4/21/10 15:59 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 6.60	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

016 Site: B2-A Date Sampled: 4/21/10 15:59 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 100	ug/Kg, Dry	A		Benzene	< 50.0	ug/Kg, Dry	A	
Toluene	< 50.0	ug/Kg, Dry	A		Ethylbenzene	< 50.0	ug/Kg, Dry	A	
Xylenes, Total	< 100	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 50.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 50.0	ug/Kg, Dry	A		Naphthalene	< 100	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	85	%	A		Surr. 2 (Toluene d8)	106	%	A	
Surr. 3 (4-Bromofluorobenzene)	102	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8015B

017 Site: B3-A Date Sampled: 4/22/10 10:26 Analysis Date: 5/3/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
TPH Gas Range Organics	< 2.70	mg/Kg, dry	A						

TEST METHOD: EPA 8260B

017 Site: B3-A Date Sampled: 4/22/10 10:26 Analysis Date: 5/12/10 W DAW

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 80.0	ug/Kg, Dry	A		Benzene	< 40.0	ug/Kg, Dry	A	
Toluene	< 40.0	ug/Kg, Dry	A		Ethylbenzene	< 40.0	ug/Kg, Dry	A	
Xylenes, Total	< 80.0	ug/Kg, Dry	A		1,3,5-Trimethylbenzene	< 40.0	ug/Kg, Dry	A	
1,2,4-Trimethylbenzene	< 40.0	ug/Kg, Dry	A		Naphthalene	< 80.0	ug/Kg, Dry	A	
Surr. 1 (Dibromofluoromethane	81	%	A		Surr. 2 (Toluene d8)	102	%	A	
Surr. 3 (4-Bromofluorobenzene)	99	%	A		Unidentified Peaks	6		U	

Report Summary of Qualifiers and Notes

Report revised to include Volatiles compound analysis for the Solid samples.

Volatile compound analysis on the solid samples was performed past method specified holding time.