594.001

OTTER CREEK ENGINEERING, INC.

March 6, 2012

Mr. Alex Geller
Environmental Analyst
VDEC Waste Management Division
Sites Management Section
103 South Main Street, West Building
Waterbury, VT 05671-0404

Subject: Peter & Wendy Thurston Residence - Barn Well Water Quality Report
254 Barnes Road, East Montpelier, VT (Site # 2009-3951)

Dear Mr. Geller:

Otter Creek Engineering, Inc., on behalf of Peter & Wendy Thurston, collected a water quality sample on February 16, 2012 from the Barn Well that supplies water to their residence. Additional work completed that day included removal and inspection of the sorbent in the House Well, and inspection of the polyencapsulated soil pile. This work was completed in accordance with your November 16, 2011 e-mail approval to conduct biannual monitoring and reporting.

February 2012 Monitoring and Sampling Event

On February 16, 2012 a site visit was conducted to monitor the groundwater level and free product thickness in the House Well, collect a groundwater quality sample from the Barn Well, and inspect the polyencapsulated soil pile. As shown in **Table 1**, the groundwater level in the House Well was 35.30-feet below the well top-of-casing (TOC). Although there was a fuel oil odor from the well, there was no measurable thickness of fuel oil atop the groundwater. The sorbent suspended in the House Well was brownish and slightly covered with a brown slime. The sorbent was placed back into the well and adjusted so that the center of the sorbent was at the groundwater level to collect any free product that might collect in the House Well. The slime material suggests that active biodegradation of the fuel oil is occurring in the House Well.

A groundwater quality sample was collected from the Barn Well at the laundry sink in the basement after running the water for 20 minutes. The sample was chilled on ice and delivered with a Trip Blank sample to the Endyne, Inc. Laboratory for VOCs analysis via EPA Method 8021B. The laboratory report is included in **Appendix A** and the results are summarized in **Table 2**. Review of **Table 2** and **Appendix A** indicates that VOCs were not detected in the Barn Well and the Trip Blank samples. The data indicate that the low concentration of 1,2,4-trimethylbenzene detected (1.4 ppb) in the August 9, 2011 sampling

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event has declined to less than 1.0 ppb, the analytical detection limit, and that water from the Barn Well is considered potable.

The soil pile was inspected and remains fully polyencapsulated and covered with snow. A few small animal tracks were visible in the snow on the soil pile. Photographs of the soil pile are presented in **Appendix B**.

Recommendations

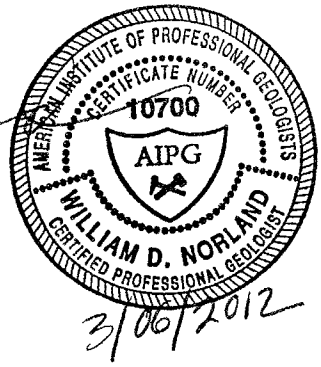
Based on the previous investigations and reports completed, data collected during the August 9, 2011 field activities, and the recent monitoring data collected, the following recommendations are made with regard to future work at the Site:

1. Biannually, in August 2012, and in February and August 2013, conduct a site visit to monitor the groundwater level and free product thickness in the House Well. Remove any accumulated fuel oil and place it in the drum for future disposal, and replace the sorbent as necessary.
2. At that time collect a groundwater sample from the Barn Well and have it tested for VOCs via EPA Method 8021B at the Endyne, Inc. Laboratory.
3. In August 2013, conduct a site visit to assess the contaminant levels within the soil pile using a hand auger and a PID. If all PID assays are <1 ppm, then submit the data in a letter with a request to SMS for thinspreading the soils on the Site. If there are detectable concentrations of VOCs >1 ppm, re-cover the biopile and conduct testing in August 2015.
4. Summarize the findings in a letter and submit it to the VDEC SMS, the Thurstons, and their insurance carrier, USAA.
5. The 55-gallon steel drum that contains fuel oil and sorbents will be properly transported and disposed in August, 2012.

Should you have any questions or comments, please do not hesitate to call me.

Sincerely,

William D. Norland, C.P.G.
Hydrogeologist



c: Wendy and Peter Thurston
Jim McGowin - USAA Claims

Enclosures

OTTER CREEK ENGINEERING

TABLE 1 - Groundwater Level & Fuel Oil Thickness Summary

Peter & Wendy Thurston Residence
Fuel Oil Contamination Investigation
245 Barnes Road
East Montpelier, Vermont (Site #2009-3951)

Well	TOC Elevation (feet)	08/05/2009 DTGW (feet)	08/05/2009 GWEL (feet)	10/21/2009 DTGW (feet)	10/21/2009 GWEL (feet)
House Well	100.00	28.97	71.03	41.42	58.58
Fuel Oil Thickness (feet)			0.02		2.00

Well	TOC Elevation (feet)	10/21/2009 DTGW (feet)	10/21/2009 GWEL (feet)	10/21/2009 DTGW (feet)	10/21/2009 GWEL (feet)
House Well	100.00	41.34	58.66	40.10	59.90
Fuel Oil Thickness (feet)			1.83		0.28

Well	TOC Elevation (feet)	10/21/2009 DTGW (feet)	10/21/2009 GWEL (feet)	10/26/2009 DTGW (feet)	10/26/2009 GWEL (feet)
House Well	100.00	39.91	60.09	38.89	61.11
Fuel Oil Thickness (feet)			0.01		

Well	TOC Elevation (feet)	2/01/2010 DTGW (feet)	2/01/2010 GWEL (feet)	8/25/2010 DTGW (feet)	8/25/2010 GWEL (feet)
House Well	100.00	27.80	72.20	39.47	60.53
Fuel Oil Thickness (feet)					

Well	TOC Elevation (feet)	2/09/2011 DTGW (feet)	2/09/2011 GWEL (feet)	8/09/2011 DTGW (feet)	8/09/2011 GWEL (feet)
House Well	100.00	37.21	62.79	38.11	61.89
Fuel Oil Thickness (feet)					

Well	TOC Elevation (feet)	2/16/2012 DTGW (feet)	2/16/2012 GWEL (feet)		
House Well	100.00	35.30	64.70		
Fuel Oil Thickness (feet)					

GWEL = Groundwater elevation

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TABLE 2 - Groundwater Quality Summary
Peter & Wendy Thurston Residence
Fuel Oil Contamination Investigation
245 Barnes Road
East Montpelier, Vermont (Site #2009-3951)

			Concentration (ppb)			
Sample Point	Compound	VGES	8/18/2009[1]	10/26/2009[2]	2/1/2010[2]	8/25/2010[3]
Barn Well	Benzene	5.0	<0.5	<1.0	<1.0	<0.5
	Toluene	1,000	<0.5	**2.4**	<1.0	<0.5
	Ethylbenzene	700	<0.5	<1.0	<1.0	<0.5
	Xylenes, Total	10,000	<1.0	<2.0	<2.0	<1.0
	MTBE	40	<0.5	<2.0	<2.0	<0.5
	Naphthalene	20	<0.5	<2.0	<2.0	<0.5
	1,2,4-Trimethylbenzene	350 combined	<0.5	<1.0	<1.0	<0.5
	1,3,5-Trimethylbenzene		<0.5	<1.0	<1.0	<0.5

Sample Point	Compound	VGES	2/9/2011[2]	8/9/2011[2]	2/16/2012[2]	
Barn Well	Benzene	5.0	<1.0	<1.0	<1.0	
	Toluene	1,000	<1.0	<1.0	<1.0	
	Ethylbenzene	700	<1.0	<1.0	<1.0	
	Xylenes, Total	10,000	<2.0	<2.0	<2.0	
	MTBE	40	<2.0	<2.0	<2.0	
	Naphthalene	20	<2.0	<2.0	<2.0	
	1,2,4-Trimethylbenzene	350 combined	<1.0	**1.4**	<1.0	
	1,3,5-Trimethylbenzene		<1.0	<1.0	<1.0	

VGES = Vermont Groundwater Enforcement Standard
< = less than the analytical detection limit
ppb = parts per billion (ug/L)
Detected compounds are *italicized,* **bold**, and shaded grey
1 = Sample collected at wellhead discharge
2 = Sample collected at basement sink
3 = Sample collected at outdoor hose bibb

APPENDIX A - BARN WELL WATER QUALITY REPORT

ENDYNE Inc.
Environmental Laboratories

594.001

Otter Creek Engineering	
PO Box 712	090205
East Middlebury, VT 05740	
Atten: Bill Norland	

PROJECT: Thurston Residence - E. Montp
WORK ORDER: **1202-02197**
DATE RECEIVED: February 16, 2012
DATE REPORTED: February 21, 2012
SAMPLER: Bill Norland

Laboratory Report

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

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

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

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

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 02/21/2012

CLIENT: Otter Creek Engineering
PROJECT: Thurston Residence - E. Montp

WORK ORDER: **1202-02197**
DATE RECEIVED 02/16/2012

001 Site: Trip Blank Date Sampled: 2/16/12 Time: 9:42

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Vt Petroleum List 8021B							
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Benzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Toluene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Ethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Xylenes, Total	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
1,3,5-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
1,2,4-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Naphthalene	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Surr. 1 (Bromobenzene)	104	%	EPA 8021B	2/17/12	W RBF	N	
Unidentified Peaks	0		EPA 8021B	2/17/12	W RBF	N	

002 Site: Barn Well @ Basement Sink Date Sampled: 2/16/12 Time: 10:07

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Vt Petroleum List 8021B							
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Benzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Toluene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Ethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Xylenes, Total	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
1,3,5-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
1,2,4-Trimethylbenzene	< 1.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Naphthalene	< 2.0	ug/L	EPA 8021B	2/17/12	W RBF	N	
Surr. 1 (Bromobenzene)	99	%	EPA 8021B	2/17/12	W RBF	N	
Unidentified Peaks	0		EPA 8021B	2/17/12	W RBF	N	

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

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: _____

№ 58536

Project Name: Thurston Residence / E. Montpelier	Client/Contact Name: Otter Creek Engineering	Sampler Name: Bill Norland
State of Origin: VT X NY __ NH __ Other __	Phone #: 802-382-8522	Phone #: ~~same~~
Endyne WO # 1202-0297	Mailing Address: ~~PO~~ Box 712 E. Middlebury, VT 05740	Billing Address: ~~same~~

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	FieldResults/Remarks	Due Date
Trip Blank	Water	X		2/16/12 @ 0742	2	40ml VOA	HCl ✓	33		
Barn Well @ Basement Sink	Water	X		2/16/12 @ 1007	2	40ml VOA	HCl ✓	33		

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
William Norland	2/16/12 1255			Ellen Rooney	2/16 12:55

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other EPA 8021B				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp. 2.2
Comment:

(White - Laboratory / Yellow - Client)

Page ____ of ____

APPENDIX B - PHOTOGRAPHS

PETER AND WENDY THURSTON RESIDENCE
SOIL PILE - INSPECTION PHOTOS

View to south of soil biopile covered in snow.

View to north of soil biopile covered in snow.