Waite - Heindel
Environmental Management

October 15, 2013

Ms. Sue Thayer
VT DEC
Waste Management & Prevention Division
1 National Life Dr., Davis 1
Montpelier VT 05620-3704

Sent via email: susan.thayer@state.vt.us

RE: UST Closure – Soil Sampling Results
Young Property, 28 North Williams Street, Burlington, Vermont

Dear Sue:

Please find attached soil sampling results from the UST closure at the Bill and Sarah Young property in Burlington, Vermont. This letter is a follow-up to the UST Closure Report prepared by Waite-Heindel Environmental Management (WHEM) dated October 1.

The soil sampling was conducted by WHEM on September 20, 2013 during the UST closure. Sample "Tank Pit" was a confirmatory bottom sample collected from the reddish dense clay that was encountered below the leaking UST at a depth of 6.0 ft. Sample "Soil Pile" was a composite of the fuel-oil contaminated soil that was removed from under and around the UST. The results, provided in Table 2 and in the lab report attached, indicate the following:

- The bottom sample had levels of Total Petroleum Hydrocarbons (TPH) and petroleum volatile organic compounds (VOCs) below VT DEC Soil Screening Values (SSVs), indicating that the source area was adequately remediated by the excavation.
- The composite sample had high levels of TPH in excess of SSVs, indicating a successful recovery of contaminant mass that was eventually disposed of the ESMI facility in Louden, New Hampshire.

Given the established presence of VOCs in the groundwater under the Young Residence, we continue to recommend additional assessment of the full magnitude and extent of groundwater contamination.

Sincerely,

Miles E. Waite, PhD
Senior Hydrogeologist

Attachments

cc: Bill Young (email only)
Hugo Martinez Cazon, VT DEC (email only)

TABLE 2
Soil Quality Data
Young Residence
28 N. Williams St, Burlington, Vermont

Sample Location		SOIL SCREENING VALUES (SSVs)		**Tank Pit**	**Soil Pile**
Sample Depth Interval (ft)		EPA RSL	VDH	6.0 ft	composite
Sample Date		Resdential (5/13)	VALUE	9/20/2013	9/20/2013
TOTAL PETROLEUM HYDROCARBONS - DEISEL RANGE (TPH-DRO) (EPA Method 8015B)					
TPH-DRO	mg/Kg (ppm)		200	**159**	**3,780**
VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260B)					
Benzene	ug/Kg (ppb)	1,100	6,240	ND / < 28.0	
Toluene	ug/Kg (ppb)	5,000,000		ND / < 28.0	
Ethylbenzene	ug/Kg (ppb)	5,400		**41.2**	
Xylenes	ug/Kg (ppb)	630,000		**147**	
1,2,4-Trimethylbenzene	ug/Kg (ppb)	62,000		**216**	
1,3,5-Trimethylbenzene	ug/Kg (ppb)	780,000		**152**	
Naphthalene	ug/Kg (ppb)	3,600	107,000	**643**	

NOTES:
1. ND = not detected above any of the estimated reporting limits.
2. VT DEC Soil Screening Values (SSV) are from Appendix A of the Investigation and Remediation of Contaminated Properties Procedures (April 2012).
3. EPA Method 8260B compounds not shown were not detected.
4. Results reported above the method detection limit are indicated in bold.
5. Shaded results are above guideline.

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

WaiteHeindel Environmental Mgt	100675
7 Kilburn Street	
Suite 301	
Burlington, VT 05406	
Atten: Miles Waite	

PROJECT: Young
WORK ORDER: **1309-18838**
DATE RECEIVED: September 20, 2013
DATE REPORTED: October 04, 2013
SAMPLER: Miles

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

CLIENT: WaiteHeindel Environmental Mgt
PROJECT: Young
REPORT DATE: 10/4/2013

WORK ORDER: **1309-18838**
DATE RECEIVED: 09/20/2013

002 Site: Soil Pile — Date Sampled: 9/20/13 Time: 13:15

Parameter	Result	Units	Method	Analysis Date		Lab/Tech	NELAC	Qual.
Ignitability-Solids Package								
Ignitability	Negative		EPA 1030	9/24/13	11:40	W JSS	N	
Flashpoint	> 220	Degrees F	EPA 1010 Modified	9/24/13	11:40	W JSS	U	

CLIENT: WaiteHeindel Environmental Mgt
PROJECT: Young
REPORT DATE: 10/4/2013

WORK ORDER: **1309-18838**
DATE RECEIVED: 09/20/2013

TEST METHOD: EPA 8015B

001 Site: Tank Pit — Sampled: 9/20/13 12:30 — Test Date: 9/27/13 — W FAA

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		C7-C10 TPH	< 30	mg/Kg, dry	U	
C10-C28 TPH-DRO	159	mg/Kg, dry	A		C28-C40 TPH	< 30	mg/Kg, dry	U	
Tot. Petroleum Hydrocarbons	159	mg/Kg, dry	U		Hydrocarbon Window	C10-C26		U	

TEST METHOD: EPA 8260B

001 Site: Tank Pit — Sampled: 9/20/13 12:30 — Test Date: 10/2/13 — W MHM

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Prep EPA 5035A High Level	Complete		A		Dichlorodifluoromethane	< 140	ug/Kg, Dry	N	
Chloromethane	< 84.0	ug/Kg, Dry	A		Vinyl chloride	< 56.0	ug/Kg, Dry	A	
Bromomethane	< 140	ug/Kg, Dry	A	QA-	Chloroethane	< 140	ug/Kg, Dry	A	
Trichlorofluoromethane	< 56.0	ug/Kg, Dry	N		Diethyl ether	< 140	ug/Kg, Dry	N	
1,1-Dichloroethene	< 28.0	ug/Kg, Dry	A		Acetone	< 280	ug/Kg, Dry	N	
Carbon disulfide	< 140	ug/Kg, Dry	N		Methylene chloride	< 140	ug/Kg, Dry	A	
t-Butanol	< 560	ug/Kg, Dry	N	QA-	Methyl-t-butyl ether (MTBE)	< 56.0	ug/Kg, Dry	A	
trans-1,2-Dichloroethene	< 28.0	ug/Kg, Dry	A		Di-isopropyl ether (DIPE)	< 56.0	ug/Kg, Dry	U	
1,1-Dichloroethane	< 28.0	ug/Kg, Dry	A		Ethyl-t-butyl ether (ETBE)	< 56.0	ug/Kg, Dry	U	
2-Butanone	< 280	ug/Kg, Dry	A		2,2-Dichloropropane	< 56.0	ug/Kg, Dry	N	
cis-1,2-Dichloroethene	< 28.0	ug/Kg, Dry	N		Bromochloromethane	< 56.0	ug/Kg, Dry	N	
Chloroform	< 28.0	ug/Kg, Dry	A		Tetrahydrofuran	< 280	ug/Kg, Dry	U	
1,1,1-Trichloroethane	< 28.0	ug/Kg, Dry	A		Carbon tetrachloride	< 28.0	ug/Kg, Dry	A	
1,1-Dichloropropene	< 28.0	ug/Kg, Dry	N		Benzene	< 28.0	ug/Kg, Dry	A	
t-Amylmethyl ether (TAME)	< 56.0	ug/Kg, Dry	U		1,2-Dichloroethane	< 28.0	ug/Kg, Dry	A	
Trichloroethene	< 28.0	ug/Kg, Dry	A		1,2-Dichloropropane	< 56.0	ug/Kg, Dry	A	
Dibromomethane	< 56.0	ug/Kg, Dry	N		Bromodichloromethane	< 28.0	ug/Kg, Dry	A	
cis-1,3-Dichloropropene	< 28.0	ug/Kg, Dry	A		4-Methyl-2-pentanone (MIBK)	< 280	ug/Kg, Dry	N	
Toluene	< 28.0	ug/Kg, Dry	A		trans-1,3-Dichloropropene	< 56.0	ug/Kg, Dry	A	
1,1,2-Trichloroethane	< 28.0	ug/Kg, Dry	A		Tetrachloroethene	< 28.0	ug/Kg, Dry	A	
1,3-Dichloropropane	< 28.0	ug/Kg, Dry	N		2-Hexanone	< 280	ug/Kg, Dry	N	
Dibromochloromethane	< 56.0	ug/Kg, Dry	A		1,2-Dibromoethane	< 28.0	ug/Kg, Dry	N	
Chlorobenzene	< 28.0	ug/Kg, Dry	A		Ethylbenzene	41.2	ug/Kg, Dry	A	
1,1,1,2-Tetrachloroethane	< 56.0	ug/Kg, Dry	N		Xylenes, Total	147	ug/Kg, Dry	A	
Styrene	< 28.0	ug/Kg, Dry	N		Bromoform	< 56.0	ug/Kg, Dry	A	
Isopropylbenzene	32.7	ug/Kg, Dry	A		1,1,2,2-Tetrachloroethane	< 56.0	ug/Kg, Dry	A	
Bromobenzene	< 28.0	ug/Kg, Dry	N		n-Propylbenzene	54.8	ug/Kg, Dry	A	
1,2,3-Trichloropropane	< 56.0	ug/Kg, Dry	N		2-Chlorotoluene	< 28.0	ug/Kg, Dry	N	
1,3,5-Trimethylbenzene	152	ug/Kg, Dry	A		4-Chlorotoluene	< 28.0	ug/Kg, Dry	N	
t-Butylbenzene	< 28.0	ug/Kg, Dry	A		1,2,4-Trimethylbenzene	216	ug/Kg, Dry	A	
s-Butylbenzene	86.1	ug/Kg, Dry	A		4-Isopropyltoluene	76.1	ug/Kg, Dry	A	
1,3-Dichlorobenzene	< 28.0	ug/Kg, Dry	A		1,4-Dichlorobenzene	< 28.0	ug/Kg, Dry	A	
n-Butylbenzene	126	ug/Kg, Dry	A		1,2-Dichlorobenzene	< 28.0	ug/Kg, Dry	A	
1,2-Dibromo-3-Chloropropane	< 56.0	ug/Kg, Dry	N		1,2,4-Trichlorobenzene	< 56.0	ug/Kg, Dry	N	
1,3,5-Trichlorobenzene	< 56.0	ug/Kg, Dry	U		Hexachlorobutadiene	< 28.0	ug/Kg, Dry	N	
Naphthalene	643	ug/Kg, Dry	A		1,2,3-Trichlorobenzene	< 56.0	ug/Kg, Dry	N	
Surr. 1 (Dibromofluoromethane)	110	%	A		Surr. 2 (Toluene d8)	97	%	A	
Surr. 3 (4-Bromofluorobenzene)	100	%	A		Unidentified Peaks	> 10		U	

TEST METHOD: EPA 8015B

002 Site: Soil Pile — Sampled: 9/20/13 13:15 — Test Date: 9/27/13 — W FAA

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Ultrasonic Extraction	Completed		A		C7-C10 TPH	< 300	mg/Kg, dry	U	
C10-C28 TPH-DRO	3,780	mg/Kg, dry	A		C28-C40 TPH	< 300	mg/Kg, dry	U	
Tot. Petroleum Hydrocarbons	3,780	mg/Kg, dry	U		Hydrocarbon Window	C10-C26		U	

CLIENT: WaiteHeindel Environmental Mgt
PROJECT: Young
REPORT DATE: 10/4/2013

WORK ORDER: **1309-18838**
DATE RECEIVED: 09/20/2013

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.

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

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: _____ Nº 68098

Project Name: Young	Client/Contact Name: WHEM	Sampler Name: MM
State of Origin: VT __ NY __ NH __ Other __	Phone #: 860-9400	Phone #:
Endyne WO # 1309-18838	Mailing Address: 7 Kriblin St Suite 3-7 Burlington, VT 05401	Billing Address:

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	FieldResults/Remarks	Due Date
Tank pit	Soil	✓		9/20/13 1230	2	1 VOA 1 4oz	Me OH	8260 TPH-DRO	Normal Turn.	
Soil Pile				1115	2	2 4oz	—	TPH-DRO	1d — Rush 1d	Verbal

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
[signature]	9/20/13 3:50			Eileen Toomey	9/20 @ 3:50

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

LAB USE ONLY
Delivery: Client
Temp: 11.5
Comment: On ice

(White - Laboratory / Yellow - Client)

Page ____ of ____