WAITE HEINDEL
Environmental Management

August 19, 2019

Hugo Martinez Cazon
VT DEC
1 National Life Drive – Davis 1
Montpelier, VT 05620-3704

Sent via email: hugo.martinez.cazon@vermont.gov

RE: Groundwater Monitoring Report: April 2019
Young Residence
28 North Williams Street
Burlington, VT 05401
SMS Site #2013-4436

Dear Hugo:

Waite-Heindel Environmental Management (WHEM) is pleased to present the *Groundwater Monitoring Report* for work conducted during April 2019 at the Young property at 28 North Williams Street in Burlington, Vermont. This is the fifth monitoring event following the CAP approval, and the first event since the property's sump treatment system was deactivated (August 2018).

Do not hesitate to contact me if you have questions. I can be reached at (802) 860-9400 ext. 101 or by email at mwaite@waiteenv.com

Sincerely,

Miles E. Waite, Ph.D.
Senior Hydrogeologist

Christopher Page
Project Scientist

Cc: Bill and Sally Young

Enclosure

GROUNDWATER MONITORING REPORT: APRIL 2019

Young Residence
28 N. Williams Street
Burlington, Vermont 05401

SMS SITE #2013-4436

August 19, 2019

Prepared for:

Hugo Martinez Cazon
VT DEC
Waste Management & Prevention Division
1 National Life Drive – Davis 1
Montpelier, VT 05620-3704

Prepared by:

7 Kilburn Street, Suite 301
Burlington, Vermont 05401
P: (802) 860-9400
F: (802) 860-9440
www.waiteenv.com

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1.0 INTRODUCTION

Waite-Heindel Environmental Management (WHEM) of Burlington, Vermont conducted a round of groundwater quality monitoring and sump sampling on April 3, 2019 at the Young residence, located at 28 North Williams Street in Burlington, VT (SMS #2013-4436). In addition to groundwater samples collected from MW-1 and MW-3, WHEM also collected samples from the Sump North and Sump South monitoring points in the residence. MW-2 was destroyed in 2017. The activated carbon treatment system connected to the home's sump pits was deactivated in August 2018 based on influent concentrations being consistently reported below applicable groundwater standards.

The work was performed in accordance with WHEM's Corrective Action Plan (CAP) dated August 14, 2015 (revised April 14, 2016), approved by the VT DEC via e-mail dated May 20, 2016. The approved plan included the installation of a groundwater treatment system and continued groundwater monitoring. The April 2019 monitoring event is the fifth round of groundwater monitoring since the CAP was approved, and the first round of monitoring since the sump groundwater treatment system was deactivated in August 2018. Due to diminishing VOC concentrations in groundwater observed in 2016 - 2017 and as continuously observed in the sump treatment system influent, WHEM reduced the frequency of groundwater sampling to annual monitoring; the last sampling event was in April 2018.

2.0 GROUNDWATER SAMPLING

2.1 Sump Sampling

On April 3, 2019, WHEM conducted a sump sampling from Sump South and Sump North for VOC analysis via Method 8021B. Sump locations are shown on the Site Plan in Appendix 1. Both sumps were purged and allowed to recharge prior to sampling. Sump water at Sump North produced an ephemeral weathered petroleum odor; iron flocculation was present, but no sheen was observed. At Sump South, water odor and appearance were similar to conditions at Sump North, though no iron flocculation was observed. Sump groundwater samples were stored on ice and delivered to Endyne Laboratories for analysis on the day of sampling. Results are discussed in Section 2.3.

2.2 Treatment System VOC Concentrations

Water quality data collected from Sump South and Sump North are included in Table 2.0 of Appendix 2. System monitoring data from the period of treatment system operation is not included with this report. A summary of April 3, 2019 results follows:

- In Sump South, Benzene (0.8 ug/L), Ethylbenzene (2.5 ug/L), Xylenes (6.5 ug/L), 1,3,5-Trimethylbenzene (3.9 ug/L), 1,2,4-Trimethylbenzene (4.3 ug/L), and Naphthalene (6.5 ug/L); no compounds were reported in exceedance of VGES, and only Benzene exceeded its Preventive Action Level (PAL; 0.5 ug/L). The Total Petroleum VOC concentration (sum of BTEX, MTBE, and Naphthalene) of <27.8 ug/L is lower than April 2018 (<32.7 ug/L), and towards the lower end of its historic range.
- In Sump North, Benzene (0.8 ug/L), Ethylbenzene (2.5 ug/L), 1,3,5-Trimethylbenzene (3.0 ug/L), 1,2,4-Trimethylbenzene (3.6 ug/L), and Naphthalene (5.7 ug/L); no compounds were reported in exceedance of VGES, and only Benzene exceeded its PAL. The Total Petroleum VOC concentration of <20.6 ug/L was slightly higher than April 2018 (<12.1 ug/L) but in the lower end of historic ranges as the third lowest concentration to date.
- Despite high water table conditions, which in some cases may increase groundwater concentrations by exposing groundwater to petroleum sorbed to shallower soils, there is no evidence of a spike in petroleum concentrations at either sump monitoring location.

2.3 Groundwater Sampling

On April 3, 2018, WHEM sampled the two (2) remaining monitoring wells, identified on the Site Plan as MW-1 and MW-3. MW-2 was formally abandoned in Spring 2017 in order to repair the home's sewer effluent pipe. This well had been consistently free and clear of petroleum-related contamination, and is not proposed to be replaced.

Prior to sampling, wells were gauged for depth to groundwater, which measured 2.48 ft below top of casing (BTOC) in MW-1 to 3.32 ft BTOC in MW-3. Groundwater elevations, presented in Table 1 in Appendix 2, ranged from 97.52 ft (MW-1) to 95.22 ft (MW-3). Groundwater elevations have been mapped and contoured as shown in Figure 2 in Appendix 1. The measured water table elevations were the highest observed to date. Historically, groundwater contours have shown a depression at MW-2, likely due to influence from the home's perimeter drain system. It is assumed, even without MW-2, that the same approximate groundwater contours were present during the April 2019 monitoring event. The site-wide horizontal hydraulic gradient is calculated at 0.068 ft/ft to the east-northeast, or 6.76% (calculated from MW-1 to

MW-3). This is a shallower gradient than had been calculated when MW-2 was utilized as the furthest downgradient monitoring well, due to the apparent water table depression at MW-2.

Both wells were sampled via low-flow protocol, allowing the following geochemical parameters to stabilize prior to sampling: Temperature, Dissolved Oxygen, Specific Conductance, pH, Oxidation-Reduction Potential, and turbidity. Wells were sampled via peristaltic pump, at a rate of approximately 150-200 ml/min. Each of the aforementioned parameters was recorded every three minutes until each parameter was stable for three consecutive readings. Refer to the Field Sheets, provided in Appendix 4. Final parameter readings for both wells can be found in Table 5 in Appendix 2.

All wells were allowed to recharge prior to sampling. Samples were collected directly from the outlet of the peristaltic pump. Samples were delivered on ice following chain-of-custody procedures to Endyne Laboratories in Williston, Vermont, and submitted for analysis by 8021B for petroleum VOCs.

Purged groundwater from MW-1 had a faint weathered petroleum odor and an abundance of iron flocculation, but no sheen was observed. Groundwater from MW-3 was odorless and free of any visual indication of petroleum contamination. There were no issues or anomalies with low-flow sampling, and both wells were purged to full parameter stabilization. Low-flow was achieved by reducing flow rates from 200 mL/min to 150 mL/min in order to reduce well drawdown; measurements were still collected every three minutes, as WHEM's YSI Flow Cell is 300 mL in volume, so full replacement of groundwater in the flow cell was easily achieved within three minutes despite the modest reduction in flow rate. Refer to the Field Sheets in Appendix 4 for more details.

2.3 Groundwater Results

The groundwater results are presented in Table 2 in Appendix 2. The full laboratory report is provided in Appendix 3. Charts depicting variation in Naphthalene concentrations in Sump North, Sump South, and MW-1 are also included in Appendix 2. Groundwater elevation in MW-1 has been added to each of these charts to show the relationship between water table elevation and concentrations at these three locations. All concentrations have been compared to the Vermont Groundwater Enforcement Standards (VGES). These results, shown in micrograms per liter (ug/L), are summarized below:

- VOCs were non-detected in MW-3, as has consistently been the case since the well was first sampled in August 2014.

- In MW-1, total VOC concentrations (<35.1 ug/L) fell to their lowest concentration to date. Benzene (1.4 ug/L), Ethylbenzene (4.5 ug/L), Xylenes (9.3 ug/L), 1,3,5-Trimethylbenzenes (1.5 ug/L), 1,2,4-Trimethylbenzenes (11.8 ug/L), and Naphthalene (3.6 ug/L) were detected. No compounds were reported in exceedance of VGES; Benzene exceeded the PAL.

- This is the second consecutive event, and the second monitoring event to date, in which no VGES exceedances were reported in MW-1.

- As displayed in the Charts in Appendix 2, although there is some positive correlation at this site between water table elevation and Naphthalene concentrations, this has not been the case for the past four monitoring events. In April 2019, Naphthalene and other VOC concentrations were very low despite the highest water table elevation reported to date.

- This is the second consecutive monitoring event in which there were no VGES exceedances at any of the monitoring locations (monitoring wells and sumps).

- Based on the reported concentrations in groundwater at MW-1 and MW-3, it remains extremely unlikely that any VGES exceedances would occur in groundwater at the downgradient property line as a result from the fuel oil release at the Young residence.

Quality Assurance/Quality Control (QA/QC) samples included a Trip Blank, which was prepared at WHEM using de-ionized water obtained from Endyne Laboratories in Williston. No contaminants were detected in the Trip Blank. A duplicate sample was collected from MW-1; duplicate results showed excellent parity, with relative percent difference (RPD) ranging from 4.2% to 10.5% for detected compounds. Results of the QA/QC sampling are included as Table 4 in Appendix 2 and in the lab report in Appendix 3.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results presented in this report, WHEM reaches the following conclusions:

1. Grab samples from Sump North and Sump South reported petroleum VOC concentrations in the low end of historic ranges, with no VGES exceedances reported.

2. Water table elevations in MW-1 and MW-3 were the highest reported to date in April 2019.

3. Monitoring wells MW-1 and MW-3 were successfully sampled via low-flow methodology, with full parameter stabilization at both wells.

4. Compared to April 2018, a downward trend in VOC concentrations was observed. The Total VOC concentration reported at MW-1 (<35.1 ug/L) was the lowest reported to date.

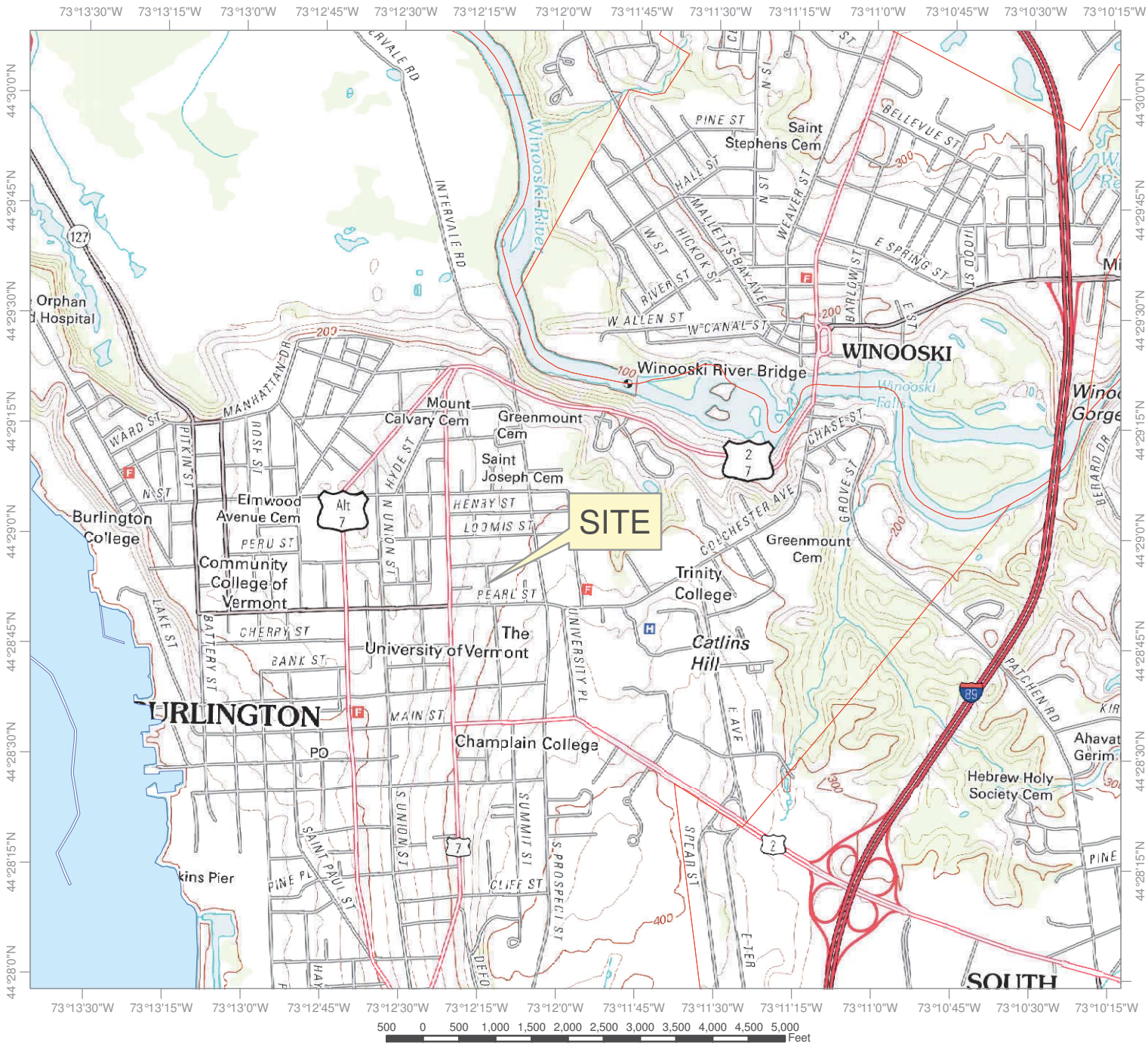
5. VGES exceedances were not reported at any sampling location for the second consecutive sampling event, and the second event to date.

6. Based on groundwater data to date, it is highly unlikely that there are any impacts to groundwater quality at the downgradient property line.

Based on recent data collected from the site, including groundwater quality, soil quality, and ongoing sump sampling results, WHEM recommends that the site be considered for Sites Management Activities Complete (SMAC) designation. Based on the presence of shallow soil contamination in the immediate vicinity of the tank grave, a notice to land records may be required. Prior to SMAC designation, the granular activated carbon (GAC) filter will need to be removed and properly disposed, both remaining monitoring wells will need to be abandoned, and the sump treatment system will need to be re-plumbed for metered discharge directly to the sanitary sewer system. To remain compliant with City of Burlington rules, the system must remain plumbed to a radio-read totalizing flow meter.

APPENDIX 1

FIGURES



USGS

Young Property
28 N. Williams Street
Burlington, Vermont

October 1, 2013
Map produced by:
C:\Users\MILESW~1\AppData\Local\Temp\~DFE51841EF9C75B4E3.TMP

Subject Area
Town Boundary

Site Coordinates:
Geographic (Degrees Minutes Seconds):
Northing: 0
Easting: 0
VT State Plane Meters:

Circle Radius: 0.5 mile(s)

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References:

United States Geological Survey xxxx Vermont Quadrangle. Computer file, USGS. Distributed through Vermont Center for Geographic Information, April 2007.
Town boundary, best sources. Computer file, bndhash, Vermont Center for Geographic Information, Waterbury, VT. Distributed through Vermont Center for Geographic Information, Inc. 2007.

GARAGE

NEW (JULY 2016)
GROUNDWATER
TREATMENT SYSTEM

AS
OUTDOOR

JANUARY 2014
EXCAVATION LIMITS

ASPHALT
DRIVEWAY

ADDITION:
SLAB ON GRADE

SIDEWALK

STUDY

RELICT U.S.T. REMOVED
SEPTEMBER 2013

SEPTEMBER 2013 EXCAVATION
LIMITS

CRAWL SPACE

HA-5 HA-6 HA-3
HA-8 HA-1 HA-2
HA-7 HA-4 HA-1

MW-1

FRENCH DRAIN

SUMP SOUTH

KITCHEN (1ST FLOOR)

SUMP NORTH

DISCHARGE TO
SANITARY SEWER

AS
BASEMENT
POOL TABLE
(BASEMENT)

BASEMENT
FLOOR ELEV. APPROX: 92 FT

LIVING ROOM
(1ST FLOOR)

AS
FIRST FLOOR

YOUNG RESIDENCE
28 N. WILLIAMS STREET
SITE #2013-4436

EXISTING CLEANOUT IN
FLOOR HATCH

UNUSED A.S.T. REMOVED
IN JANUARY 2014

HUDDLE RESIDENCE
34 N. WILLIAMS STREET
SITE #2011-4316

20 N. WILLIAMS STREET

MW-2
ABANDONED

MW-3

WATER LINE (APPROX)

SEWER LINE (APPROX)

ASPHALT DRIVE

SIDEWALK

N. WILLIAMS STREET

LEGEND

- PROPERTY LINE FROM TAX MAP (APPROX)
- SUMP PUMP INSTALLED BY OWNER
- MW-1 MONITORING WELL INSTALLED BY WHEM
- AS AIR SAMPLE LOCATION (NOVEMBER 2014)
- HA-1 HAND AUGER SOIL SAMPLE BY WHEM (APRIL 2017)

0 5 10 20
GRAPHIC SCALE: 1"=10'

NOTES:
1. BASE PLAN IS ORIGINAL BLUEPRINT OF HOUSE PROVIDED BY OWNER.
2. ALL LOCATIONS APPROXIMATE. THIS IS NOT A SURVEYED PLAN.

Waite - Heindel
Environmental Management
• Hydrogeology • Environmental Services •
• Water and Wastewater Design •
Burlington, Vermont • (802) 860-9400

1

DATE: 6/27/2018
PROJECT NO.
DRAWN BY: D.W.F.
PROJ. MGR: C.P.
APPROVED: M.E.W.

☐ DRAFT ☒ FINAL

YOUNG
28 NORTH WILLIAMS STREET
BURLINGTON, VERMONT

SITE PLAN

FILE: Young Williams Street.dwg

SCALE: 1" = 10'

GARAGE

ASPHALT DRIVEWAY

ADDITION:
SLAB ON GRADE

SIDEWALK

HUDDLE RESIDENCE
34 N. WILLIAMS STREET
SITE #2011-4316

STUDY

CRAWL SPACE

FRENCH DRAIN

SUMP NORTH

DISCHARGE TO SANITARY SEWER

SUMP SOUTH

BASEMENT
FLOOR ELEV. APPROX: 92 FT

YOUNG RESIDENCE
28 N. WILLIAMS STREET
SITE #2013-4436

EXISTING CLEANOUT IN FLOOR HATCH

MW-1
97.52
<35.1

<27.8

<20.6

MW-2
ABANDONED

MW-3
95.22
ND/<1

97
96
95
94
10

WATER LINE (APPROX)

SEWER LINE (APPROX)

ASPHALT DRIVE

SIDEWALK

20 N. WILLIAMS STREET

N

LEGEND

- PROPERTY LINE FROM TAX MAP (APPROX)
- SUMP PUMP INSTALLED BY OWNER
- MW-1 / 96.20 — MONITORING WELL WITH GROUNDWATER ELEVATION (FT)
- GROUNDWATER ELEVATION CONTOUR LINE (FT)
- 84.6 — TOTAL REPORTED PETROLEUM VOCs (ug/L) IN GROUNDWATER
- ND — PETROLEUM VOCS NOT DETECTED
- ASSUMED LIMITS OF DISSOLVED PETROLEUM CONTAMINATION

NOTES:
1. GROUNDWATER ELEVATIONS ARE RELATIVE TO THE ELEVATION OF THE TOP-OF-CASING (TOC) OF WELL MW-1, ABRITRARILY SET AT 100.0 FT. SURVEY CONDUCTED BY WHEM IN DECEMBER 2013.
2. GROUNDWATER ELEVATIONS ARE FROM APRIL 3, 2018.
3. TOTAL PETROLEUM VOCS IS CALCULATED AS SUM OF CONCENTRATIONS OF THE COMPOUNDS BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, TRIMETHYLBENZENES, NAPTHALENE, AND MTBE. SAMPLES COLLECTED ON APRIL 3, 2019 AND ANALYZED BY METHOD 8021B.

N. WILLIAMS STREET

0 5 10 20
GRAPHIC SCALE: 1"=10'

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• Water and Wastewater Design •
Burlington, Vermont • (802) 860-9400

2

DATE: 6/5/2019
PROJECT NO.
DRAWN BY: M.E.W.
PROJ. MGR: C.P.
APPROVED: M.E.W.

☐ DRAFT ☒ FINAL

YOUNG
28 NORTH WILLIAMS STREET
BURLINGTON, VERMONT (SITE #2013-4436)

GROUNDWATER ELEVATION AND CONTAMINANT CONCENTRATION MAP - APRIL 2019

FILE: Young Williams Street.dwg

SCALE: 1" = 10'

APPENDIX 2

TABLES AND CHARTS

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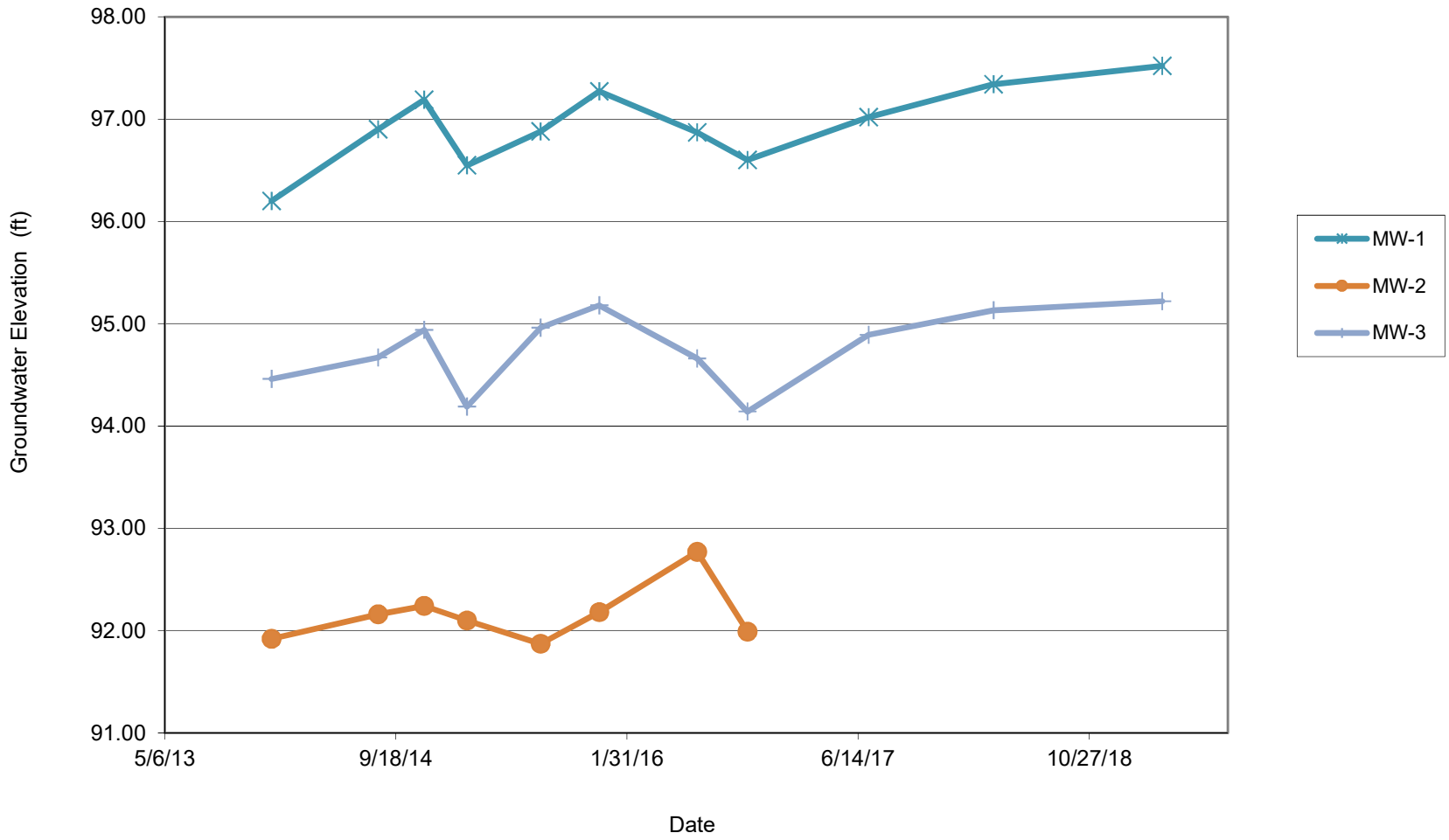
TABLE 1.0
Groundwater Elevation Measurements:
Young Residence
28 N. Williams Street, Burlington
SMS Site #2013-4436

Well ID	Measuring Point (ft)	Measuring Point Elevation (ft)	Date	Depth to Water (ft btoc)	Groundwater Elevation (ft)
MW-1	TOC	100.00	12/23/13	3.80	96.20
			8/11/14	3.10	96.90
			11/18/14	2.81	97.19
			2/19/15	3.45	96.55
			7/28/15	3.12	96.88
			12/2/15	2.73	97.27
			7/1/16	3.13	96.87
			10/18/16	3.40	96.60
			7/7/17	2.98	97.02
			4/3/18	2.66	97.34
			4/3/19	2.48	97.52
MW-2	TOC	99.20	12/23/13	7.28	91.92
			8/11/14	7.04	92.16
			11/18/14	6.96	92.24
			2/19/15	7.10	92.10
			7/28/15	7.33	91.87
			12/2/15	7.02	92.18
			7/1/16	6.43	92.77
			10/18/16	7.21	91.99
			7/7/17	Well	Destroyed
			4/3/18	Well	Destroyed
			4/3/19	Well	Destroyed
MW-3	TOC	98.54	12/23/13	4.08	94.46
			8/11/14	3.87	94.67
			11/18/14	3.60	94.94
			2/19/15	4.35	94.19
			7/28/15	3.58	94.96
			12/2/15	3.36	95.18
			7/1/16	3.88	94.66
			10/18/16	4.40	94.14
			7/7/17	3.65	94.89
			4/3/18	3.41	95.13
			4/3/19	3.32	95.22

Notes:
-All elevations are in feet, relative to arbitrary benchmark (MW-1 top of casing)
-"<"= less than bottom elevation of well, signifiying that the well dry during monitoring event; "NA" = not available; blank = not sampled.

Groundwater Elevations
Young Residence
28 N. Williams Street, Burlington



WAITE HEINDEL
Environmental Management

TABLE 2.0
Groundwater Quality Data
Young Residence
28 N. Williams St, Burlington, Vermont

Sump South													
Sample Date	Units	VGES	4/29/2014	8/11/2014	11/18/2014	2/19/2015	7/28/2015	12/2/2015	7/1/2016	10/18/2016	7/7/2017	4/3/2018	4/3/2019
PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260/8021B)													
MTBE	ug/L (ppb)	40	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 4.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
Benzene	ug/L (ppb)	5.0	**2.5**	ND / < 5.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	**2.3**	**1.2**	**1.5**	ND / < 1.0	ND / < 1.0	**0.8**
Toluene	ug/L (ppb)	1,000	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	**1.1**	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Ethylbenzene	ug/L (ppb)	700	**13.6**	**16.9**	**3.4**	**11.8**	**10.3**	**21.4**	**8.5**	**12.8**	ND / < 1.0	**2.3**	**2.8**
Xylenes	ug/L (ppb)	10,000	**22.9**	**14.0**	**3.3**	**13.2**	**30.8**	**67.1**	**12.8**	**11.5**	ND / < 2.0	**7.0**	**6.5**
1,3,5-Trimethylbenzene	ug/L (ppb)	350	**22.8**	**8.0**	**1.4**	**3.9**	**5.4**	**19.3**	**3.3**	**11.8**	ND / < 1.0	**5.7**	**3.9**
1,2,4-Trimethylbenzene	ug/L (ppb)		**27.0**	**26.4**	**4.1**	**16.1**	**16.2**	**46.4**	**5.7**	**7.8**	ND / < 1.0	**4.8**	**4.3**
Naphthalene	ug/L (ppb)	20	**70.1**	**38.3**	**7.0**	**13.9**	**24.6**	**47.8**	**10.1**	**4.8**	ND / < 2.0	**8.9**	**6.5**
TOTAL PETROLEM VOCS	*ug/L (ppb)*	--	***<99.7***	***<105.1***	***<75.8***	***<37.65***	***<38.***	***<66.2***	***<35.3***	***<39.9***	*<11.0*	***<12.1***	***<20.6***
Unidentified Peaks	#	--	>10	>10	>10	>10	>10	>10	>10	>10	0	>10	>10
NON-PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260)													
Acetone	ug/L (ppb)	700				ND / < 10.0							
Bromodichloromethane	ug/L (ppb)	80				ND / < 0.5							
Chloroform	ug/L (ppb)					ND / < 1.0							
2-Butanone	ug/L (ppb)	4200				ND / < 10.0							
Tetrachloroethene	ug/L (ppb)	5.0				ND / < 1.0							
TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS (EPA Method 8015B)													
TPH-DRO	mg/L (ppm)												

Sump North													
Sample Date	Units	VGES	4/29/2014	8/11/2014	11/18/2014	2/19/2015	7/28/2015	12/2/2015	7/1/2016	10/18/2016	7/7/2017	4/3/2018	4/3/2019
PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260/8021B)													
MTBE	ug/L (ppb)	40	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
Benzene	ug/L (ppb)	5.0	**1.6**	**2.1**	**1.3**	ND / < 1.0	**1.3**	**1.6**	**1.4**	ND / < 1.0	ND / < 1.0	ND / < 1.0	**0.8**
Toluene	ug/L (ppb)	1,000	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Ethylbenzene	ug/L (ppb)	700	**8.6**	**11.2**	**6.7**	**7.2**	**4.9**	**9.3**	**3.0**	**6.4**	ND / < 1.0	ND / < 1.0	**2.5**
Xylenes	ug/L (ppb)	10,000	**25.3**	**26.4**	**10.3**	**6.3**	**7.3**	**14.2**	**7.8**	**6.0**	ND / < 2.0	ND / < 2.0	ND / < 2.0
1,3,5-Trimethylbenzene	ug/L (ppb)	350	**11.6**	**9.8**	**5.3**	**3.5**	**3.6**	**7.4**	**3.0**	**3.9**	ND / < 1.0	**1.2**	**3.0**
1,2,4-Trimethylbenzene	ug/L (ppb)		**20.0**	**28.1**	**25.8**	**12.8**	**10.5**	**17.0**	**8.3**	**10.2**	ND / < 1.0	**1.6**	**3.6**
Naphthalene	ug/L (ppb)	20	**29.6**	**24.5**	**23.4**	**3.9**	**7.4**	**13.7**	**8.8**	**9.4**	ND / < 2.0	**2.3**	**5.7**
TOTAL PETROLEM VOCS	*ug/L (ppb)*	--	***<99.7***	***<105.1***	***<75.8***	***<37.65***	***<38.***	***<66.2***	***<35.3***	***<39.9***	*<11.0*	***<12.1***	***<20.6***
Unidentified Peaks	#	--	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
NON-PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260)													
Acetone	ug/L (ppb)	700				ND / < 10.0							
Bromodichloromethane	ug/L (ppb)	80				ND / < 0.5							
Chloroform	ug/L (ppb)					ND / < 1.0							
2-Butanone	ug/L (ppb)	4200				ND / < 10.0							
Tetrachloroethene	ug/L (ppb)	5.0				ND / < 1.0							
TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS (EPA Method 8015B)													
TPH-DRO	mg/L (ppm)											ND / <0.60	ND / <0.60

MW-1													
Sample Date	Units	VGES	4/29/2014	8/11/2014	11/18/2014	2/19/2015	7/28/2015	12/2/2015	7/1/2016	10/18/2016	7/7/2017	4/3/2018	4/3/2019
PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260/8021B)													
MTBE	ug/L (ppb)	40		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 10.0	ND / < 10.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
Benzene	ug/L (ppb)	5.0		ND / < 5.0	**4.6**	**5.1**	**5.1**	**7.5**	**4.6**	**6.7**	**2.6**	**3.2**	**1.4**
Toluene	ug/L (ppb)	1,000		**5.4**	**1.8**	**1.0**	ND / < 5.0	ND / < 5.0	ND / < 1.0	**1.5**	ND / < 1.0	ND / < 1.0	ND / < 1.0
Ethylbenzene	ug/L (ppb)	700		**10.6**	**13.2**	**16.8**	**25.6**	**28.5**	**22.3**	**31.5**	**17.1**	**18.1**	**4.5**
Xylenes	ug/L (ppb)	10,000		**34.7**	**40.5**	**42.1**	**70.7**	**93**	**65.8**	**85.2**	**32.4**	**40.7**	**9.3**
1,3,5-Trimethylbenzene	ug/L (ppb)	350		**7.9**	**8.6**	**9.7**	**12.1**	**19.1**	**11.6**	**17.2**	**9.4**	**8.9**	**1.5**
1,2,4-Trimethylbenzene	ug/L (ppb)			**15.9**	**23.2**	**26.5**	**33.4**	**48.5**	**34.7**	**45.5**	**34.4**	**33.2**	**11.8**
Naphthalene	ug/L (ppb)	20		**10.3**	**24.3**	**30.1**	**27.5**	**35.3**	**24.5**	**35.4**	**20.9**	**16.6**	**3.6**
TOTAL PETROLEM VOCS	*ug/L (ppb)*	--		***< 91.8***	***< 118.2***	***< 133.3***	***< 189.4***	***< 246.9***	***< 166.5***	***< 225.***	***< 119.8***	***< 123.7***	***< 35.1***
Unidentified Peaks	#	--		>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
NON-PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260)													
Acetone	ug/L (ppb)	700				**11.3**							
Bromodichloromethane	ug/L (ppb)	80				ND / < 0.5							
Chloroform	ug/L (ppb)					ND / < 1.0							
2-Butanone	ug/L (ppb)	4200				ND / < 10.0							
Tetrachloroethene	ug/L (ppb)	5.0				ND / < 1.0							
TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS (EPA Method 8015B)													
TPH-DRO	mg/L (ppm)												

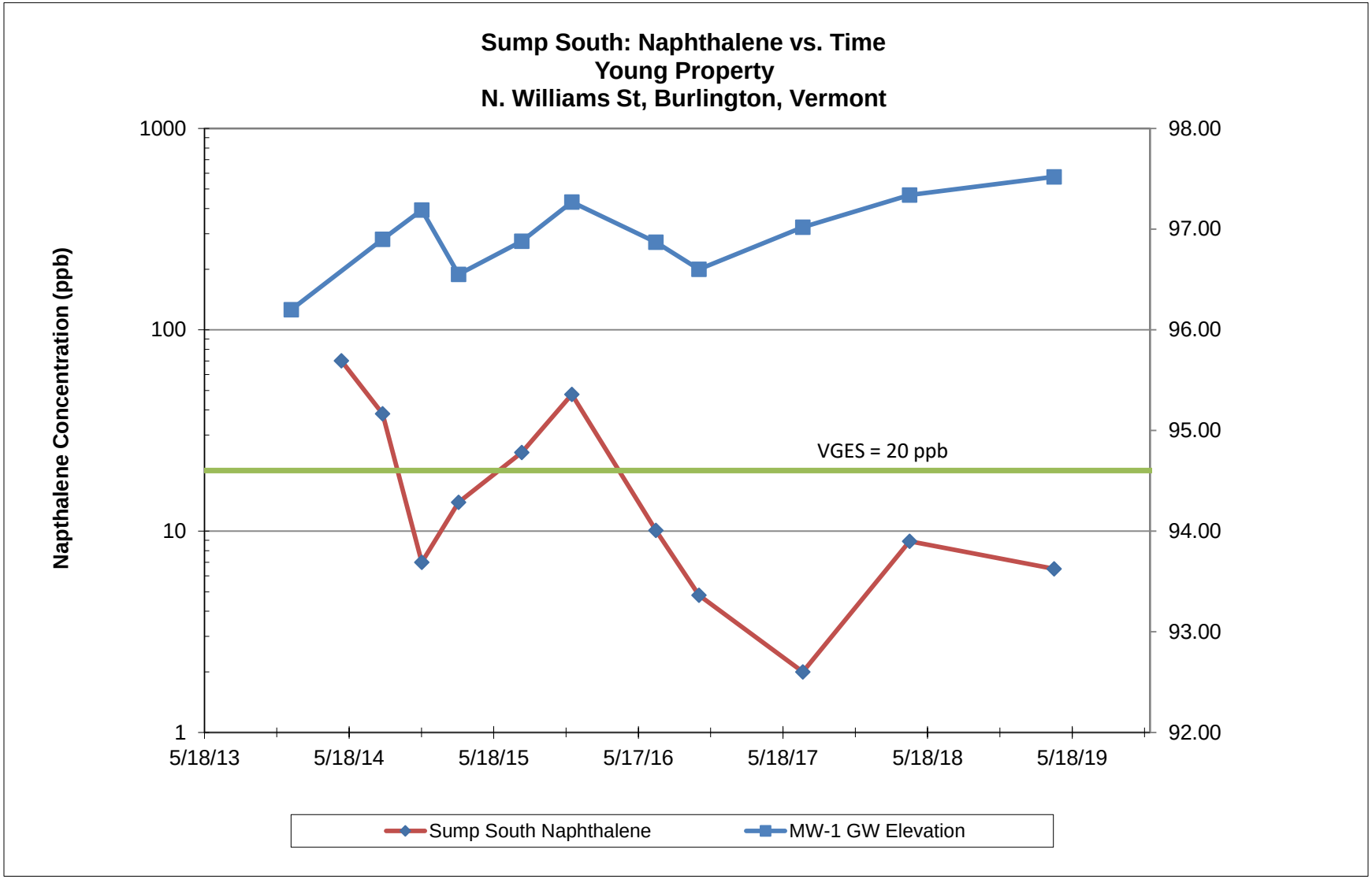
WAITE HEINDEL
Environmental Management

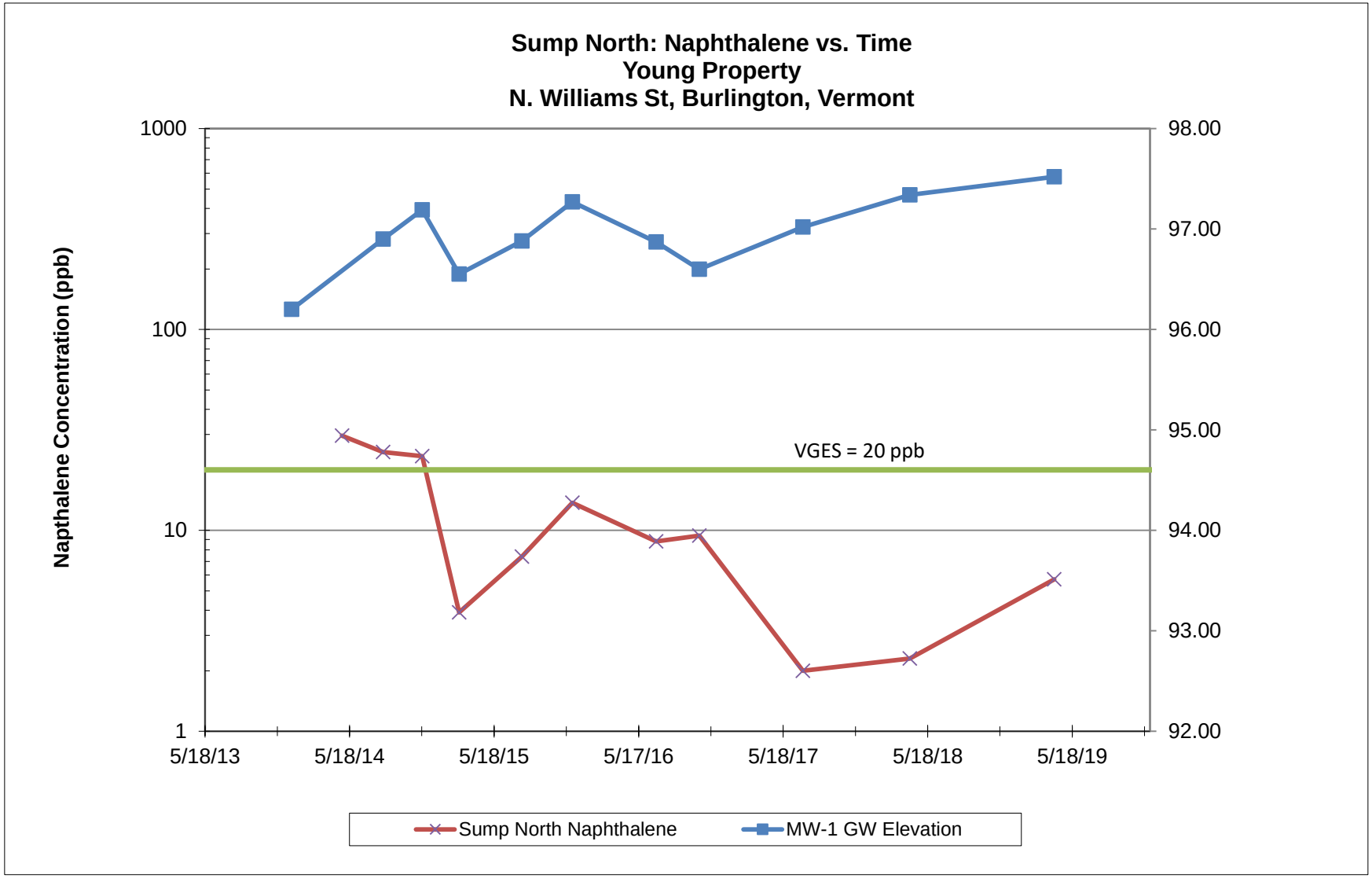
TABLE 2.0
Groundwater Quality Data
Young Residence
28 N. Williams St, Burlington, Vermont

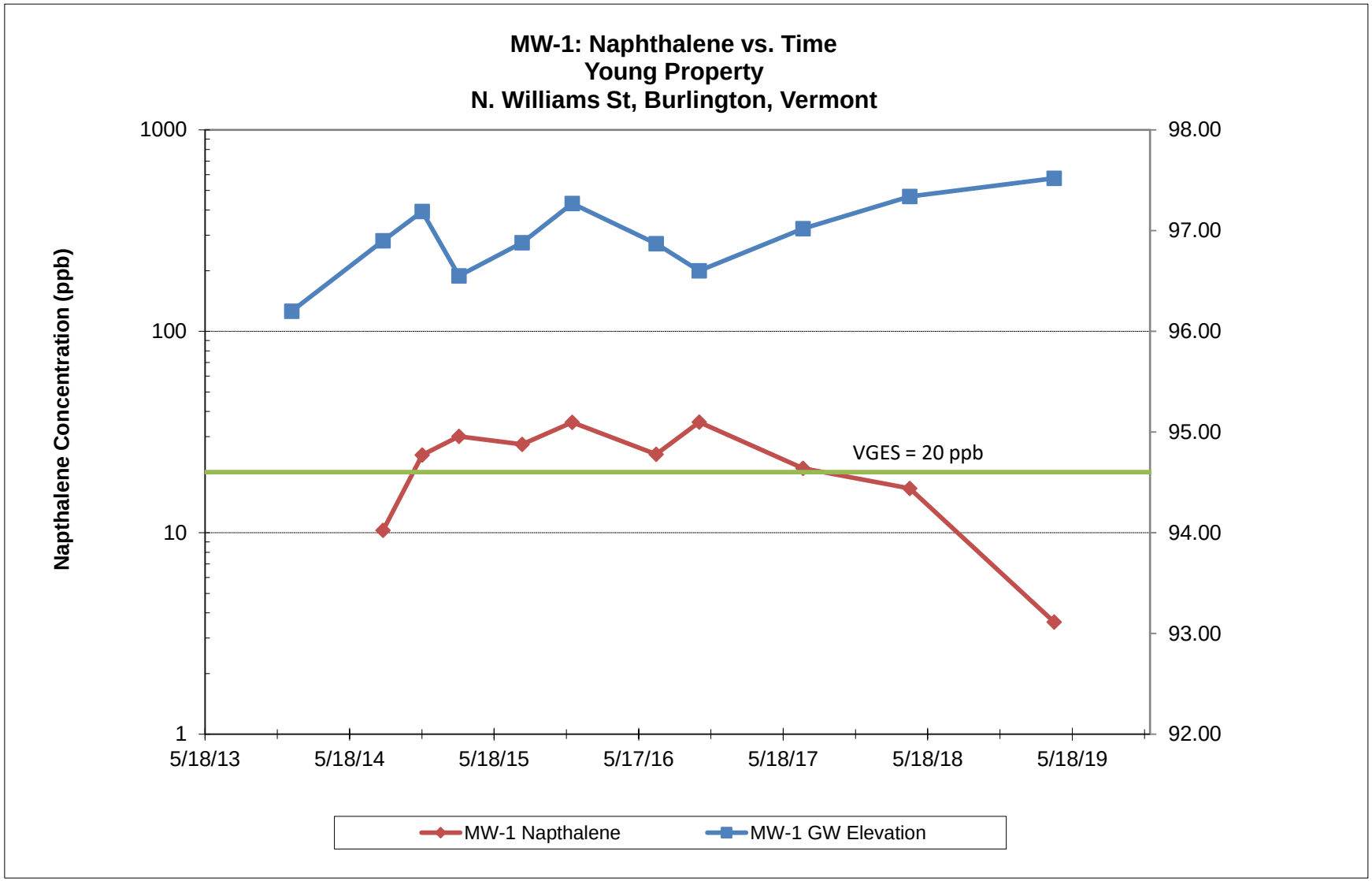
MW-2													
Sample Date	Units	VGES		8/11/2014	11/18/2014	2/19/2015	7/28/2015	12/2/2015	7/1/2016	10/18/2016	7/7/2017	4/3/2018	4/3/2019
PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260/8021B)													
MTBE	ug/L (ppb)	40		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0			
Benzene	ug/L (ppb)	5.0		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0			
Toluene	ug/L (ppb)	1,000		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0			
Ethylbenzene	ug/L (ppb)	700		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0			
Xylenes	ug/L (ppb)	10,000		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0			
1,3,5-Trimethylbenzene	ug/L (ppb)	350		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0			
1,2,4-Trimethylbenzene	ug/L (ppb)			ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0			
Naphthalene	ug/L (ppb)	20		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0			
TOTAL PETROLEM VOCS	*ug/L (ppb)*	--		*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	**Well Destroyed**	**Well Destroyed**	**Well Destroyed**
Unidentified Peaks	#	--		1	0	2	1	>10	0	0			
NON-PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260)													
Acetone	ug/L (ppb)	700				**22.5**							
Bromodichloromethane	ug/L (ppb)	80				ND / < 0.5							
Chloroform	ug/L (ppb)					ND / < 1.0							
2-Butanone	ug/L (ppb)	4200				ND / < 10.0							
Tetrachloroethene	ug/L (ppb)	5.0				ND / < 1.0							
TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS (EPA Method 8015B)													
TPH-DRO	mg/L (ppm)												

MW-3													
Sample Date	Units	VGES		8/11/2014	11/18/2014	2/19/2015	7/28/2015	12/2/2015	7/1/2016	10/18/2016	7/7/2017	4/3/2018	4/3/2019
PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260/8021B)													
MTBE	ug/L (ppb)	40		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
Benzene	ug/L (ppb)	5.0		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Toluene	ug/L (ppb)	1,000		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Ethylbenzene	ug/L (ppb)	700		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Xylenes	ug/L (ppb)	10,000		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
1,3,5-Trimethylbenzene	ug/L (ppb)	350		ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
1,2,4-Trimethylbenzene	ug/L (ppb)			ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 1.0
Naphthalene	ug/L (ppb)	20		ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0	ND / < 2.0
TOTAL PETROLEM VOCS	*ug/L (ppb)*	--		*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*	*ND / < 11.0*
Unidentified Peaks	#	--		1	0	0	0	0	0	0	0	0	0
NON-PETROLEUM VOLATILE ORGANIC COMPOUNDS (VOCs) (EPA Method 8260)													
Acetone	ug/L (ppb)	700				ND / < 10.0							
Bromodichloromethane	ug/L (ppb)	80				ND / < 0.5							
Chloroform	ug/L (ppb)					ND / < 1.0							
2-Butanone	ug/L (ppb)	4200				ND / < 10.0							
Tetrachloroethene	ug/L (ppb)	5.0				ND / < 1.0							
TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS (EPA Method 8015B)													
TPH-DRO	mg/L (ppm)												

NOTES:
1. ND = not detected above any of the estimated reporting limits.
2. VGES = Vermont Groundwater Enforcement Standards, February 2005.
3. Results reported above the method detection limit are indicated in bold.
5. Shaded results are above guideline.
6. NA = Compound not analyzed


Sump South: Naphthalene vs. Time
Young Property
N. Williams St, Burlington, Vermont
Napthalene Concentration (ppb)
1000
100
10
1
98.00
97.00
96.00
95.00
94.00
93.00
92.00
VGES = 20 ppb
5/18/13
5/18/14
5/18/15
5/17/16
5/18/17
5/18/18
5/18/19
Sump South Naphthalene
MW-1 GW Elevation


Sump North: Naphthalene vs. Time
Young Property
N. Williams St, Burlington, Vermont
Napthalene Concentration (ppb)
1000
100
10
1
98.00
97.00
96.00
95.00
94.00
93.00
92.00
VGES = 20 ppb
5/18/13
5/18/14
5/18/15
5/17/16
5/18/17
5/18/18
5/18/19
Sump North Naphthalene
MW-1 GW Elevation


MW-1: Naphthalene vs. Time
Young Property
N. Williams St, Burlington, Vermont
Napthalene Concentration (ppb)
1000
100
10
1
98.00
97.00
96.00
95.00
94.00
93.00
92.00
VGES = 20 ppb
5/18/13
5/18/14
5/18/15
5/17/16
5/18/17
5/18/18
5/18/19
MW-1 Napthalene
MW-1 GW Elevation

WAITE HEINDEL
Environmental Management

TABLE 3.0
Quality Assurance / Quality Control Data
Young Residence
28 N. Williams Street, Burlington, Vermont

Sample Location		Trip Blank	MW-1	Duplicate	RPD
Sample Date		4/3/2019	4/3/2019	4/3/2019	
Benzene	ug/L (ppb)	0.5	**1.4**	**1.5**	**-6.9%**
Toluene	ug/L (ppb)	ND / 1.0	ND / < 1.0	ND / < 1.0	0.0%
Ethylbenzene	ug/L (ppb)	ND / 1.0	**4.5**	**5.0**	**-10.5%**
Xylenes	ug/L (ppb)	ND / 2.0	**9.3**	**9.7**	**-4.2%**
1,3,5-Trimethylbenzene	ug/L (ppb)	ND / 1.0	**1.5**	**1.6**	**-6.5%**
1,2,4-Trimethylbenzene	ug/L (ppb)	ND / 1.0	**11.8**	**12.7**	**-7.3%**
Naphthalene	ug/L (ppb)	ND / 2.0	**3.6**	**3.9**	**-8.0%**
MTBE	ug/L (ppb)	ND / 2.0	ND / < 2.0	ND / < 2.0	0.0%

Notes:
1. The results of the laboratory analysis of the duplicate sample were analyzed using a relative percent difference (RPD) analysis. The RPD is defined as 100 times the difference in reported concentration between sample and duplicate, divided by the mean of the two samples. A small RPD indicates good correlation between sample and duplicate. RPD values cannot be calculated ("na") for undetected compounds.

TABLE 4.0
Groundwater Geochemical Data
Young Residence
28 N. Williams Street, Burlington, Vermont

Measurement Date: 12/23/13

Well I.D.	Temp. (deg C)	Specific Cond. (us/cm)	DO (mg/L)	pH	ORP (mv)	Turbidity (NTU)
MW-1	10.18	2221	2.02	6.78	37.1	11.80
MW-2	10.76	1829	2.35	6.67	-79.6	46.10
MW-3	7.69	2950	2.86	6.71	248.9	12.10

Measurement Date: 11/18/14

Well I.D.	Temp. (deg C)	Specific Cond. (us/cm)	DO (mg/L)	pH	ORP (mv)	Turbidity (NTU)
MW-1	13.67	1721	2.80	6.78	-125.4	128.60
MW-2	13.04	2031	3.28	6.63	-41.0	82.59
MW-3	11.63	3010	1.42	6.75	-12.4	10.50

Measurement Date: 4/3/18

Well I.D.	Temp. (deg C)	Specific Cond. (us/cm)	DO (mg/L)	pH	ORP (mv)	Turbidity (NTU)
MW-1	9.24	1144	3.36	7.28	-115.5	94.81
MW-2	Well Destroyed					
MW-3	5.28	6607	0.77	6.85	-53.8	2.45

Measurement Date: 4/3/19

Well I.D.	Temp. (deg C)	Specific Cond. (us/cm)	DO (mg/L)	pH	ORP (mv)	Turbidity (NTU)
MW-1	9.40	799	0.29	7.01	-160.8	84.90
MW-2	Well Destroyed					
MW-3	5.00	4922	0.45	6.84	38.9	3.85

Notes:
1. Data from a YSI 556 calibrated to manufacturer's specifications on the morning prior to use. Data shown are stabilized v alues after completion of low-flow sampling.
2. us/cm = microsiemens per centimerter; mv=millivolts; mg/L= milligrams per liter; NTU = nephelometric turbidity units.
3. N/A = data not available.

APPENDIX 3

LABORATORY REPORTS

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

Waite-Heindel Environmental	100675
7 Kilburn Street, Suite 301	
Burlington, VT 05406	
Atten: Miles Waite	

PROJECT: Young
WORK ORDER: **1904-07492**
DATE RECEIVED: April 04, 2019
DATE REPORTED: April 19, 2019
SAMPLER: Chris Page

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: Waite-Heindel Environmental
PROJECT: Young
REPORT DATE: 4/19/2019

WORK ORDER: **1904-07492**
DATE RECEIVED: 04/04/2019

TEST METHOD: EPA 8260C

001 Site: MW-3 Date Sampled: 4/3/19 13:27 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 0.5	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)	101	%	A		Unidentified Peaks	0		U	

TEST METHOD: EPA 8260C

002 Site: MW-1 Date Sampled: 4/3/19 14:25 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	1.4	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	4.5	ug/L	A	
Xylenes, Total	9.3	ug/L	A		1,3,5-Trimethylbenzene	1.5	ug/L	A	
1,2,4-Trimethylbenzene	11.8	ug/L	A		Naphthalene	3.6	ug/L	A	
Surr. 1 (Dibromofluoromethane)	94	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	102	%	A		Unidentified Peaks	>10		U	

TEST METHOD: EPA 8260C

003 Site: Dup Date Sampled: 4/3/19 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	1.5	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	5.0	ug/L	A	
Xylenes, Total	9.7	ug/L	A		1,3,5-Trimethylbenzene	1.6	ug/L	A	
1,2,4-Trimethylbenzene	12.7	ug/L	A		Naphthalene	3.9	ug/L	A	
Surr. 1 (Dibromofluoromethane)	94	%	A		Surr. 2 (Toluene d8)	100	%	A	
Surr. 3 (4-Bromofluorobenzene)	102	%	A		Unidentified Peaks	>10		U	

TEST METHOD: EPA 8260C

004 Site: Sump North Date Sampled: 4/3/19 14:55 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	0.8	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	2.5	ug/L	A	
Xylenes, Total	< 2.0	ug/L	A		1,3,5-Trimethylbenzene	3.0	ug/L	A	
1,2,4-Trimethylbenzene	3.6	ug/L	A		Naphthalene	5.7	ug/L	A	
Surr. 1 (Dibromofluoromethane)	94	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	102	%	A		Unidentified Peaks	>10		U	

TEST METHOD: EPA 8260C

005 Site: Sump South Date Sampled: 4/3/19 15:15 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	0.8	ug/L	A	
Toluene	< 1.0	ug/L	A		Ethylbenzene	2.8	ug/L	A	
Xylenes, Total	6.5	ug/L	A		1,3,5-Trimethylbenzene	3.9	ug/L	A	
1,2,4-Trimethylbenzene	4.3	ug/L	A		Naphthalene	6.5	ug/L	A	
Surr. 1 (Dibromofluoromethane)	94	%	A		Surr. 2 (Toluene d8)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	102	%	A		Unidentified Peaks	>10		U	

CLIENT: Waite-Heindel Environmental
PROJECT: Young
REPORT DATE: 4/19/2019

WORK ORDER: **1904-07492**
DATE RECEIVED: 04/04/2019

TEST METHOD: EPA 8260C

006 Site: Trip Blank Date Sampled: 4/3/19 12:20 Analysis Date: 4/17/19 W TEL

Parameter	Result	Unit	Nelac	Qual	Parameter	Result	Unit	Nelac	Qual
Methyl-t-butyl ether (MTBE)	< 2.0	ug/L	A		Benzene	< 0.5	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)	99	%	A	
Surr. 3 (4-Bromofluorobenzene)	101	%	A		Unidentified Peaks	0		U	

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

CHAIN-OF-CUSTODY-RECORD

79552

Special Reporting Instructions/PO#: Young Task 3-16

Project Name: Young Residence	Client/Contact Name: Chris Page / Waite-Heindel	Sampler Name: Chris Page
State of Origin: VT X NY __ NH __ Other __	Phone #: 802 860 9400 x104	Phone #: 802 860 9400 x104
Endyne WO #	Mailing Address: WHEM	Billing Address: WHEM

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	H2O	X		4/3/19 1220	2	40 ml glass	HCl	19		
MW-3				4/3/19 1327						
MW-1				1425						
Dup				—						
Sump North				1455						
Sump South				1515						

1904-07492

1904-07492

Waite-Heindel Environmental
Young

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
	4/4/19 1328			Toomey	4/4/19 @ 1328

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: 0.9
Comment:

(White - Laboratory / Yellow - Client)

APPENDIX 4

FIELD SHEETS

WAITE HEINDEL
Environmental Management

SITE: Young Residence (SMS #2013-4436)
FIELD WATER COLLECTION SHEET

SAMPLING LOCATION	MW-3			Pump Intake Depth	8.5 ft btop
Date	4/3/2019			Pump Type	peri
Sampler	CP			Well Diameter	1"
Weather	Overcast, breezy, lt rain			Well Depth	9.75 ft btop
Water Type	**gw**	sw	supply	Initial Depth to Water	3.32 ft btop
Sampling Method	bailer	***low flow***	grab	Traditional Purge Rate (ml/min / gpm)	150

LOW FLOW PURGING DATA

	within 3%	within 3%	within 10%	0.1 pH unit	10 mv	within 10%				
Time	**Temp.** (deg C)	**Specific Cond.** (us/cm)	**DO** (mg/L)	**pH**	**ORP** (mv)	**Turbidity** (NTU)	**Depth to Water** (ft btp)	**Purge Rate** (ml/min)		**Notes**
1300	6.6	4089	4.78	7.01	132.7	41.13	4.55	125		
1303	5.9	4082	1.02	7.06	100.5	31.71	4.57	125		
1306	5.3	4456	0.95	6.93	77.9	20.49	4.51	125		
1309	5.1	4687	0.59	6.89	63.0	9.56	4.5	125		No odor
1312	5.2	4784	0.46	6.86	52.1	8.22	4.52	125		Clear
1315	5.1	4842	0.43	6.85	46.1	7.20	4.53	125		
1318	5.1	4887	0.44	6.82	42.5	4.91	4.56	125		
1321	5.2	4903	0.45	6.83	40.1	4.54	4.57	125		
1324	5.0	4922	0.45	6.84	38.9	3.85	4.58	125		Stable

SAMPLE COLLECTION	**Temp.**	**Specific Cond.**	**DO**	**pH**	**ORP**	**Turbidity**	**Depth to Water**	**Purge Volume**		
Final Measurements:	5	4922	0.45	6.84	38.9	3.85	4.58	1 gallon		

Sample Description	**Label**	**Type Container**	**# Container**	**Preservative**	**Analysis Method**	**Collection Time**	**COC #**	
Sample	MW-3	VOA	2	HCl	8021	1327		
Additional								
Additional								
Field Duplicate								
MS/MSD								
Field Blank								

General Notes: Trip Blank collected by WHEM at WHEM offices, 1220 on 4/3/2019

WAITE HEINDEL Environmental Management

SITE: Young Residence (SMS #2013-4436)
FIELD WATER COLLECTION SHEET

SAMPLING LOCATION	MW-1			Pump Intake Depth	6.5 ft btop
Date	4/3/2019			Pump Type	peri
Sampler	CP			Well Diameter	2"
Weather	Overcast, breezy, lt rain			Well Depth	6.70 ft btop
Water Type	**gw**	sw	supply	Initial Depth to Water	2.48 ft btop
Sampling Method	bailer	***low flow***	grab	Traditional Purge Rate (ml/min / gpm)	150 mL/min

LOW FLOW PURGING DATA

	within 3%	within 3%	within 10%	0.1 pH unit	10 mv	within 10%				
Time	**Temp.** (deg C)	**Specific Cond.** (us/cm)	**DO** (mg/L)	**pH**	**ORP** (mv)	**Turbidity** (NTU)	**Depth to Water** (ft btp)	**Purge Rate** (ml/min)		**Notes**
1356	10.2	868	1.74	7.09	-135.1	199.6	3.38	100		
1359	9.9	797	0.31	7.07	-158.4	267.9	3.70	100		faint petrol OD
1402	9.9	793	0.20	7.07	-164.9	247.7	3.97	100		Heavy iron
1405	9.6	795	0.20	7.06	-168.0	215.2	4.19	100		
1408	9.6	804	0.21	7.05	-168.8	158.6	4.36	100		
1411	9.6	806	0.27	7.04	-168.6	100.8	4.52	100		
1414	9.5	805	0.25	7.04	-167.5	91.82	4.55	100		
1417	9.3	803	0.29	7.03	-165.0	86.86	4.58	100		
1420	9.4	799	0.29	7.01	-160.8	84.90	4.65	100		stable

SAMPLE COLLECTION	**Temp.**	**Specific Cond.**	**DO**	**pH**	**ORP**	**Turbidity**	**Depth to Water**	**Purge Volume**		
Final Measurements:	9.4	799	0.29	7.01	-160.8	84.90	4.65	0.75 gal		

Sample Description	**Label**	**Type Container**	**# Container**	**Preservative**	**Analysis Method**	**Collection Time**	**COC #**	
Sample	MW-1	VOA	2	HCl	8021	1425		
Additional								
Additional								
Field Duplicate	DUP	VOA	2	HCl	8021	--		
MS/MSD								
Field Blank								

General Notes:

Purge volume (2 cup/500 ml = 1 mark)