



**BOURNE'S SERVICE STATION
2015 BIENNIAL MONITORING REPORT**

**BOURNE'S SERVICE STATION
760 SHELBURNE ROAD
SOUTH BURLINGTON, VT**

Prepared for:
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Bourne Petroleum
414 West Grove St.
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*Project No. 08-210531.00
SMS No. 98-2368
August 2015*

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A large, stylized green silhouette of a tree is centered on the page. Below the tree, a horizontal band contains the text 'WHERE BUSINESS AND THE ENVIRONMENT CONVERGE'. The background features a light green circular shape and a textured green area at the bottom, suggesting a landscape or field.

WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	FIELD METHODOLOGY	2
3.0	RESULTS	3
4.0	QUALITY ASSURANCE/QUALITY CONTROL	4
5.0	CONCLUSIONS AND RECOMMENDATIONS	5

FIGURES:

- Figure 1.Site Location Map
- Figure 2.Site Map
- Figure 3 Groundwater Elevation Map
- Figure 4.Contaminant Distribution Map
- Figure 5-10. Time Series Graphs

TABLES:

- Table 1. Groundwater Elevation Calculations
- Table 2. Laboratory Analytical Results

APPENDIX A: Laboratory Report Form

1.0 INTRODUCTION

This report summarizes the findings of the biennial groundwater monitoring event conducted on 26 May 2015 by Environmental Compliance Services, Inc. (ECS) at Bourne's Service Center (SMS Site # 98-2368) located at 760 Shelburne Road in South Burlington, Vermont (Figures 1 and 2). The work was completed in accordance with ECS' work plan dated 1 April 2015.

Petroleum contamination was discovered at the site during the removal and replacement of an underground storage tank (UST) in 1998. During this UST decommissioning, the piping from three USTs installed in 1987 was also removed and replaced. These tanks remained in place (see Figure 2). Heindel and Noyes, Inc. (H&N) of Burlington, Vermont performed an Initial Site Investigation (ISI) in 2005, and groundwater monitoring has been performed on a regular basis since that time. Four new monitoring wells were installed during the ISI, and petroleum contamination above Vermont Groundwater Enforcement Standards (VGES) was found to be migrating to the west. In the ISI, H&N recommended closing one of the USTs because it was no longer in service. In 2006, a 10,000 gallon gasoline UST was closed in place and the decommissioning was assessed by H&N. The Vermont Department of Environmental Conservation (VT DEC) determined that a second petroleum release had occurred at that time. In 2008, the remaining three USTs were removed and this decommissioning was assessed by ECS. Currently only the closed-in-place 10,000 gallon tank remains in the original UST grave on the north side of the site building.

In 2008, two new USTs were installed at the southern end of the property, south of the dispenser island (see Figure 2).

2.0 FIELD METHODOLOGY

Monitoring wells were gauged for depth to groundwater on 26 May 2015 using an electronic water level meter. Static water table elevations were computed for each monitoring well by subtracting the measured depth-to-water readings from the surveyed top-of-casing elevations, which are relative to an arbitrary site datum of 100.00 feet.

During gauging, monitoring well integrity was noted. The riser in MW-101 appeared to have shifted and the j-plug well cap needs to be replaced. The concrete pads at MW-102, -103 and -104 were removable and the bolts on the flush mounts were rusted. The monitoring wells had not been sampled in two years and maintenance is required.

Monitoring wells MW-1, -3, -101, -102, -103, and -104 were bailed of three well volumes of water. Groundwater was sampled for the Vermont 8021B target list of petroleum-related compounds via EPA Method 8260B. Samples were collected in laboratory provided 40 milliliter vials preserved with hydrochloric acid and shipped on ice under chain-of-custody procedures to Spectrum Analytical, Inc., of Agawam, Massachusetts (see Appendix A Laboratory Report).

3.0 RESULTS

Depth to groundwater below top of well casings ranged from 1.64 feet in MW-102 to 4.10 feet in MW-101. Water-level measurements and elevation calculations are presented in Table 1. A groundwater elevation isocontour map is presented as Figure 3.

Based on the hydrogeologic data, the groundwater in the unconfined surficial aquifer at the site is shallow (generally two to three feet below top of well casings), and the isolated groundwater flow direction affected by the paved parking lot is generally south toward MW-1. The vertical groundwater flow components at the site, and the hydraulic relationship between the shallow unconfined aquifer and the bedrock aquifer, are currently unknown.

In MW-3, the concentrations of naphthalene and trimethylbenzenes exceeded the VGES. MW-3 also had detections for ethylbenzene and xylenes. MW-102, -103 and -104 all had detections for methyl tert-butyl ether (MTBE), but none exceeded the VGES. Contaminant concentrations are presented in Table 2. A contaminant distribution map is presented as Figure 4.

Contaminant concentrations at the site have decreased significantly since sampling began, and since the USTs were removed at the north end of the property (see Time-Series Graphs, Figures 5 - 10). The sample collected from MW-3 was the only monitoring well to have exceedances of the VGES during this monitoring event and the total benzene, toluene, ethylbenzenes and xylenes (BTEX) concentrations in this well have decreased 99.5% from 41,350 micrograms per liter ($\mu\text{g/L}$) in December 2005 to 198.8 $\mu\text{g/L}$ in May 2015. At MW-102, MTBE concentrations decreased by two orders of magnitude from 108 $\mu\text{g/L}$ in April 2013 to 2.9 $\mu\text{g/L}$ in May 2015.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

A laboratory-supplied trip blank and a blind duplicate sample from MW-3 were submitted to Spectrum Analytical with the sample batch. Results are presented in Table 2. No target analytes were detected in the trip blank. Results from the blind duplicate were all within 30% relative percent difference of the original MW-3 sample, with the exception of the naphthalene concentration which differed by 35%.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the site monitoring described above, ECS concludes the following:

During this 26 May 2015 monitoring round, petroleum-related compounds exceeded the VGES in one onsite well, MW-3, located next to the former UST 4, removed in 2007. Point of compliance well, MW-102, had a significant decrease in MTBE concentration to below VGES. Contaminant concentrations have decreased significantly site-wide since USTs were removed. Natural attenuation appears to be reducing petroleum contaminant concentrations in groundwater. No sensitive receptors are immediately threatened.

ECS recommends continued biennial groundwater monitoring, with the next event scheduled for Spring 2017 to verify the MTBE concentration in compliance well MW-102. If another round of data confirms that all contaminant concentrations continue to decrease significantly and the compliance well does not exceed VGES, then site closure will be recommended based on satisfying the criteria for a Site Management Activity Completed (SMAC) designation. A Notice to Land Records may be required if concentrations at MW-3 remain above the VGES. Monitoring well maintenance is recommended to replace road boxes and the upheaved concrete pads in the parking lot at MW-102, -103 and -104 in 2015 to prevent damage to the monitoring wells.

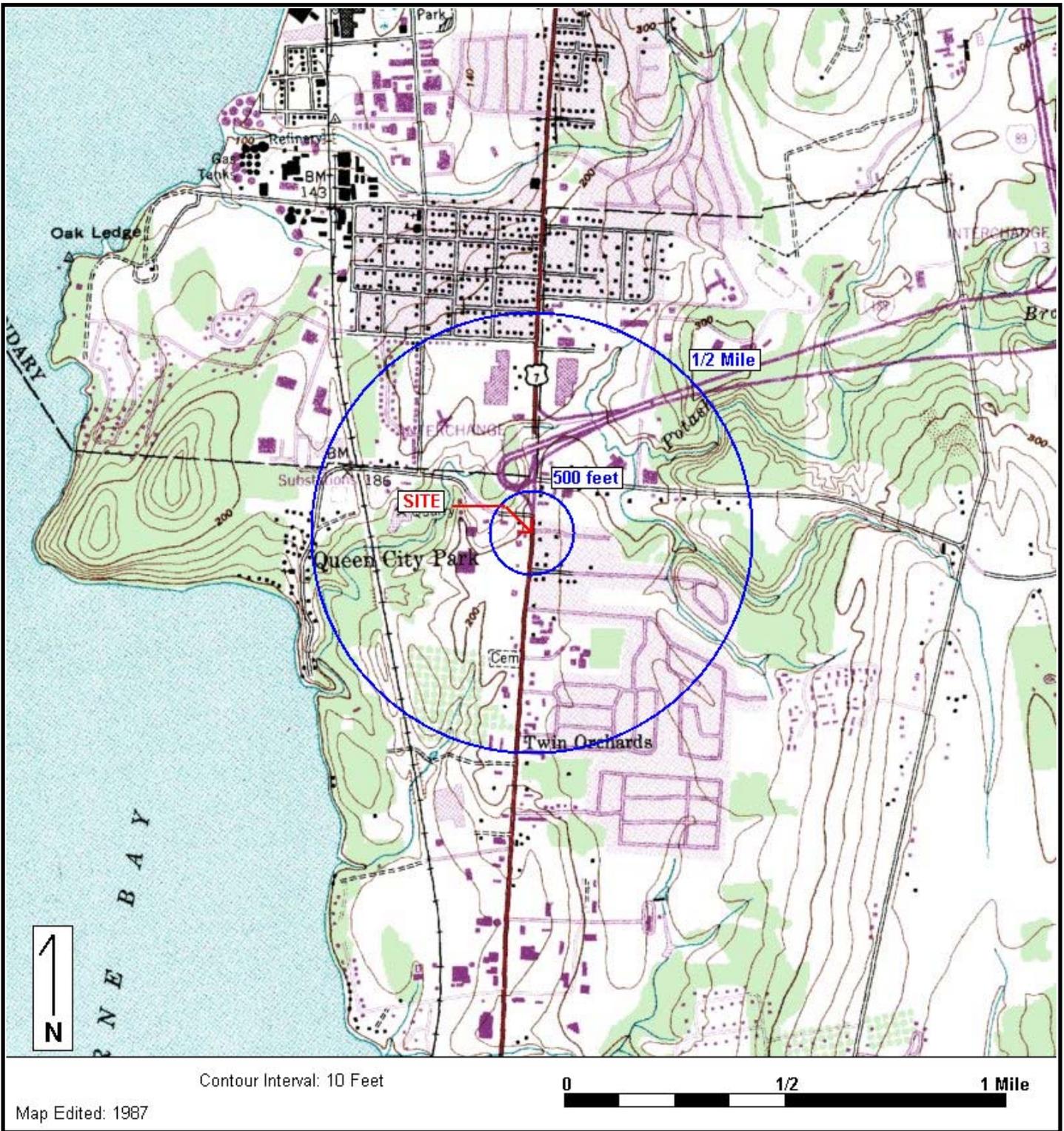
FIGURES



Environmental Compliance Services, Inc.
 65 Millet Street, Suite 301
 Richmond, VT 05477
 Phone 802.434.4500 Fax 802.434.6076
 www.ecsconsult.com

Bourne's South Burlington
 Route 7
 South Burlington, VT 05403

Figure 1: SITE LOCUS



Contour Interval: 10 Feet

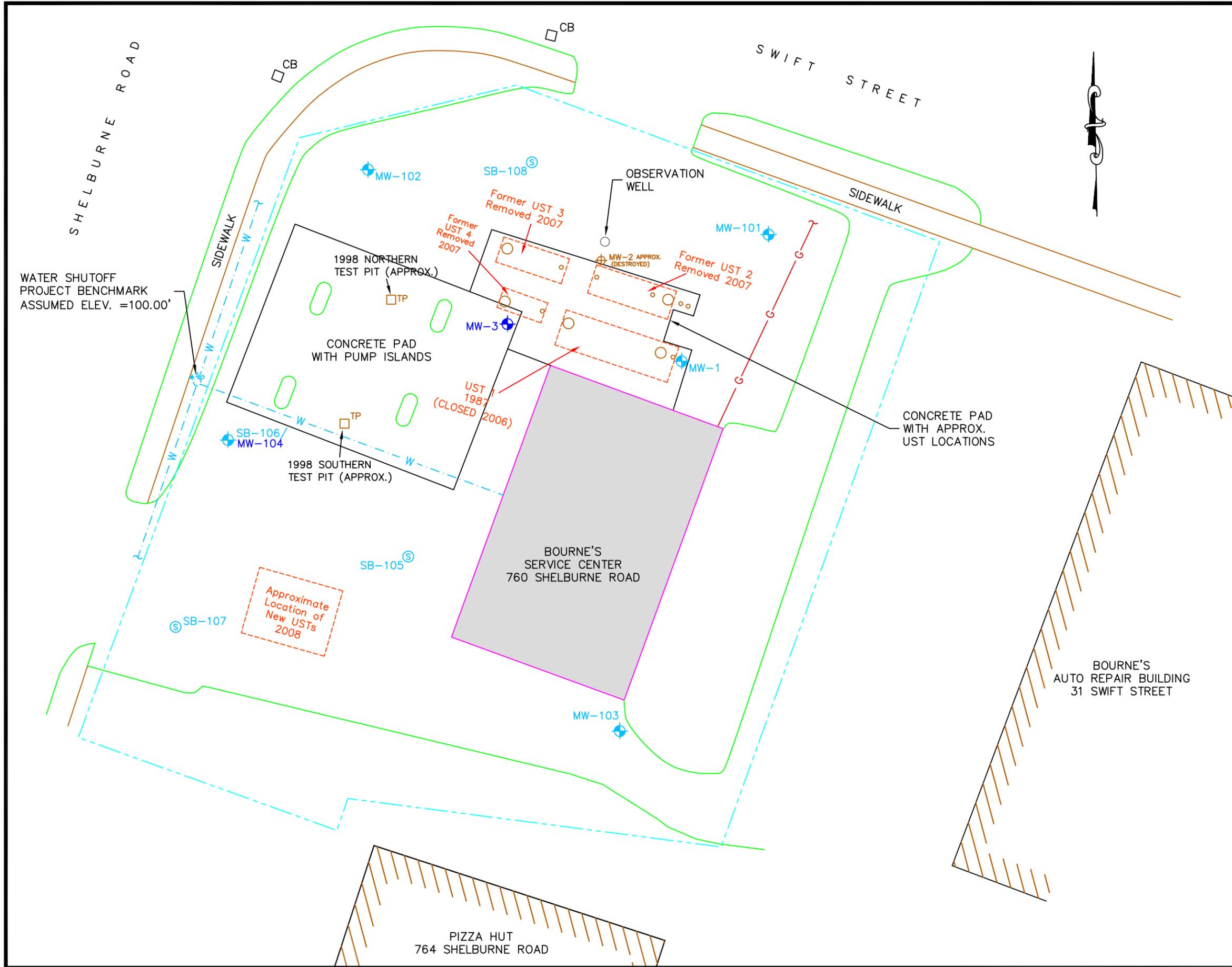
0 1/2 1 Mile

Map Edited: 1987

Base Map: U.S. Geological Survey; Quadrangle Location: Burlington, VT

Lat/Lon: 44° 26' 39" NORTH, 73° 12' 34" WEST - UTM Coordinates: 18 642485 EAST / 4922770 NORTH

Generated By: Christine DiMaio



Legend

- ◆ MW MONITORING WELL
- Ⓢ SB SOIL BORING
- CB CATCH BASIN
- PROPERTY LINE (APPROX.)
- W- WATER LINE (APPROX.)
- NATURAL GAS LINE (APPROX.)

General Notes:

Site plan prepared from plan provided and prepared by Heindel and Noyes on 8/3/07, and information obtained from ECS, Inc. personnel during site reconnaissance.

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Horizontal, and vertical locations of wells, and selected site features determined through measurements made by ECS personnel.



1 Elm Street, Suite 3, Waterbury, VT
Phone: 1-800-520-6065 Fax: 802-434-6076

PROJECT: **Bourne's Service Center**
760 Shelburne Road
South Burlington, VT

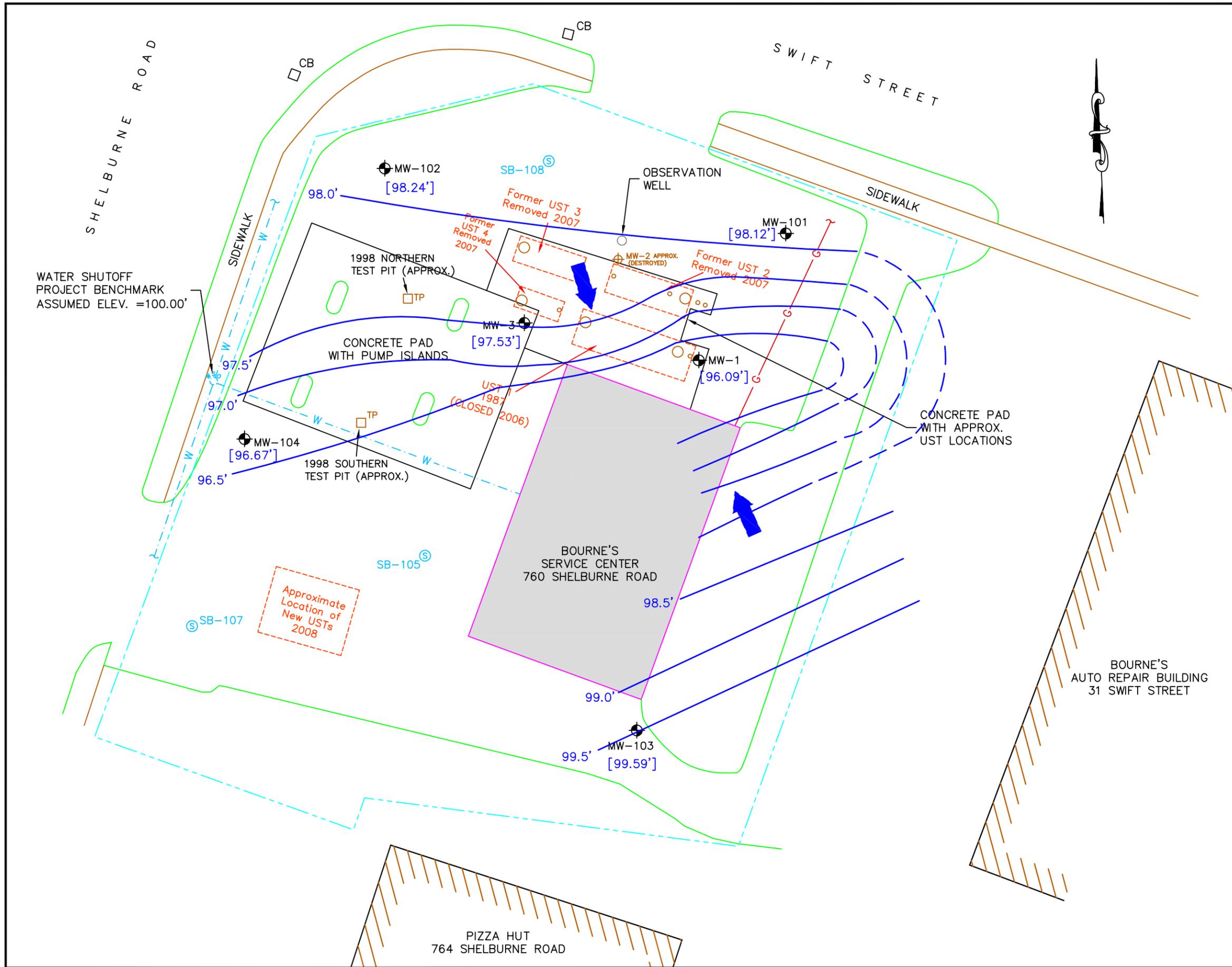
TITLE: **Site Plan**

CLIENT: **Bourne Petroleum**

GRAPHIC SCALE: 1"=20'

COMPUTER CADFILE : 08-210531.R_JUNE09

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
ABC	SS	BE	BE
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1"=20'	7/01/09	08-210531.00	2



Legend

- MONITORING WELL
- SOIL BORING
- CATCH BASIN
- PROPERTY LINE (APPROX.)
- WATER LINE (APPROX.)
- NATURAL GAS LINE (APPROX.)
- [100.01'] GROUNDWATER ELEVATION (ft)
- 100' GROUNDWATER CONTOUR (ft)
- INFERRED FLOW DIRECTION

General Notes:

Site plan prepared from plan provided and prepared by Heindel and Noyes on 8/3/07, and information obtained from ECS, Inc. personnel during site reconnaissance.

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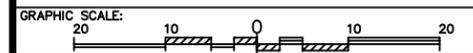


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PROJECT: BOURNE'S SERVICE CENTER
760 Shelburne Road
South Burlington, VT

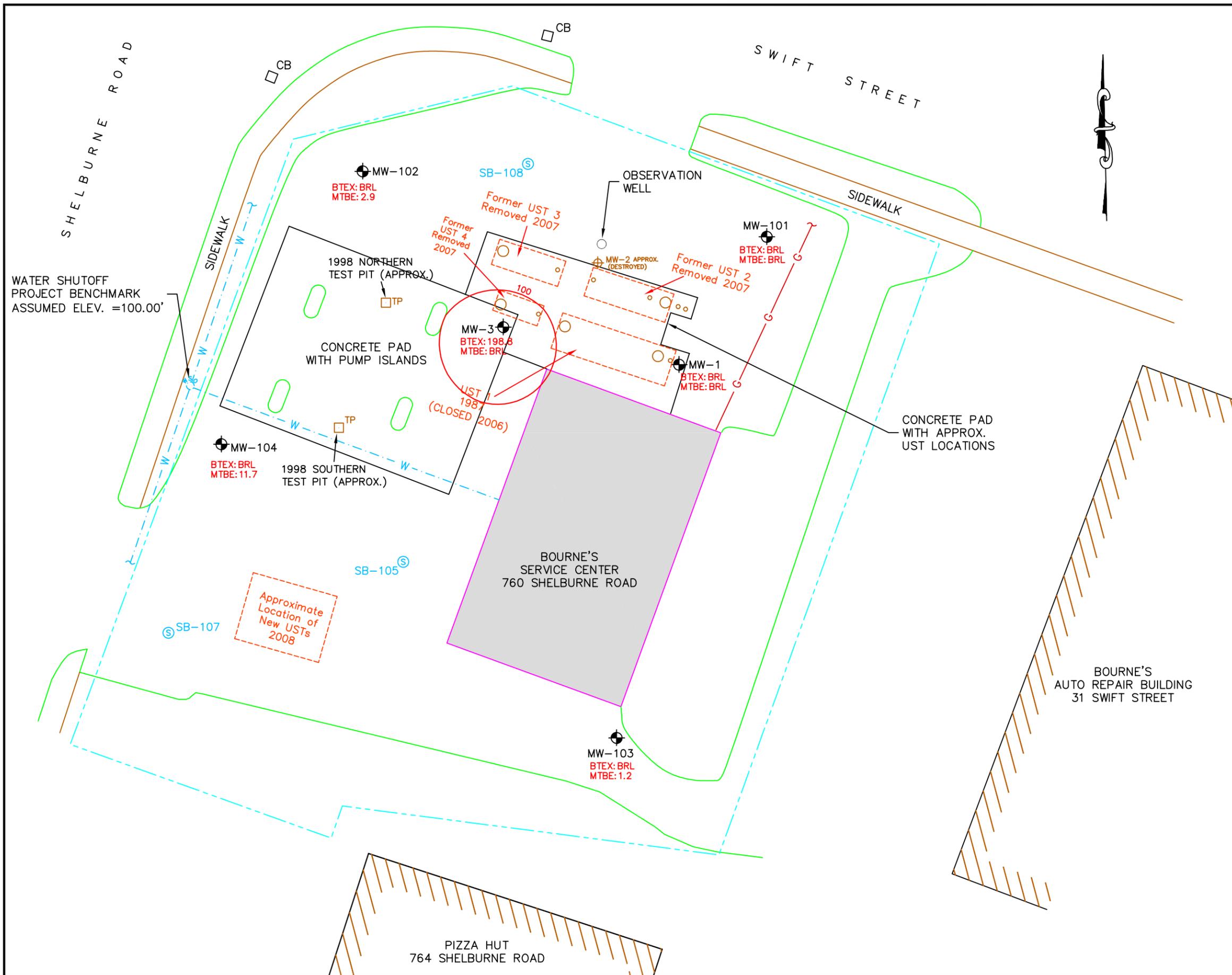
TITLE: **Groundwater Contour Map**
Sample Date: May 26, 2015

CLIENT: **Bourne Petroleum**



COMPUTER CADFILE : BOX/210531.DWG

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
AC	SS	KM	JH
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1"=20'	6/15/15	08-210531.00	3



Legend

- ⊕ MW MONITORING WELL
- ⊙ SB SOIL BORING
- CB CATCH BASIN
- PROPERTY LINE (APPROX.)
- - - W - - - WATER LINE (APPROX.)
- G - - - NATURAL GAS LINE (APPROX.)
- BTEX:1507 TOTAL BTEX CONCENTRATION (µg/L)
- 100 BTEX CONTOUR (µg/L)
- MTBE:7.2 METHYL TERT-BUTYL ETHER (MTBE) CONCENTRATION (µg/L)
- BRL BELOW REPORTABLE LIMIT

General Notes:

Site plan prepared from plan provided and prepared by Heindel and Noyes on 8/3/07, and information obtained from ECS, Inc. personnel during site reconnaissance.

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Horizontal, and vertical locations of wells, and selected site features determined through measurements made by ECS personnel.



1 Elm Street, Suite 3, Waterbury, VT
Phone: 1-800-520-8065 Fax: 802-434-8076

PROJECT: BOURNE'S SERVICE CENTER
760 Shelburne Road
South Burlington, VT

TITLE: **Contaminant Contour Map**
Sample Date: May 26, 2015

CLIENT: **Bourne Petroleum**

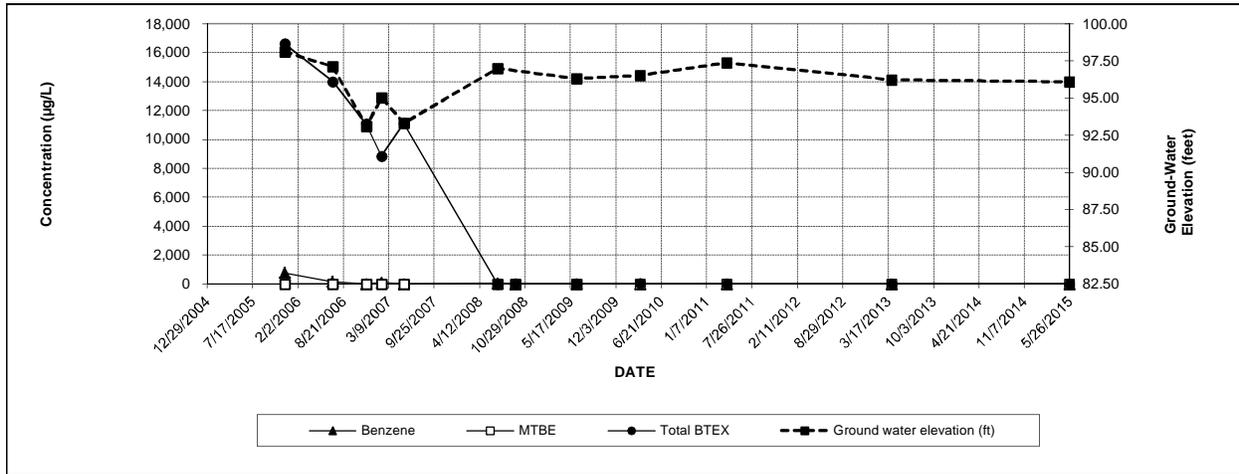


COMPUTER CADFILE : BOX/210531/CADD

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
AC	SS	KM	JH
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1"=20'	6/15/15	08-210531.00	4

**FIGURE 5. MW-1
VOC Concentrations**

Bourne Service Center
South Burlington, Vermont



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Ground water elevation (ft)
12/5/2005	762	3,740	2,030	10,100	ND<200	496	3,227	16,632	24.4	98.12
7/5/2006	145	2,410	1,350	10,100	ND<200	323	3,734	14,005	NA	97.13
11/30/2006	ND<100	1,040	810	9,230	ND<200	529	3,665	11,080	NA	93.11
2/5/2007	82	495	762	7,510	ND<200	279	3,607	8,849	NA	95.02
5/14/2007	ND<100	ND<100	3,920	7,200	ND<200	282	6,460	11,120	NA	93.30
6/30/2008	50.7	385	142	930	BRL<10.0	60.6	757	BRL	NA	97.02
9/16/2008	NS	NS	NS	NS	NS	NS	NS	NS	NS	
6/12/2009	BRL<1.0	1.8	41.8	67.5	BRL<1.0	21.1	165	BRL	NA	96.32
3/22/2010	BRL<1.0	1.8	5.1	8.5	BRL<1.0	2.4	50.6	15.4	NA	96.52
4/7/2011	BRL<1.0	BRL<1.0	3.0	4.5	BRL<1.0	BRL<1.0	12.5	7.5	NA	97.38
4/2/2013	BRL<1.0	BRL<1.0	BRL<1.0	BRL<3.0	BRL<1.0	BRL<1.0	BRL<2.0	BRL	NA	96.24
5/26/2015	BRL<1.0	BRL<1.0	BRL<1.0	BRL<3.0	BRL<1.0	BRL<1.0	1.0	BRL	NA	96.09
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

BRL - below laboratory reporting limit

Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

shaded cells exceed VGES

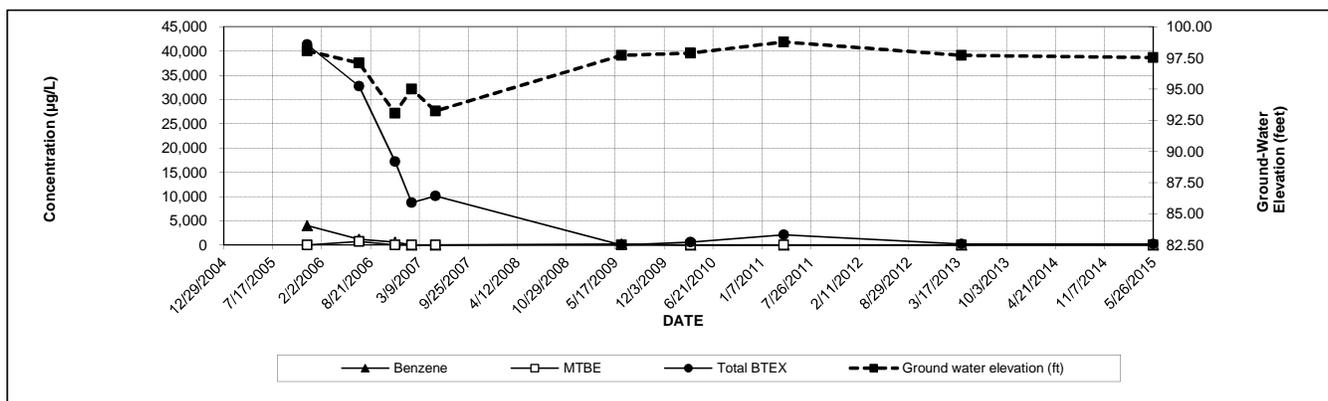
NS - not sampled

NA - not analyzed

all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

2/5/07 - n-propylbenzene (62 µg/L), isopropylbenzene (67 µg/L), and n-propylbenzene (117 µg/L) also detected via full 8260 list

**FIGURE 6. MW-3
VOC Concentrations**
**Bourne Service Center
South Burlington, Vermont**



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Ground water elevation (ft)
12/5/2005	3,980	19300	3,270	14,800	ND<200	540	2,911	41,350	55.0	98.07
7/5/2006	1,210	11700	2,140	17,700	711	813	3,925	32,750	NA	97.11
11/30/2006	624	1400	1,360	13,800	ND<200	553	2,469	17,184	NA	93.07
2/5/2007	ND<50	84	112	8,560	ND<100	585	5,420	8,756	NA	95.00
5/14/2007	ND<200	ND<200	3,580	6,550	ND<400	ND<400	3,880	10,130	NA	93.25
6/30/2008	NS	NS	NS	NS	NS	NS	NS	NS	NS	
9/16/2008	NS	NS	NS	NS	NS	NS	NS	NS	NS	
6/12/2009	184	103	300	2522	BRL<20.0	458	3,198	BRL	NA	97.72
3/22/2010	19.9	13.0	72.3	508.1	BRL<10.0	88.8	921	613.3	NA	97.88
4/7/2011	30.3	29.4	195	1,868	BRL<10.0	217	2,512	2,122.7	NA	98.78
4/2/2013	BRL<10.0*	BRL<10.0	30.4	179	BRL<10.0	55.4	612.2	209.4	NA	97.70
5/26/2015	BRL<10.0	BRL<10.0	49.8	149	BRL<10.0	74.1	644	198.8	NA	97.53
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

BRL - below laboratory reporting limit

Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

shaded cells exceed VGES

NS - not sampled

NA - not analyzed

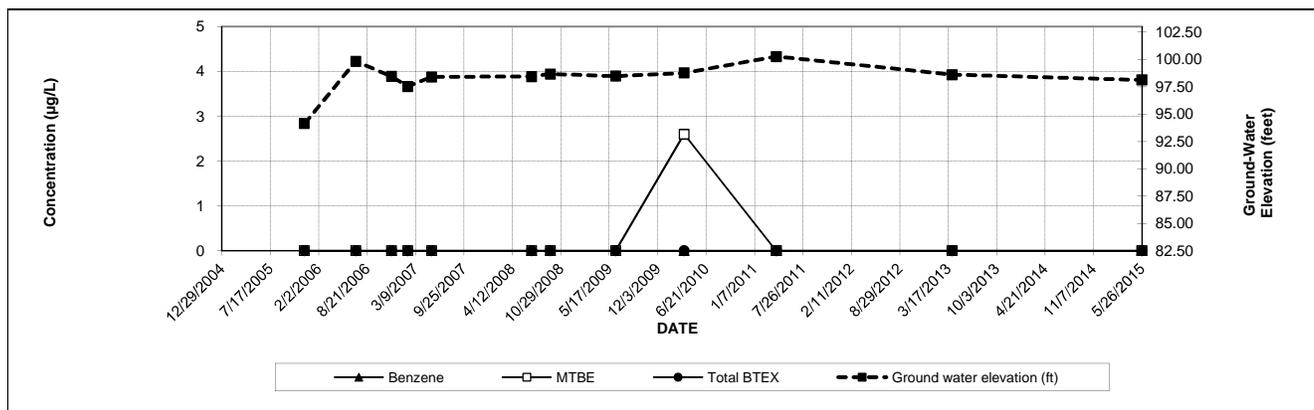
all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

2/5/07 - n-butylbenzene (83.5 ug/L) also detected via full 8260 list

*4/2/2013 - benzene was detected at 10.3 ug/L in the duplicate sample collected from MW-3

**FIGURE 7. MW-101
VOC Concentrations**

**Bourne Service Center
South Burlington, VT**



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Ground water elevation (ft)
12/5/2005	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	ND < 2.0	ND < 1.0	ND < 2.0	ND	3.22	94.14
7/5/2006	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	ND < 2.0	ND < 1.0	ND < 2.0	ND	NA	99.83
11/30/2006	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	ND < 2.0	ND < 1.0	ND < 2.0	ND	NA	98.44
2/5/2007	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND	NA	97.53
5/14/2007	ND < 1.0	ND < 1.0	ND < 1.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND	NA	98.40
6/30/2008	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	98.43
9/16/2008	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	98.66
6/12/2009	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	98.47
3/22/2010	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	2.6	BRL < 1.0	BRL < 2.0	BRL	NA	98.76
4/7/2011	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	100.27
4/2/2013	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	98.61
5/26/2015	BRL < 1.0	BRL < 1.0	BRL < 1.0	BRL < 3.0	BRL < 1.0	BRL < 1.0	BRL < 2.0	BRL	NA	98.12
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

BRL - below laboratory reporting limit

Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

shaded cells exceed VGES

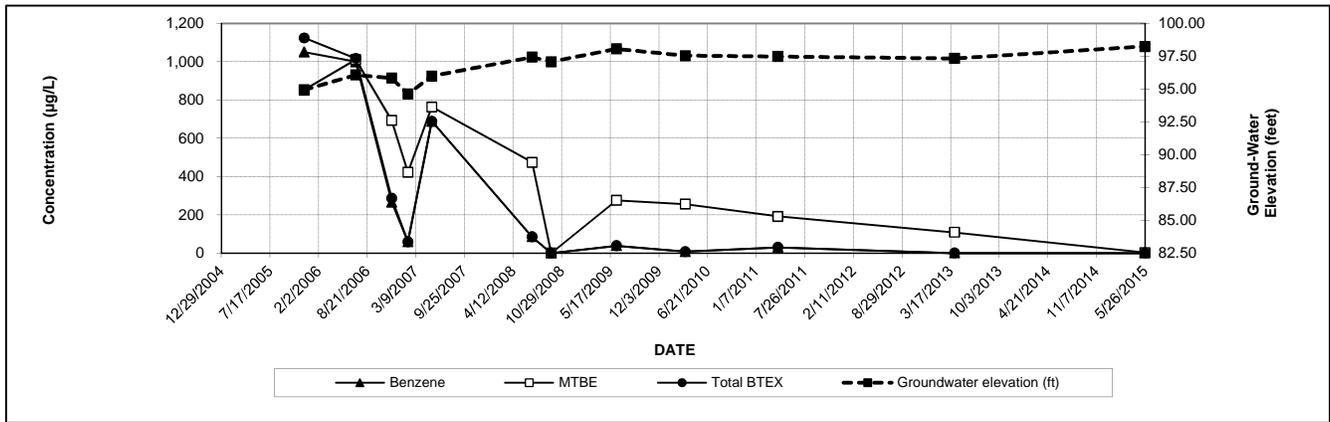
NS - not sampled

NA - not analyzed

all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

**FIGURE 8. MW-102
VOC Concentrations**

**Bourne Service Center
South Burlington, VT**



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Groundwater elevation (ft)
12/5/2005	1,050	7.4	9.4	56.8	852	ND / < 5.0	ND / < 16.5	1,124	0.81	94.93
7/5/2006	999	ND / < 10.0	17.7	ND / < 20.0	1,010	ND / < 20.0	ND / < 20.0	1,017	NA	96.07
11/30/2006	267	ND / < 5.0	ND / < 5.0	ND / < 10.0	693	ND / < 10.0	ND / < 10.0	287	NA	95.83
2/5/2007	59	ND / < 5.0	ND / < 5.0	ND / < 10.0	422	ND / < 10.0	ND / < 10.0	59	NA	94.62
5/14/2007	689	ND / < 10.0	ND / < 10.0	ND / < 20.0	763	ND / < 20.0	ND / < 20.0	689	NA	95.98
6/30/2008	84.9	BRL <1.0	BRL <1.0	BRL <3.0	474	BRL <1.0	BRL <2.0	85	NA	97.43
9/16/2008	BRL <10.0	BRL <10.0	BRL <10.0	BRL <30.0	BRL <10.0	BRL <10.0	BRL <20.0	BRL	NA	97.07
6/12/2009	38.2	BRL <5.0	BRL <5.0	BRL <15.0	276	BRL <5.0	BRL <10.0	38	NA	98.06
3/22/2010	7.5	BRL <5.0	BRL <5.0	BRL <15.0	256	BRL <5.0	BRL <10.0	7.5	NA	97.53
4/7/2011	30.0	BRL <5.0	BRL <5.0	BRL <15.0	192	BRL <5.0	BRL <10.0	30.0	NA	97.48
4/2/2013	BRL <5.0	BRL <5.0	BRL <5.0	BRL <15.0	108	BRL <5.0	BRL <10.0	BRL	NA	97.33
5/26/2015	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	2.9	BRL <1.0	BRL <2.0	BRL	NA	98.24
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

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Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

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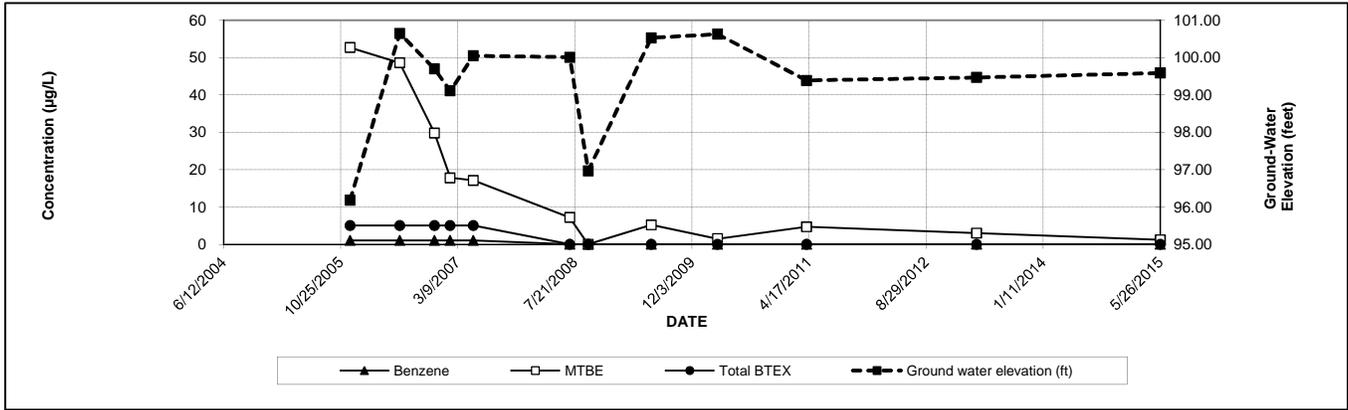
NS - not sampled

NA - not analyzed

all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

**FIGURE 9. MW-103
VOC Concentrations**

**Bourne Service Center
South Burlington, VT**



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Ground water elevation (ft)
12/5/2005	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	52.7	ND / < 1.0	ND / < 2.0	ND / < 5.0	ND / < 0.40	96.18
7/5/2006	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	48.6	ND / < 1.0	ND / < 2.0	ND / < 5.0	NA	100.65
11/30/2006	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	29.8	ND / < 1.0	ND / < 2.0	ND / < 5.0	NA	99.70
2/5/2007	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	17.8	ND / < 2.0	ND / < 2.0	ND / < 5.0	NA	99.11
5/14/2007	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	17.1	ND / < 2.0	ND / < 2.0	ND / < 5.0	NA	100.05
6/30/2008	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	7.2	BRL <1.0	BRL <2.0	BRL	NA	100.01
9/16/2008	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	BRL <1.0	BRL <1.0	BRL <2.0	BRL	NA	96.97
6/12/2009	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	5.2	BRL <1.0	BRL <2.0	BRL	NA	100.53
3/22/2010	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	1.5	BRL <1.0	BRL <2.0	BRL	NA	100.63
4/7/2011	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	4.7	BRL <1.0	BRL <2.0	BRL	NA	99.39
4/2/2013	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	3.0	BRL <1.0	BRL <2.0	BRL	NA	99.47
5/26/2015	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	1.2	BRL <1.0	BRL <2.0	BRL	NA	99.59
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

BRL - below laboratory reporting limit

Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

shaded cells exceed VGES

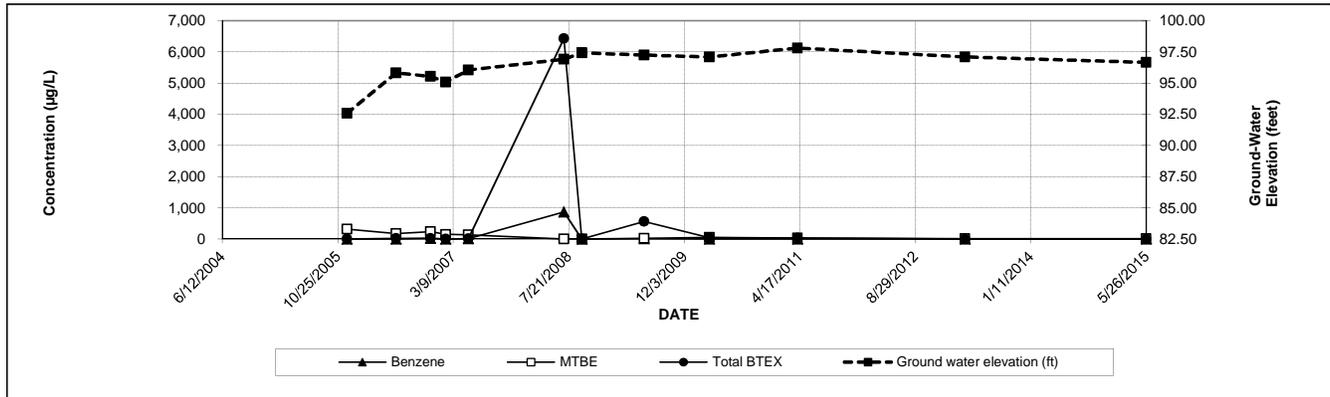
NS - not sampled

NA - not analyzed

all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

**FIGURE 10. MW-104
VOC Concentrations**

**Bourne Service Center
South Burlington, VT**



Date	Benzene	Toluene	Ethyl benzene	Xylenes	MTBE	Naphthalene	Total TMBs	Total BTEX	TPH-DRO (8015B)	Ground water elevation (ft)
12/5/2005	2.0	ND / < 1.0	ND / < 1.0	3.4	317	ND / < 1.0	ND / < 2.0	5.4	0.41	92.59
7/5/2006	ND / < 5.0	ND / < 5.0	ND / < 5.0	ND / < 10.0	177	ND / < 10.0	ND / < 10.0	ND / < 25.0	NA	95.82
11/30/2006	23.1	ND / < 5.0	ND / < 5.0	ND / < 10.0	234	ND / < 10.0	ND / < 10.0	23.1	NA	95.55
2/5/2007	ND / < 1.0	ND / < 1.0	ND / < 1.0	ND / < 2.0	149	ND / < 2.0	ND / < 2.0	ND / < 5.0	NA	95.09
5/14/2007	12.7	ND / < 10.0	ND / < 10.0	ND / < 20.0	137	ND / < 20.0	ND / < 20.0	12.7	NA	96.04
6/30/2008	870	3160	440	1957	BRL <50.0	BRL <1.0	80.5	6,427	NA	96.93
9/16/2008	BRL <1.0	BRL <1.0	BRL <1.0	BRL <1.0	BRL <1.0	BRL <1.0	BRL <2.0	BRL	NA	97.43
6/12/2009	7.0	12.2	108	438	25.5	10.8	132.9	565.2	NA	97.24
3/22/2010	5.5	BRL <1.0	19.2	16.7	52.3	8.8	55.8	41.4	NA	97.10
4/7/2011	2.5	BRL <1.0	9.5	14.8	31.9	3.7	52.9	26.8	NA	97.80
4/2/2013	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	13.6	BRL <1.0	BRL <2.0	BRL	NA	97.11
5/26/2015	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	11.7	BRL <1.0	1.4	BRL	NA	96.67
VGES	5	1000	700	10000	40	20	350	--	--	

Notes:

Concentrations in micrograms per liter (µg/L) except TPH in milligrams per liter (mg/L)

MTBE - methyl tert-butyl ether

TMBs - trimethyl benzenes

ND - None detected

VGES - Vermont Groundwater Enforcement Standards

BRL - below laboratory reporting limit

Samples through 2007 collected by Heindel & Noyes and analyzed by Endyne Laboratories

Samples after 2008 collected by ECS and analyzed by Spectrum Analytical Laboratories

shaded cells exceed VGES

NS - not sampled

NA - not analyzed

all samples analyzed via EPA 8260 for the Vermont 8021B short list of compounds, except 2/5/07 samples analyzed for full 8260 list

TABLES

TABLE 1.
Groundwater Elevation Data

Bourne Service Station
SMS site #98-2368

Monitoring Date: 26 May 2015

Monitoring Well	TOC Elevation (ft)	Depth to groundwater (ft)	Ground water elevation (ft)
MW-101	102.22	4.10	98.12
MW-102	99.88	1.64	98.24
MW-103	101.63	2.04	99.59
MW-104	99.24	2.57	96.67
MW-1	99.62	3.53	96.09
MW-3	100.32	2.79	97.53

TOC - top of casing

ft - feet

**Bourne's Service Center
SMS Site #98-2368**

Monitoring Date: 26 May 2015

	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	Total TMB	Total BTEX
MW-1	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	BRL <1.0	BRL <1.0	1.0	BRL
MW-3	BRL<10.0	BRL<10.0	49.8	149	BRL<10.0	74.1	644	198.8
MW-101	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	BRL<1.0	BRL <1.0	BRL <2.0	BRL
MW-102	BRL<1.0	BRL <1.0	BRL <1.0	BRL <3.0	2.9	BRL <1.0	BRL <2.0	BRL
MW-103	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	1.2	BRL <1.0	BRL <2.0	BRL
MW-104	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	11.7	BRL <1.0	1.4	BRL
VGES	5	1,000	700	10,000	40	20	350	--
QA/QC samples								
Trip Blank	BRL <1.0	BRL <1.0	BRL <1.0	BRL <3.0	BRL <1.0	BRL <1.0	BRL <2.0	BRL
Duplicate (MW-3)	BRL <20.0	BRL <20.0	41.0	106	BRL<20.0	105	642	147
RPD (%)	--	--	19	25*	--	35	0.3	--

Notes:

All samples collected by ECS and analyzed by Spectrum Analytical, Inc.

Concentrations in micrograms per liter (µg/L).

MTBE - methyl tert-butyl ether

Shaded area indicate VGES exceedences.

TMB - trimethyl benzene

VGES - Vermont Groundwater Enforcement Standards

BRL - Below Reporting Limit

RPD - relative percent difference

BTEX - total benzene, toluene, ethylbenzene, and xylenes

* Relative percent difference for m,p-xylenes was 25%. For o-xylenes not compared, as it was not detected above laboratory reporting limit in duplicate

APPENDIX A

LABORATORY ANALYTICAL REPORTS

Report Date:
04-Jun-15 14:31



SPECTRUM ANALYTICAL, INC.

Laboratory Report

- Final Report
- Re-Issued Report
- Revised Report

Environmental Compliance Services
1 Elm St. Suite 3
Waterbury, VT 05676
Attn: Katrina Mattice

Project: Bourne Petroleum - S. Burlington, VT
Project #: 08-210531.00

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC07940-01	MW-1	Ground Water	26-May-15 11:10	27-May-15 10:07
SC07940-02	MW-101	Ground Water	26-May-15 11:20	27-May-15 10:07
SC07940-03	MW-3	Ground Water	26-May-15 11:40	27-May-15 10:07
SC07940-04	MW-102	Ground Water	26-May-15 11:29	27-May-15 10:07
SC07940-05	MW-104	Ground Water	26-May-15 12:05	27-May-15 10:07
SC07940-06	MW-103	Ground Water	26-May-15 12:20	27-May-15 10:07
SC07940-07	Duplicate	Ground Water	26-May-15 00:00	27-May-15 10:07
SC07940-08	Trip Blank	Deionized Water	26-May-15 00:00	27-May-15 10:07

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00098
USDA # S-51435



Authorized by:

Nicole Leja
Laboratory Director

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 16 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 0.2 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 8260C

Calibration:

1505078

Analyte quantified by quadratic equation type calibration.

1,2,4-Trimethylbenzene
1,2-Dibromoethane (EDB)
1,3,5-Trimethylbenzene
Ethylbenzene
m,p-Xylene
Naphthalene
o-Xylene

This affected the following samples:

1510429-BLK1
1510429-BS1
1510429-BSD1
1510429-MS1
1510429-MSD1
Duplicate
MW-1
MW-101
MW-103
MW-104
S504701-ICV1
S505146-CCV1

1505104

Analyte quantified by quadratic equation type calibration.

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Naphthalene

This affected the following samples:

1510654-BLK1
1510654-BS1
1510654-BSD1
MW-102
MW-3
S505010-ICV1
S505268-CCV1
Trip Blank

SW846 8260C

Spikes:

1510429-MS1 *Source: SC07940-03*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Toluene

1510429-MSD1 *Source: SC07940-03*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Methyl tert-butyl ether

Toluene

Samples:

S505268-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Ethylbenzene (20.2%)

m,p-Xylene (27.1%)

Methyl tert-butyl ether (21.5%)

This affected the following samples:

1510654-BLK1

1510654-BS1

1510654-BSD1

MW-102

MW-3

Trip Blank

SC07940-03RE1 *MW-3*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

SC07940-07 *Duplicate*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Sample Acceptance Check Form

Client: Environmental Compliance Services - Waterbury, VT
Project: Bourne Petroleum - S. Burlington, VT / 08-210531.00
Work Order: SC07940
Sample(s) received on: 5/27/2015

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples cooled on ice upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample Identification

MW-1

SC07940-01

Client Project #

08-210531.00

Matrix

Ground Water

Collection Date/Time

26-May-15 11:10

Received

27-May-15

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Volatile Organic CompoundsVolatile Organic Compounds by GC/MSPrepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	28-May-1 5	28-May-1 5	NAA	1510429	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	1.0		µg/l	1.0	1.0	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	82			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	100			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	80			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	119			70-130 %			"	"	"	"	"	

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Sample IdentificationMW-101
SC07940-02Client Project #
08-210531.00Matrix
Ground WaterCollection Date/Time
26-May-15 11:20Received
27-May-15

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
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Volatile Organic CompoundsVolatile Organic Compounds by GC/MSPrepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	28-May-1 5	28-May-1 5	NAA	1510429	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	89			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	98			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	102			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	102			70-130 %			"	"	"	"	"	

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Sample Identification

MW-3
SC07940-03

Client Project #
08-210531.00

Matrix
Ground Water

Collection Date/Time
26-May-15 11:40

Received
27-May-15

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Volatile Organic Compounds

Re-analysis of Volatile Organic Compounds
by GC/MS

GS1

Prepared by method SW846 5030 Water MS

71-43-2	Benzene	< 10.0	D	µg/l	10.0	1.7	10	SW846 8260C	01-Jun-15	02-Jun-15	GMA	1510654	X
106-93-4	1,2-Dibromoethane (EDB)	< 5.0	D	µg/l	5.0	2.6	10	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 10.0	D	µg/l	10.0	1.6	10	"	"	"	"	"	X
100-41-4	Ethylbenzene	49.8	D	µg/l	10.0	1.7	10	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 10.0	D	µg/l	10.0	1.7	10	"	"	"	"	"	X
91-20-3	Naphthalene	74.1	D	µg/l	10.0	4.0	10	"	"	"	"	"	X
108-88-3	Toluene	< 10.0	D	µg/l	10.0	3.3	10	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	644	D	µg/l	10.0	4.0	10	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 10.0	D	µg/l	10.0	8.9	10	"	"	"	"	"	X
179601-23-1	m,p-Xylene	136	D	µg/l	20.0	3.8	10	"	"	"	"	"	X
95-47-6	o-Xylene	13.0	D	µg/l	10.0	4.7	10	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	96			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	102			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	96			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	96			70-130 %			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample IdentificationMW-102
SC07940-04Client Project #
08-210531.00Matrix
Ground WaterCollection Date/Time
26-May-15 11:29Received
27-May-15

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Volatile Organic CompoundsVolatile Organic Compounds by GC/MSPrepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	01-Jun-15	02-Jun-15	GMA	1510654	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	2.9		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	86			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	102			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	97			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	90			70-130 %			"	"	"	"	"	

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Sample IdentificationMW-104
SC07940-05Client Project #
08-210531.00Matrix
Ground WaterCollection Date/Time
26-May-15 12:05Received
27-May-15

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
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Volatile Organic CompoundsVolatile Organic Compounds by GC/MSPrepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	28-May-15	28-May-15	NAA	1510429	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	11.7		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	1.4		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	91			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	97			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	123			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	130			70-130 %			"	"	"	"	"	

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Sample IdentificationMW-103
SC07940-06Client Project #
08-210531.00Matrix
Ground WaterCollection Date/Time
26-May-15 12:20Received
27-May-15

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
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Volatile Organic CompoundsVolatile Organic Compounds by GC/MSPrepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	28-May-15	28-May-15	NAA	1510429	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	1.2		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	90			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	98			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	101			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	105			70-130 %			"	"	"	"	"	

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Sample Identification

Duplicate SC07940-07
 Client Project # 08-210531.00
 Matrix Ground Water
 Collection Date/Time 26-May-15 00:00
 Received 27-May-15

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Volatile Organic Compounds

Volatile Organic Compounds by GC/MS

GS1

Prepared by method SW846 5030 Water MS

71-43-2	Benzene	< 20.0	D	µg/l	20.0	3.5	20	SW846 8260C	28-May-15	28-May-15	NAA	1510429	X
106-93-4	1,2-Dibromoethane (EDB)	< 10.0	D	µg/l	10.0	5.2	20	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 20.0	D	µg/l	20.0	3.2	20	"	"	"	"	"	X
100-41-4	Ethylbenzene	41.0	D	µg/l	20.0	3.4	20	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 20.0	D	µg/l	20.0	3.4	20	"	"	"	"	"	X
91-20-3	Naphthalene	105	D	µg/l	20.0	8.0	20	"	"	"	"	"	X
108-88-3	Toluene	< 20.0	D	µg/l	20.0	6.5	20	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	642	D	µg/l	20.0	8.0	20	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 20.0	D	µg/l	20.0	17.8	20	"	"	"	"	"	X
179601-23-1	m,p-Xylene	106	D	µg/l	40.0	7.6	20	"	"	"	"	"	X
95-47-6	o-Xylene	< 20.0	D	µg/l	20.0	9.4	20	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	96			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	100			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	99			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	104			70-130 %			"	"	"	"	"	

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Sample Identification

Trip Blank
SC07940-08

Client Project #
08-210531.00

Matrix
Deionized Water

Collection Date/Time
26-May-15 00:00

Received
27-May-15

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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Volatile Organic Compounds

Volatile Organic Compounds by GC/MS

Prepared by method SW846 5030 Water MS

71-43-2	Benzene	< 1.0		µg/l	1.0	0.2	1	SW846 8260C	01-Jun-15	02-Jun-15	GMA	1510654	X
106-93-4	1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5	0.3	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 1.0		µg/l	1.0	0.2	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0	0.9	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	X
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.5	1	"	"	"	"	"	X

Surrogate recoveries:

460-00-4	4-Bromofluorobenzene	87			70-130 %			"	"	"	"	"	
2037-26-5	Toluene-d8	100			70-130 %			"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	100			70-130 %			"	"	"	"	"	
1868-53-7	Dibromofluoromethane	91			70-130 %			"	"	"	"	"	

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1510429 - SW846 5030 Water MS										
Blank (1510429-BLK1)					<u>Prepared & Analyzed: 28-May-15</u>					
Benzene	< 1.0		µg/l	1.0						
1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5						
1,2-Dichloroethane	< 1.0		µg/l	1.0						
Ethylbenzene	< 1.0		µg/l	1.0						
Methyl tert-butyl ether	< 1.0		µg/l	1.0						
Naphthalene	< 1.0		µg/l	1.0						
Toluene	< 1.0		µg/l	1.0						
1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0						
1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.0		µg/l	2.0						
o-Xylene	< 1.0		µg/l	1.0						
<i>Surrogate: 4-Bromofluorobenzene</i>	45.3		µg/l		50.0		91	70-130		
<i>Surrogate: Toluene-d8</i>	49.0		µg/l		50.0		98	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	48.8		µg/l		50.0		98	70-130		
<i>Surrogate: Dibromofluoromethane</i>	47.2		µg/l		50.0		94	70-130		
LCS (1510429-BS1)					<u>Prepared & Analyzed: 28-May-15</u>					
Benzene	17.9		µg/l		20.0		89	70-130		
1,2-Dibromoethane (EDB)	16.6		µg/l		20.0		83	70-130		
1,2-Dichloroethane	16.3		µg/l		20.0		82	70-130		
Ethylbenzene	16.9		µg/l		20.0		84	70-130		
Methyl tert-butyl ether	15.3		µg/l		20.0		76	70-130		
Naphthalene	18.7		µg/l		20.0		93	70-130		
Toluene	15.5		µg/l		20.0		77	70-130		
1,2,4-Trimethylbenzene	17.9		µg/l		20.0		89	70-130		
1,3,5-Trimethylbenzene	17.7		µg/l		20.0		89	70-130		
m,p-Xylene	17.1		µg/l		20.0		85	70-130		
o-Xylene	17.4		µg/l		20.0		87	70-130		
<i>Surrogate: 4-Bromofluorobenzene</i>	53.8		µg/l		50.0		108	70-130		
<i>Surrogate: Toluene-d8</i>	49.6		µg/l		50.0		99	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	45.7		µg/l		50.0		91	70-130		
<i>Surrogate: Dibromofluoromethane</i>	46.2		µg/l		50.0		92	70-130		
LCS Dup (1510429-BSD1)					<u>Prepared & Analyzed: 28-May-15</u>					
Benzene	17.1		µg/l		20.0		86	70-130	4	20
1,2-Dibromoethane (EDB)	16.8		µg/l		20.0		84	70-130	1	20
1,2-Dichloroethane	16.4		µg/l		20.0		82	70-130	0.2	20
Ethylbenzene	16.2		µg/l		20.0		81	70-130	4	20
Methyl tert-butyl ether	15.6		µg/l		20.0		78	70-130	2	20
Naphthalene	18.5		µg/l		20.0		93	70-130	0.8	20
Toluene	14.7		µg/l		20.0		74	70-130	5	20
1,2,4-Trimethylbenzene	17.3		µg/l		20.0		86	70-130	3	20
1,3,5-Trimethylbenzene	17.1		µg/l		20.0		85	70-130	4	20
m,p-Xylene	16.7		µg/l		20.0		84	70-130	2	20
o-Xylene	17.2		µg/l		20.0		86	70-130	1	20
<i>Surrogate: 4-Bromofluorobenzene</i>	53.2		µg/l		50.0		106	70-130		
<i>Surrogate: Toluene-d8</i>	50.4		µg/l		50.0		101	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	45.8		µg/l		50.0		92	70-130		
<i>Surrogate: Dibromofluoromethane</i>	47.4		µg/l		50.0		95	70-130		
Matrix Spike (1510429-MS1)					<u>Source: SC07940-03</u>		<u>Prepared & Analyzed: 28-May-15</u>			
Benzene	15.2	D	µg/l		20.0	BRL	76	70-130		
1,2-Dibromoethane (EDB)	16.3	D	µg/l		20.0	BRL	81	70-130		

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1510429 - SW846 5030 Water MS										
Matrix Spike (1510429-MS1)			Source: SC07940-03			Prepared & Analyzed: 28-May-15				
1,2-Dichloroethane	15.2	D	µg/l		20.0	BRL	76	70-130		
Ethylbenzene	17.9	D	µg/l		20.0	1.7	81	70-130		
Methyl tert-butyl ether	14.7	D	µg/l		20.0	BRL	74	70-130		
Naphthalene	24.7	D	µg/l		20.0	4.2	102	70-130		
Toluene	13.7	QM7, D	µg/l		20.0	BRL	68	70-130		
1,2,4-Trimethylbenzene	47.7	D	µg/l		20.0	25.5	111	70-130		
1,3,5-Trimethylbenzene	17.9	D	µg/l		20.0	BRL	90	70-130		
m,p-Xylene	22.1	D	µg/l		20.0	4.0	90	70-130		
o-Xylene	17.4	D	µg/l		20.0	0.8	83	70-130		
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Surrogate: 4-Bromofluorobenzene	53.8		µg/l		50.0		108	70-130		
Surrogate: Toluene-d8	50.2		µg/l		50.0		100	70-130		
Surrogate: 1,2-Dichloroethane-d4	46.0		µg/l		50.0		92	70-130		
Surrogate: Dibromofluoromethane	47.6		µg/l		50.0		95	70-130		
Matrix Spike Dup (1510429-MSD1)			Source: SC07940-03			Prepared & Analyzed: 28-May-15				
Benzene	14.1	D	µg/l		20.0	BRL	70	70-130	8	20
1,2-Dibromoethane (EDB)	15.9	D	µg/l		20.0	BRL	79	70-130	3	20
1,2-Dichloroethane	14.8	D	µg/l		20.0	BRL	74	70-130	3	20
Ethylbenzene	16.5	D	µg/l		20.0	1.7	74	70-130	9	20
Methyl tert-butyl ether	13.8	QM7, D	µg/l		20.0	BRL	69	70-130	6	20
Naphthalene	24.8	D	µg/l		20.0	4.2	103	70-130	0.9	20
Toluene	12.7	QM7, D	µg/l		20.0	BRL	63	70-130	8	20
1,2,4-Trimethylbenzene	43.8	D	µg/l		20.0	25.5	92	70-130	19	20
1,3,5-Trimethylbenzene	16.6	D	µg/l		20.0	BRL	83	70-130	8	20
m,p-Xylene	20.3	D	µg/l		20.0	4.0	81	70-130	11	20
o-Xylene	16.0	D	µg/l		20.0	0.8	76	70-130	9	20
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Surrogate: 4-Bromofluorobenzene	53.1		µg/l		50.0		106	70-130		
Surrogate: Toluene-d8	50.4		µg/l		50.0		101	70-130		
Surrogate: 1,2-Dichloroethane-d4	43.2		µg/l		50.0		86	70-130		
Surrogate: Dibromofluoromethane	39.1		µg/l		50.0		78	70-130		
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Batch 1510654 - SW846 5030 Water MS										
Blank (1510654-BLK1)						Prepared & Analyzed: 01-Jun-15				
Benzene	< 1.0		µg/l	1.0						
1,2-Dibromoethane (EDB)	< 0.5		µg/l	0.5						
1,2-Dichloroethane	< 1.0		µg/l	1.0						
Ethylbenzene	< 1.0		µg/l	1.0						
Methyl tert-butyl ether	< 1.0		µg/l	1.0						
Naphthalene	< 1.0		µg/l	1.0						
Toluene	< 1.0		µg/l	1.0						
1,2,4-Trimethylbenzene	< 1.0		µg/l	1.0						
1,3,5-Trimethylbenzene	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.0		µg/l	2.0						
o-Xylene	< 1.0		µg/l	1.0						
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Surrogate: 4-Bromofluorobenzene	47.3		µg/l		50.0		95	70-130		
Surrogate: Toluene-d8	50.5		µg/l		50.0		101	70-130		
Surrogate: 1,2-Dichloroethane-d4	48.1		µg/l		50.0		96	70-130		
Surrogate: Dibromofluoromethane	49.1		µg/l		50.0		98	70-130		
LCS (1510654-BS1)						Prepared & Analyzed: 01-Jun-15				
Benzene	21.2		µg/l		20.0		106	70-130		
1,2-Dibromoethane (EDB)	19.7		µg/l		20.0		98	70-130		
1,2-Dichloroethane	19.0		µg/l		20.0		95	70-130		

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1510654 - SW846 5030 Water MS										
<u>LCS (1510654-BS1)</u>					<u>Prepared & Analyzed: 01-Jun-15</u>					
Ethylbenzene	23.0		µg/l		20.0		115	70-130		
Methyl tert-butyl ether	24.3		µg/l		20.0		122	70-130		
Naphthalene	22.8		µg/l		20.0		114	70-130		
Toluene	21.3		µg/l		20.0		106	70-130		
1,2,4-Trimethylbenzene	21.0		µg/l		20.0		105	70-130		
1,3,5-Trimethylbenzene	21.5		µg/l		20.0		107	70-130		
m,p-Xylene	24.0		µg/l		20.0		120	70-130		
o-Xylene	23.3		µg/l		20.0		117	70-130		
<i>Surrogate: 4-Bromofluorobenzene</i>	51.2		µg/l		50.0		102	70-130		
<i>Surrogate: Toluene-d8</i>	50.4		µg/l		50.0		101	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	45.2		µg/l		50.0		90	70-130		
<i>Surrogate: Dibromofluoromethane</i>	47.7		µg/l		50.0		95	70-130		
<u>LCS Dup (1510654-BSD1)</u>					<u>Prepared & Analyzed: 01-Jun-15</u>					
Benzene	22.2		µg/l		20.0		111	70-130	5	20
1,2-Dibromoethane (EDB)	20.6		µg/l		20.0		103	70-130	4	20
1,2-Dichloroethane	19.6		µg/l		20.0		98	70-130	3	20
Ethylbenzene	24.8		µg/l		20.0		124	70-130	8	20
Methyl tert-butyl ether	25.2		µg/l		20.0		126	70-130	4	20
Naphthalene	23.7		µg/l		20.0		118	70-130	4	20
Toluene	22.5		µg/l		20.0		113	70-130	6	20
1,2,4-Trimethylbenzene	22.7		µg/l		20.0		113	70-130	8	20
1,3,5-Trimethylbenzene	23.1		µg/l		20.0		116	70-130	7	20
m,p-Xylene	25.2		µg/l		20.0		126	70-130	5	20
o-Xylene	25.1		µg/l		20.0		126	70-130	8	20
<i>Surrogate: 4-Bromofluorobenzene</i>	51.1		µg/l		50.0		102	70-130		
<i>Surrogate: Toluene-d8</i>	49.8		µg/l		50.0		100	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	44.7		µg/l		50.0		89	70-130		
<i>Surrogate: Dibromofluoromethane</i>	46.8		µg/l		50.0		94	70-130		

This laboratory report is not valid without an authorized signature on the cover page.

Notes and Definitions

D	Data reported from a dilution
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

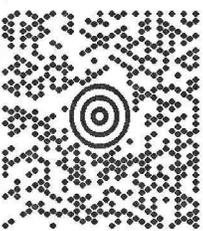
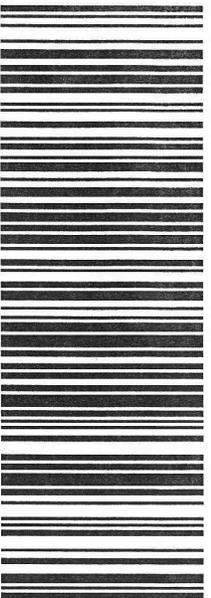
Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Nicole Leja

UPS CampussShip: View/Print Label

1. Ensure there are no other shipping or tracking labels attached to your package. Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. Fold the printed label at the solid line below. Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. GETTING YOUR SHIPMENT TO UPS
 UPS locations include the UPS Store[®], UPS drop boxes, UPS customer centers, authorized retail outlets and UPS drivers.
 Schedule a same day or future day Pickup to have a UPS driver pickup all your CampussShip packages.
 Hand the package to any UPS driver in your area.
 Take your package to any location of The UPS Store[®], UPS Drop Box, UPS Customer Center, UPS Alliances (Office Depot[®] or Staples[®]) or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampussShip and select UPS Locations.
 Customers with a Daily Pickup
 Your driver will pickup your shipment(s) as usual.

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AMY BETH CONNELL 8024344500 ECS WATERBURY 1 ELM STREET WATERBURY VT 05676	30 LBS	1 OF 1
SHIP TO: LAB 413 789 9018 SPECTRUM ANALYTICAL 11 ALMGREN DRIVE AGAWAM MA 01001-3831		
	MA 011 9-06 	
UPS NEXT DAY AIR 1 TRACKING #: 1Z F31 7E5 01 9063 8961		
BILLING: F/C BILL RECEIVER 		
Location Reference: 0008 Project Number: Samples	CS 17.2.07. WNTNVS0 63.0A.04/2015	