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September 5, 2013

Mr. Gerold Noyes
VTDEC Waste Management Division
103 S. Main St., West Building
Waterbury, Vermont 05671-0404

**RE: Groundwater Monitoring Report, Mall Mobil, Rutland, Vermont (VTDEC Site #98-2433)**

Dear Gerold:

Please find enclosed a copy of KAS' Groundwater Monitoring Report for the June 2013 groundwater monitoring at the Mall Mobil in Rutland, Vermont. This report has been forwarded to you on behalf of Midway Oil Company.

Please call me if you have any questions.

Sincerely,

Vinnie Samolis
Environmental Scientist

cc: KAS Project #410040116

# Mall Mobil
# 205 US Route 4
# Rutland, Vermont

## JUNE 2013 GROUNDWATER MONITORING REPORT

September 5, 2013

*Prepared for:*

Midway Oil Company
217 North Main Street
Rutland, Vermont 05701

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1) Site Location Map
2) Site Map
3) Groundwater Contour Map
4) Contaminant Concentration Map

**Attachment B** Liquid Level Monitoring Data

**Attachment C** Groundwater Quality Summary

**Attachment D** Analytical Laboratory Report

# 1.0 Introduction

This report summarizes the results of the June 2013 monitoring event at the Mall Mobil located in Rutland, Vermont (the Site; see Site Location Map in Appendix A). The work was performed by KAS, Inc. (KAS) of Williston, Vermont. This work was conducted in accordance with a letter from Mr. Gerold Noyes of the Vermont Department of Environmental Conservation (VTDEC) to Mr. Frank Trombetta of Midway Oil Corporation dated October 8, 2009.

The most recent work performed by KAS was on June 25, 2013, and consisted of measuring water levels from seven monitoring wells and collecting groundwater samples from four groundwater monitoring wells.

This work was performed to track the rate of degradation of subsurface petroleum contamination near the Site and to monitor the volatile oraganic compound (VOC) contamination in the groundwater underneath the site. Drinking water supply wells in the vicinity of the site have been identified as being at potential risk of impact from subsurface petroleum contamination and are being sampled as part of the Rutland landfill management plan. No other sensitive receptors have been identified.

# 2.0 Groundwater Monitoring Results

## *2.1 Groundwater Elevations*

Depth to groundwater measurements were collected from all seven monitoring wells (MW-1 through MW-7) on June 25, 2013. The well locations are shown on the Site Map in Appendix A. The depth to water was subtracted from the top-of-casing elevation to obtain the relative water table elevation. No floating product was detected with the interface probe in the monitoring wells. Depth to groundwater ranged from 6.35 feet below top of casing in MW-2 to 8.29 feet below top of casing in MW-7. Liquid level monitoring data are presented in Appendix B.

Water table elevations were plotted and contoured to illustrate the estimated gradient and direction of groundwater flow beneath the Site (see the Groundwater Contour Map, Appendix A). According to these data, groundwater is flowing to the northeast at 1.39% slope. This is a similar flow direction and gradient as previously estimated for this site. The June 2013 watertable elevations are within historical range.

## *2.2 Groundwater Quality*

On June 25, 2013, KAS collected a groundwater sample from monitoring wells MW-3, MW-5, MW-6, and MW-7. MW-1, MW-2, and MW-4 have been removed from the sampling schedule. The samples were analyzed for VOCs via EPA Method 8021B for benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl tertiary butyl ether (MTBE); 1,2,4 trimethylbenzene (TMB), 1,3,5-TMB, and naphthalene. Groundwater Quality Summary data are included in Appendix C.

The laboratory results indicate that dissolved petroleum hydrocarbons were present in the groundwater samples collected from monitoring well MW-3, MW-5, MW-6, and MW-7 at concentrations above the detection limits of the test method. The following specific observations were noted for the monitoring wells sampled on June 25, 2013:

- Contaminant concentrations detected in monitoring wells MW-5 and MW-6 were below the Vermont Groundwater Enforcement Standard (VGES).
- The total VOC concentration reported in groundwater collected from monitoring wells MW-5, and MW-6 are at the lowest level since these wells were installed in August 2006.
- The total VOC concentration reported in groundwater collected from monitoring well MW-7 has declined since a peak concentration was reported during the previous monitoring event.
- In groundwater collected from monitoring well MW-3, VOC concentrations have decreased by 92.5% since this well was installed in 2004.

The analytical results were plotted to show the distribution of dissolved contamination across the Site (see Contaminant Concentration Map, Appendix A). Historically, the core of the dissolved phase plume was in the vicinity of MW-3 which lies northeast of the former (4) 10,000-gallon UST field (source area). However, the recent sampling events indicate the plume has migrated into the vicinity of MW-7. Overall, contaminant concentrations are decreasing with time at the Site. The plume likely terminates shortly beyond MW-5 and MW-6 given the low magnitude of contamination reported in these wells.

## 3.0 Conclusions

Based on the investigations conducted to date at this Site, KAS presents the following conclusions:

- A dissolved petroleum contamination plume continues to exist in shallow groundwater beneath a portion of the Site;
- Groundwater collected from MW-5 and MW-6 reported VOC contamination at the lowest levels since monitoring of these wells began;
- The contaminant concentrations are below the VGES in monitoring wells MW-5 and MW-6;
- In groundwater collected from monitoring well MW-3, VOC concentrations have decreased by 92.5% since this well was installed in 2004.
- The total VOC concentration reported in groundwater collected from monitoring well MW-7 has declined since a peak concentration was reported during the previous monitoring event.
- VOC concentrations in groundwater beneath the Site are expected to continue to decrease over time as the natural attenuation actions of dilution, dispersion, and biodegradation proceed to breakdown the contaminants. However, fluctuations in concentrations will continue to occur due to increases in groundwater elevations; and,
- No new sensitive receptors appear to be at risk from petroleum contamination other than soil and groundwater at this time.

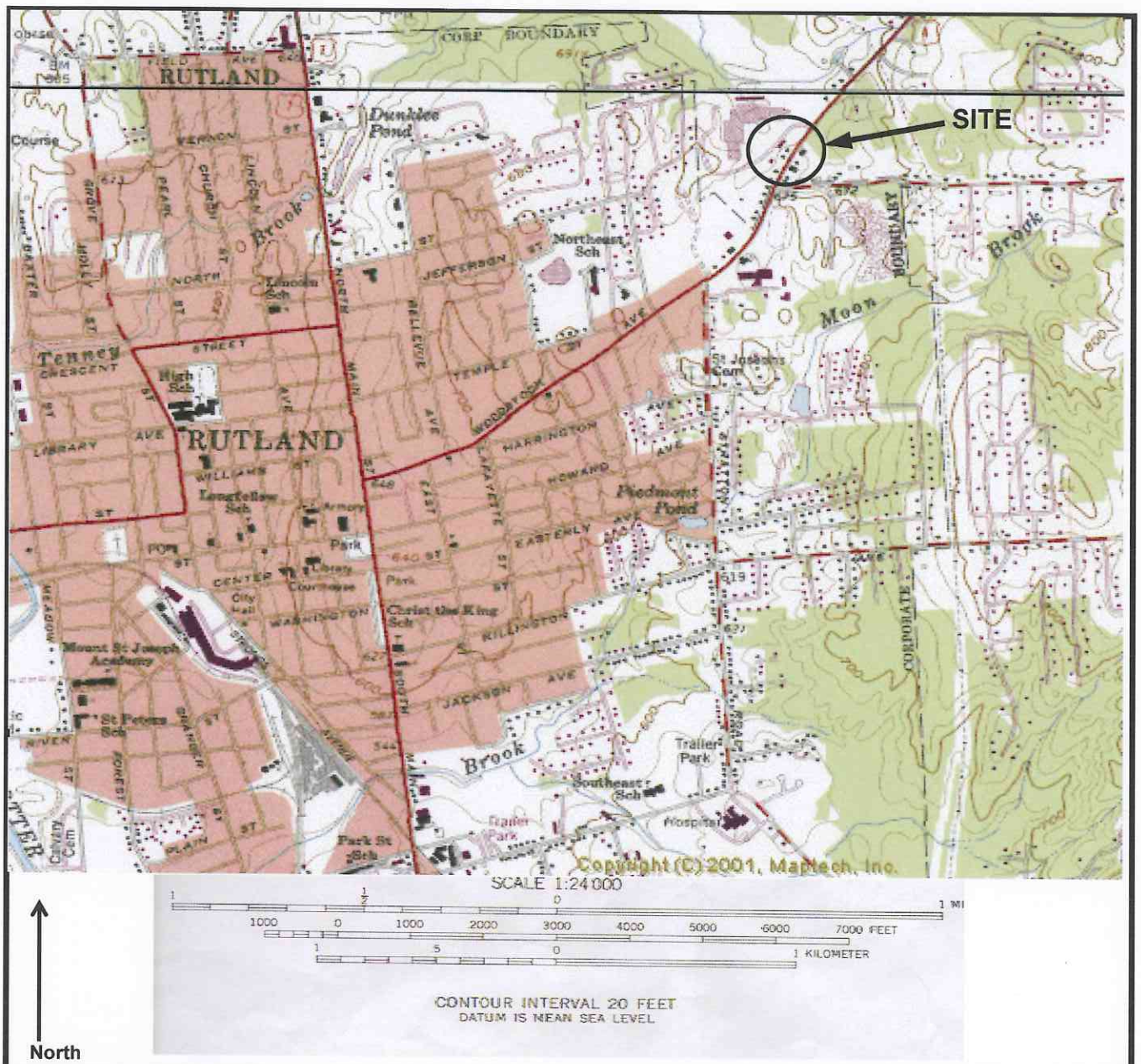
## 4.0 Recommendations

Based upon the above conclusions, KAS presents the following recommendations:

- Since select petroleum compounds were detected at concentrations greater than the VGES in two of the site monitoring wells, KAS recommends that groundwater sampling continue on a biennial basis to determine the effects of natural attenuation on groundwater contamination. The next site visit should occur in spring 2015. All wells should be gauged. Monitoring wells MW-3, MW-5, MW-6 and MW-7 should be sampled for petroleum compounds via EPA Method 8021B.

# Attachment A

1) Site Location Map
2) Site Map
3) Groundwater Contour Map
4) Contaminant Concentration Map




North

KAS Job Number: *410040116*

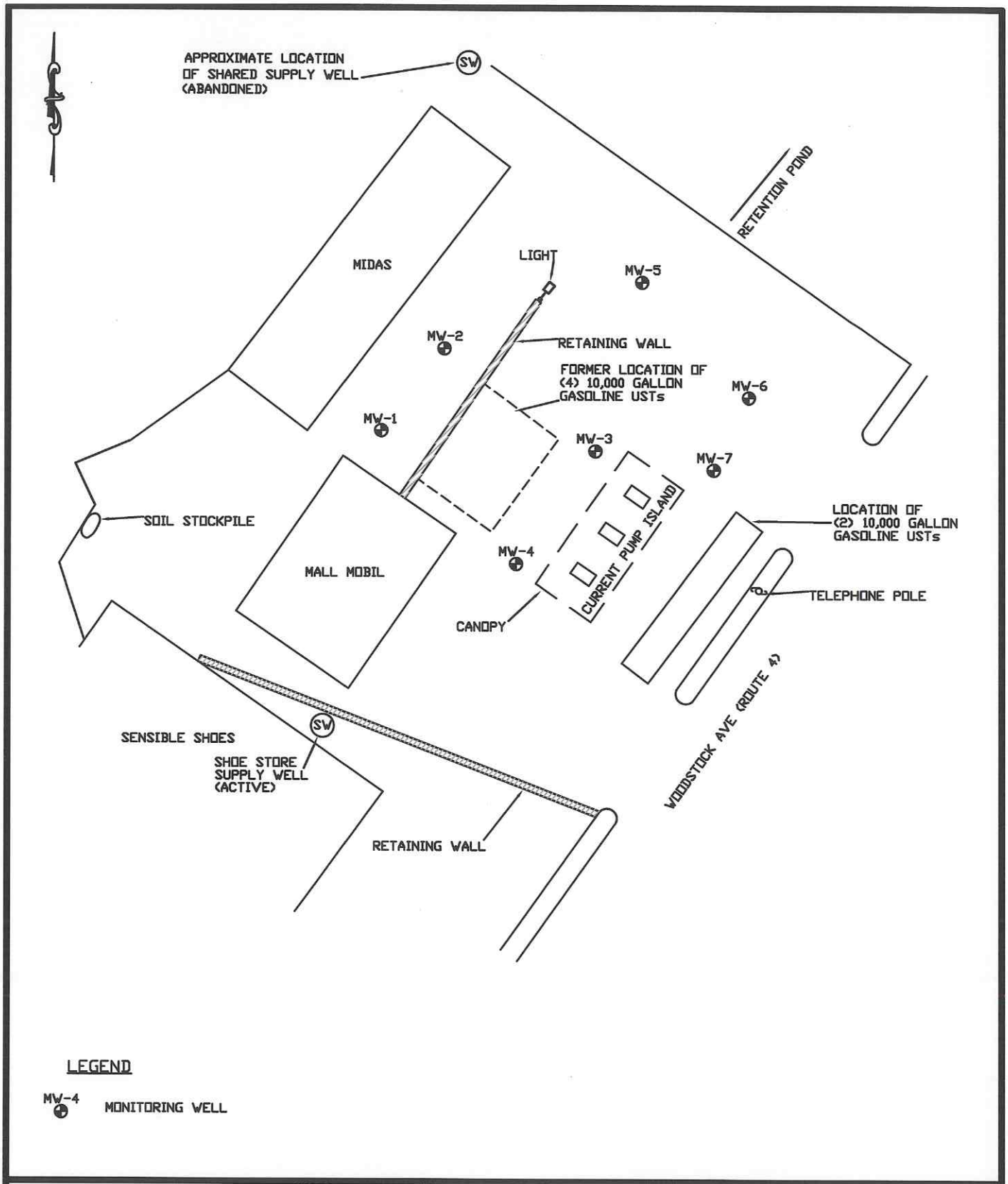
Source: *USGS 7.5' Mapping Rutland VT 1948, photorevised 1987*

kas environmental science & engineering

# Mall Mobil
# Woodstock Avenue
# Rutland, VT

Site Location Map
USGS Mapping

| Date: | 07/31/13 | Drawing No. | 1 | Scale: | 1:24,000 | By: | vs |
|---|---|---|---|---|---|---|---|




LEGEND

MW-4 MONITORING WELL

ESPC #: 20054116
KAS #: 410040116
VTDEC #: 98-2433

KAS

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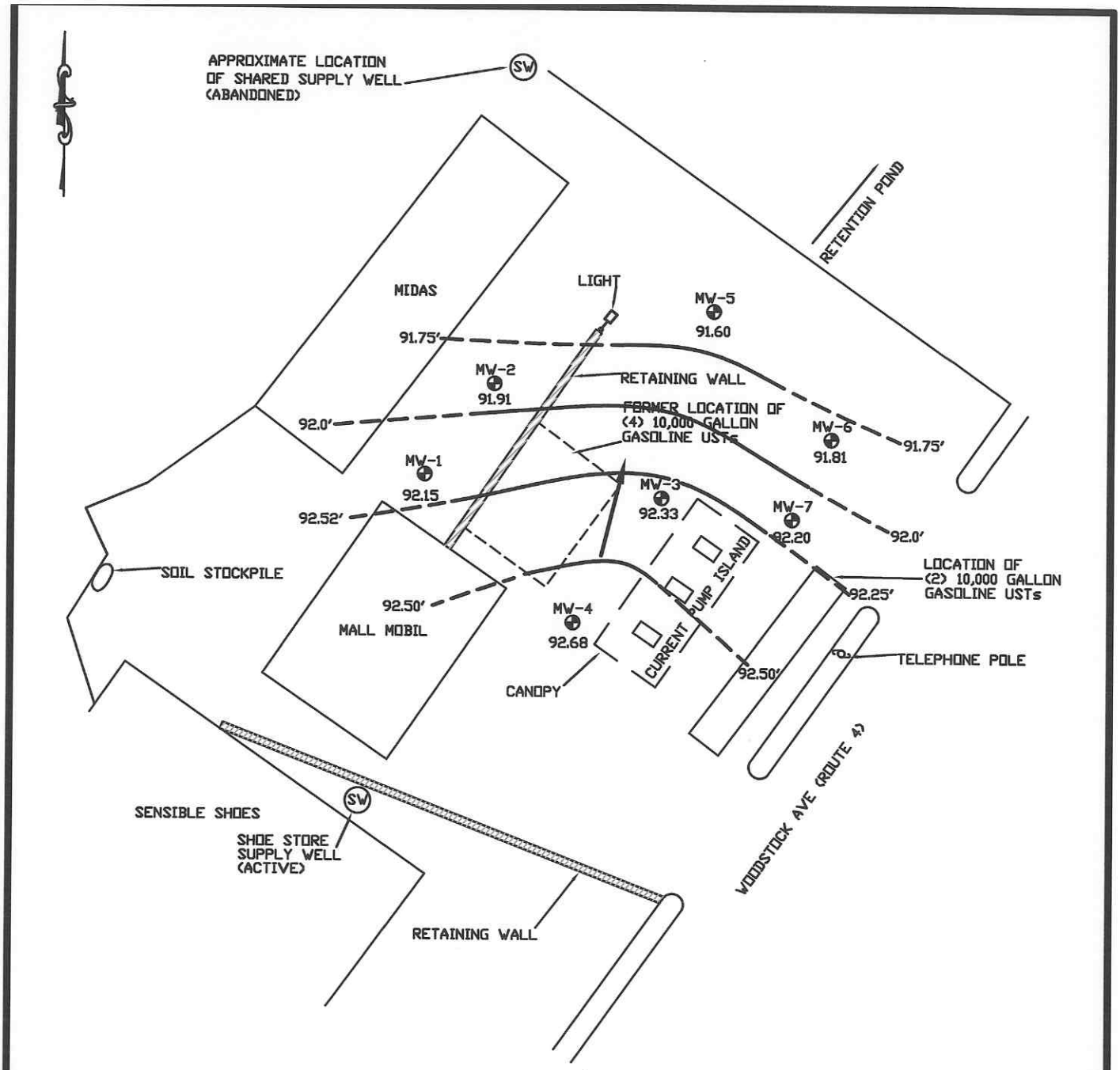
MALL MOBIL
WOODSTOCK AVE (ROUTE 4)
RUTLAND, VERMONT

SITE MAP

| DATE: 8/30/13 | DWG #: 1 | SCALE: 1"=40' | DRN.: BG | APP.: VS |
|---|---|---|---|---|




LEGEND

MW-4 92.68' — MONITORING WELL WITH GROUNDWATER ELEVATION (ft)

92.0' — GROUNDWATER ELEVATION CONTOUR (ft) (DASHED WHERE INFERRED)

APPROXIMATE GROUNDWATER FLOW DIRECTION

ESPC #: 20054116
KAS #: 410040116
VTDEC #: 98-2433

KAS

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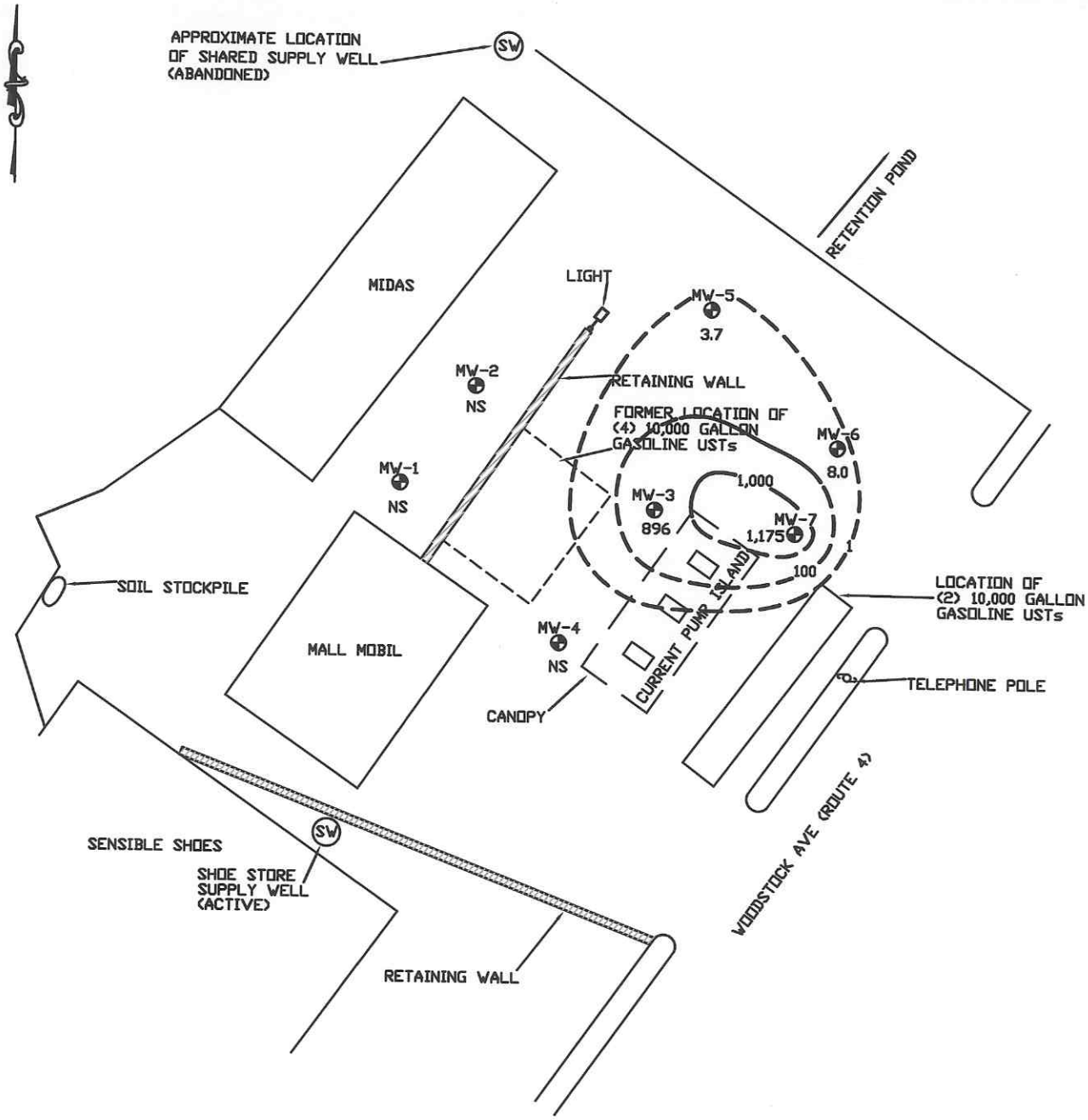
# MALL MOBIL

WOODSTOCK AVE (ROUTE 4)
RUTLAND, VERMONT

## GROUNDWATER CONTOUR MAP

MEASURED: 6/25/13

| DATE: 8/30/13 | DWG #: 2 | SCALE: 1"=40' | DRN.: BG | APP.: VS |
|---|---|---|---|---|




LEGEND

MW-3 / 896 — MONITORING WELL WITH TOTAL REPORTED VOC CONTAMINANT CONCENTRATION (ppb) (M=8021B)

NS — NOT SAMPLED

10 — VOC CONTAMINANT CONCENTRATION CONTOUR (PPB, M=80241B)

ESPC #: 20054116
KAS #: 410040116
VTDEC #: 98-2433

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# MALL MOBIL

WOODSTOCK AVE (ROUTE 4)
RUTLAND, VERMONT

## CONTAMINANT DISTRIBUTION MAP

SAMPLED: 8/30/13

| DATE: 8/30/13 | DWG #: 3 | SCALE: 1"=40' | DRN.: BG | APP.: VS |
|---|---|---|---|---|

# Attachment B

# Liquid Level Monitoring Data

# Liquid Level Monitoring Data
## Mall Mobil
## Rutland, Vermont

**Measurement Date: 06/25/13**

| Well I.D. | Well Depth btoc | Top of Casing Elevation | Depth To Product btoc | Depth To Water btoc | Product Thickness | Specific Gravity Of Product | Water Equivalent | Corrected Depth To Water | Corrected Water Table Elevation |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 13.00 | 98.52 | - | 6.37 | - | - | - | - | 92.15 |
| MW-2 | 13.00 | 98.26 | - | 6.35 | - | - | - | - | 91.91 |
| MW-3 | 15.00 | 100.00 | - | 7.67 | - | - | - | - | 92.33 |
| MW-4 | 15.00 | 100.44 | - | 7.76 | - | - | - | - | 92.68 |
| MW-5 | 15.00 | 99.20 | | 7.60 | - | - | - | - | 91.60 |
| MW-6 | 15.00 | 99.95 | | 8.14 | - | - | - | - | 91.81 |
| MW-7 | 15.00 | 100.49 | - | 8.29 | - | - | - | - | 92.20 |

# HISTORIC GROUNDWATER ELEVATION

| Well I.D. | 8/26/2004 | 5/13/2005 | 9/21/2005 | 8/9/2006 | 11/29/2006 | 6/8/2007 | 5/28/2008 | 6/5/2009 | 5/12/2011 |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 91.92 | 91.75 | 90.79 | 91.40 | 91.43 | 91.71 | 91.57 | 91.81 | 92.67 |
| MW-2 | 91.64 | 91.51 | 90.54 | 91.21 | 91.25 | 91.51 | 91.41 | 91.68 | 92.51 |
| MW-3 | 91.80 | 91.75 | 90.75 | 91.54 | 91.53 | 91.78 | 91.70 | 91.02 | 92.98 |
| MW-4 | 92.21 | 92.11 | 91.08 | 91.91 | 91.90 | 92.17 | 92.10 | 91.37 | 93.34 |
| MW-5* | | | | 90.87 | 90.89 | 91.20 | 91.02 | 91.33 | 92.09 |
| MW-6* | | | | 91.11 | 91.12 | 91.40 | 91.24 | 91.55 | 92.34 |
| MW-7* | | | | 91.43 | 91.43 | 91.72 | 91.60 | 91.91 | 92.84 |

| Well I.D. | 6/25/2013 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 92.15 | | | | | | | | |
| MW-2 | 91.91 | | | | | | | | |
| MW-3 | 92.33 | | | | | | | | |
| MW-4 | 92.68 | | | | | | | | |
| MW-5* | 91.60 | | | | | | | | |
| MW-6* | 91.81 | | | | | | | | |
| MW-7* | 92.20 | | | | | | | | |

All Values Reported in Feet
btoc - Below Top of Casing
Elevations determined relative to top of casing of MW-3, which was arbitrarily set at 100'
Site surveyed by Griffin International, Inc. on August 18, 2004 and by KAS, Inc. on August 1, 2006
*Monitoring wells MW-5, MW-6, and MW-7 were installed on August 1, 2006

# Attachment C

# Groundwater Quality Summary

# Mall Mobil
## Rutland, Vermont
## Quality Assurance and Control Summary

| PARAMETER | Date of Sample Collection | | | |
|---|---|---|---|---|
| | 6/25/2013 | | | |
| | Trip Blank | MW-3 | MW-3 Duplicate | RPD |
| MTBE | ND<2.0 | ND<10.0 | ND<10.0 | NA |
| Benzene | ND<1.0 | ND<5.0 | ND<5.0 | NA |
| Toluene | ND<1.0 | **21.2** | **22.0** | -3.7 |
| Ethylbenzene | ND<1.0 | **276.** | **275.** | 0.4 |
| Xylenes | ND<2.0 | **316.** | **310.** | 1.9 |
| 1,3,5-TMB* | ND<1.0 | **38.6** | **37.** | 4.2 |
| 1,2,4-TMB* | ND<1.0 | **232.** | **227.** | 2.2 |
| Naphthalene | ND<2.0 | **12.2** | **12.4** | -1.6 |
| Total Reported VOCs M8021B | ND | **896** | **883** | 0.6 |

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.

NOTES

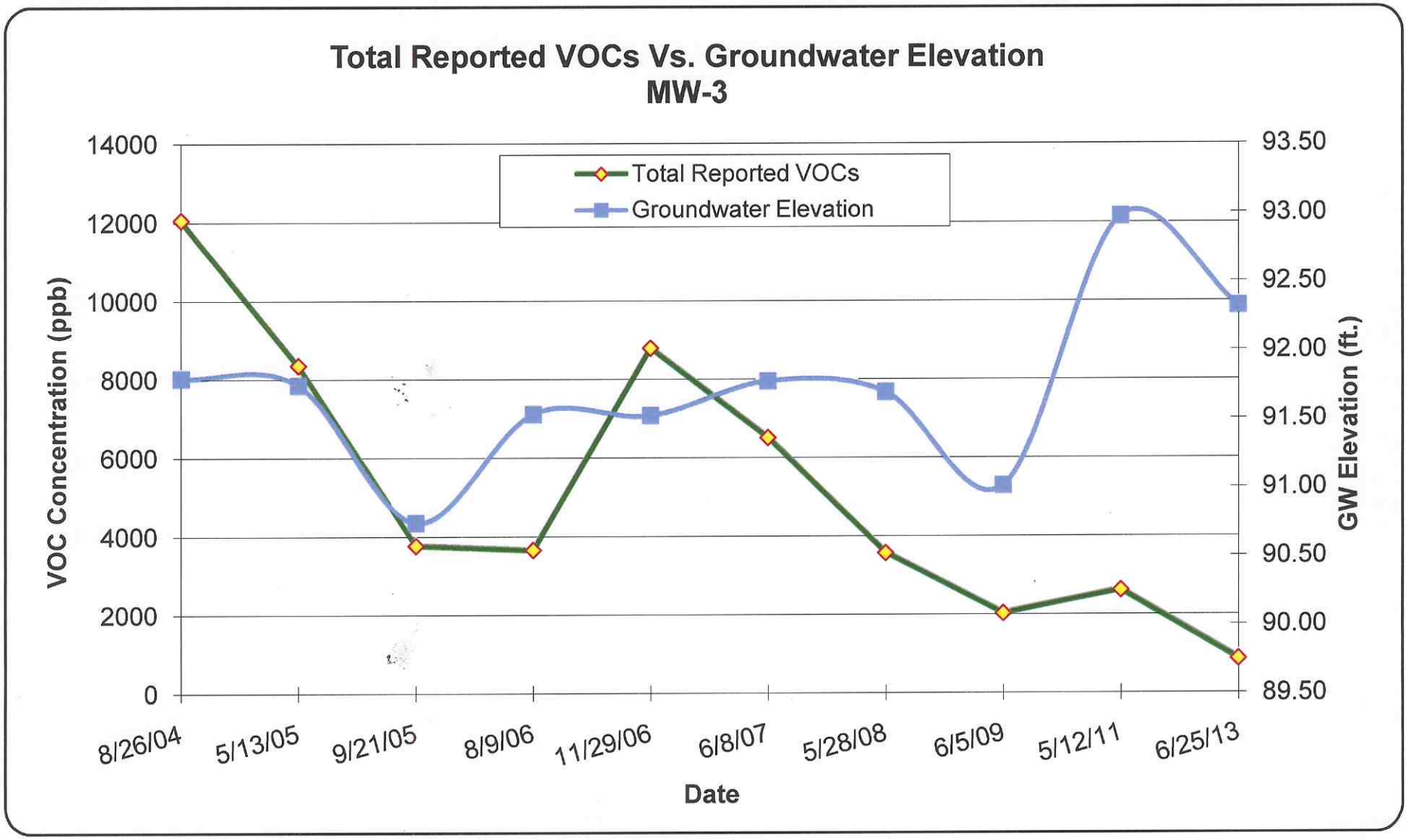
Results reported above detection limits are indicated in bold
* TMB = Trimethyl Benzene
EPA Method 8260B used for laboratory analysis
All values reported in ug/l (ppb) unless otherwise noted
ND<X - Not Detected (Detection Limit)
TBQ <X = Trace Below Quantitation Limit
NA - Not analyzed for this parameter

# Groundwater Quality Summary
## Mall Mobil
## Rutland, Vermont

| WELL MW-3 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Sampling Date* | *8/26/2004* | *5/13/2005* | *9/21/2005* | *8/9/2006* | *11/29/2006* | *6/8/2007* | *5/28/2008* | *6/5/2009* | |
| *Laboratory Analysis* | *8021B* | *8021B* | *8260B* | *8021B* | *8021B* | *8021B* | *8021B + LS* | *8021B* | |
| PARAMETER | | | | | | | | | VGES |
| Benzene | **105.** | **75.7** | **26.1** | ND<50.0 | **85.4** | **72.2** | ND<50.0 | ND<10.0 | 5.0 |
| Toluene | **3,070.** | **2,130.** | **390.** | **437.** | **572.** | **894.** | **370.** | **125** | 1000.0 |
| Ethylbenzene | **823.** | **589.** | **345.** | **324.** | **755.** | **636.** | **387.** | **333** | 700.0 |
| Xylenes | **6,220.** | **3,970.** | **1,810.** | **1,950.** | **4,380.** | **3,320.** | **1,940.** | **864** | 10000.0 |
| Total BTEX | **10218** | **6765** | **2571** | **2711** | **5792** | **4922** | **2697** | **1322** | |
| n-Butylbenzene | NA | NA | **14.6** | NA | NA | NA | NA | NA | - |
| sec-Butylbenzene | NA | NA | **5.4** | NA | NA | NA | NA | NA | - |
| Isopropylbenzene | NA | NA | **26.2** | NA | NA | NA | NA | NA | - |
| n-Propylbenzene | NA | NA | **81.5** | NA | NA | NA | NA | NA | - |
| 1,3,5-Trimethylbenzene | **431.** | **322.** | **217.** | **175.** | **657.** | **338.** | **162.** | **117** | |
| 1,2,4-Trimethylbenzene | **1,420.** | **1,070.** | **720.** | **671.** | **1,970.** | **1,080.** | **629.** | **555** | 350 |
| Naphthalene | ND<100. | **215.** | **157.** | **128.** | **400.** | **196.** | **113.** | **62.0** | 20.0 |
| MTBE | ND<200. | ND<40.0 | ND<10.0 | ND<100. | ND<100. | ND<100. | ND<100. | ND<20.0 | 40.0 |
| Total VOCs | **12069** | **8372** | **3793** | **3685** | **8819** | **6536** | **3601** | **2056** | - |
| TPH 8015-GRO (mg/L) | NA | NA | **12.4** | NA | NA | NA | NA | NA | - |
| GW Elevation (ft.) | 91.80 | 91.75 | 90.75 | 91.54 | 91.53 | 91.78 | 91.70 | 91.02 | - |

| *Sampling Date* | *5/12/2011* | *6/25/2013* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Laboratory Analysis* | *8021B* | *8021B* | | | | | | | |
| PARAMETER | | | | | | | | | VGES |
| Benzene | ND<10.0 | ND<10.0 | | | | | | | 5.0 |
| Toluene | **99.6** | **21.2** | | | | | | | 1000.0 |
| Ethylbenzene | **356** | **276** | | | | | | | 700.0 |
| Xylenes | **1,340** | **316** | | | | | | | 10000.0 |
| Total BTEX | **1,795** | **613** | | | | | | | |
| n-Butylbenzene | NA | NA | | | | | | | - |
| sec-Butylbenzene | NA | NA | | | | | | | - |
| Isopropylbenzene | NA | NA | | | | | | | - |
| n-Propylbenzene | NA | NA | | | | | | | - |
| 1,3,5-Trimethylbenzene | **163** | **38.6** | | | | | | | |
| 1,2,4-Trimethylbenzene | **597** | **232** | | | | | | | 350 |
| Naphthalene | **96.9** | **12.2** | | | | | | | 20.0 |
| MTBE | ND<20.0 | ND<10.0 | | | | | | | 40.0 |
| Total VOCs | **2,652** | **896** | | | | | | | - |
| TPH 8015-GRO (mg/L) | NA | NA | | | | | | | - |
| GW Elevation (ft.) | 92.98 | 92.33 | | | | | | | - |

**Notes:**
All values reported in ug/l (ppb) unless otherwise noted
ND<X - Not Detected (Detection Limit)
TBQ <X = Trace Below Quantitation Limit
Results reported above detection limits are indicated in bold
Data from 8/26/04 obtained from Griffin International, Inc.
NA = Not Analyzed

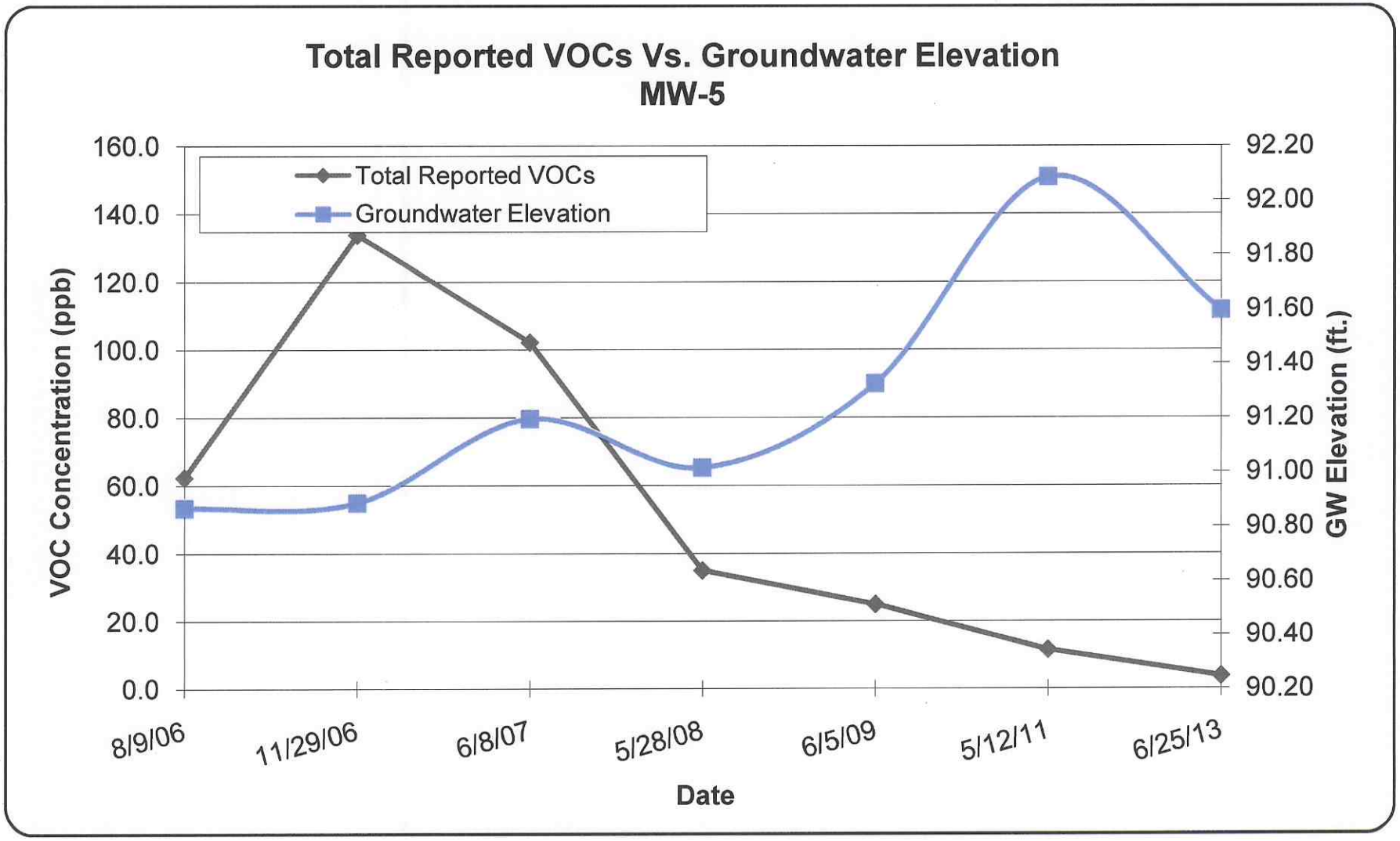

Total Reported VOCs Vs. Groundwater Elevation
MW-3
Total Reported VOCs
Groundwater Elevation
VOC Concentration (ppb)
GW Elevation (ft.)
Date
14000
12000
10000
8000
6000
4000
2000
0
93.50
93.00
92.50
92.00
91.50
91.00
90.50
90.00
89.50
8/26/04
5/13/05
9/21/05
8/9/06
11/29/06
6/8/07
5/28/08
6/5/09
5/12/11
6/25/13

# Groundwater Quality Summary
## Mall Mobil
## Rutland, Vermont

| WELL MW-5 | | | | | | |
|---|---|---|---|---|---|---|
| *Sampling Date* | *8/9/2006* | *11/29/2006* | *6/8/2007* | *5/28/2008* | *6/5/2009* | |
| *Laboratory Analysis* | *8021B* | *8021B* | *8021B* | *8021B + LS* | *8021B* | |
| PARAMETER | | | | | | VGES |
| Benzene | ND<1.0 | **10.1** | **9.9** | **1.2** | ND<1.0 | 5.0 |
| Toluene | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | 1000.0 |
| Ethylbenzene | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | 700.0 |
| Xylenes | **4.4** | ND<2.0 | **2.3** | ND<2.0 | ND<2.0 | 10,000.0 |
| Total BTEX | **4.4** | **10.1** | **12.2** | **1.2** | ND | |
| 1,3,5-Trimethylbenzene | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | ND<1.0 | |
| 1,2,4-Trimethylbenzene | ND<1.0 | ND<1.0 | **1.0** | ND<1.0 | ND<1.0 | 350 |
| Naphthalene | **3.1** | **14.7** | **17.9** | ND<2.0 | ND<2.0 | 20.0 |
| MTBE | **54.8** | **109.** | **71.1** | **33.8** | **25.0** | 40.0 |
| Total VOCs | **62.3** | **134.** | **102.2** | **35.0** | **25.0** | - |
| TPH 8015-GRO (mg/L) | ND<0.40 | NA | NA | NA | NA | - |
| GW Elevation (ft.) | 90.87 | 90.89 | 91.20 | 91.02 | 91.33 | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Sampling Date* | *5/12/2011* | *6/25/2013* | | | | |
| *Laboratory Analysis* | *8021B* | *8021B* | | | | |
| PARAMETER | | | | | | VGES |
| Benzene | **1.3** | ND<1.0 | | | | 5.0 |
| Toluene | ND<1.0 | ND<1.0 | | | | 1000.0 |
| Ethylbenzene | ND<1.0 | ND<1.0 | | | | 700.0 |
| Xylenes | ND<2.0 | ND<2.0 | | | | 10,000.0 |
| Total BTEX | **1.3** | ND | | | | |
| 1,3,5-Trimethylbenzene | ND<1.0 | ND<1.0 | | | | |
| 1,2,4-Trimethylbenzene | ND<1.0 | ND<1.0 | | | | 350 |
| Naphthalene | **2.2** | ND<2.0 | | | | 20.0 |
| MTBE | **8.0** | **3.7** | | | | 40.0 |
| Total VOCs | **11.5** | **3.7** | | | | - |
| TPH 8015-GRO (mg/L) | NA | NA | | | | - |
| GW Elevation (ft.) | 92.09 | 91.60 | | | | - |

**Notes:**
All values reported in ug/l (ppb) unless otherwise noted
ND<X - Not Detected (Detection Limit)
TBQ <X = Trace Below Quantitation Limit
Results reported above detection limits are indicated in bold
Values greater than the VGES (Table 1 of the Groundwater Protection Rule and Strategy 2/05) are shaded.
Data from 8/26/04 obtained from Griffin International, Inc.
NA = Not Analyzed

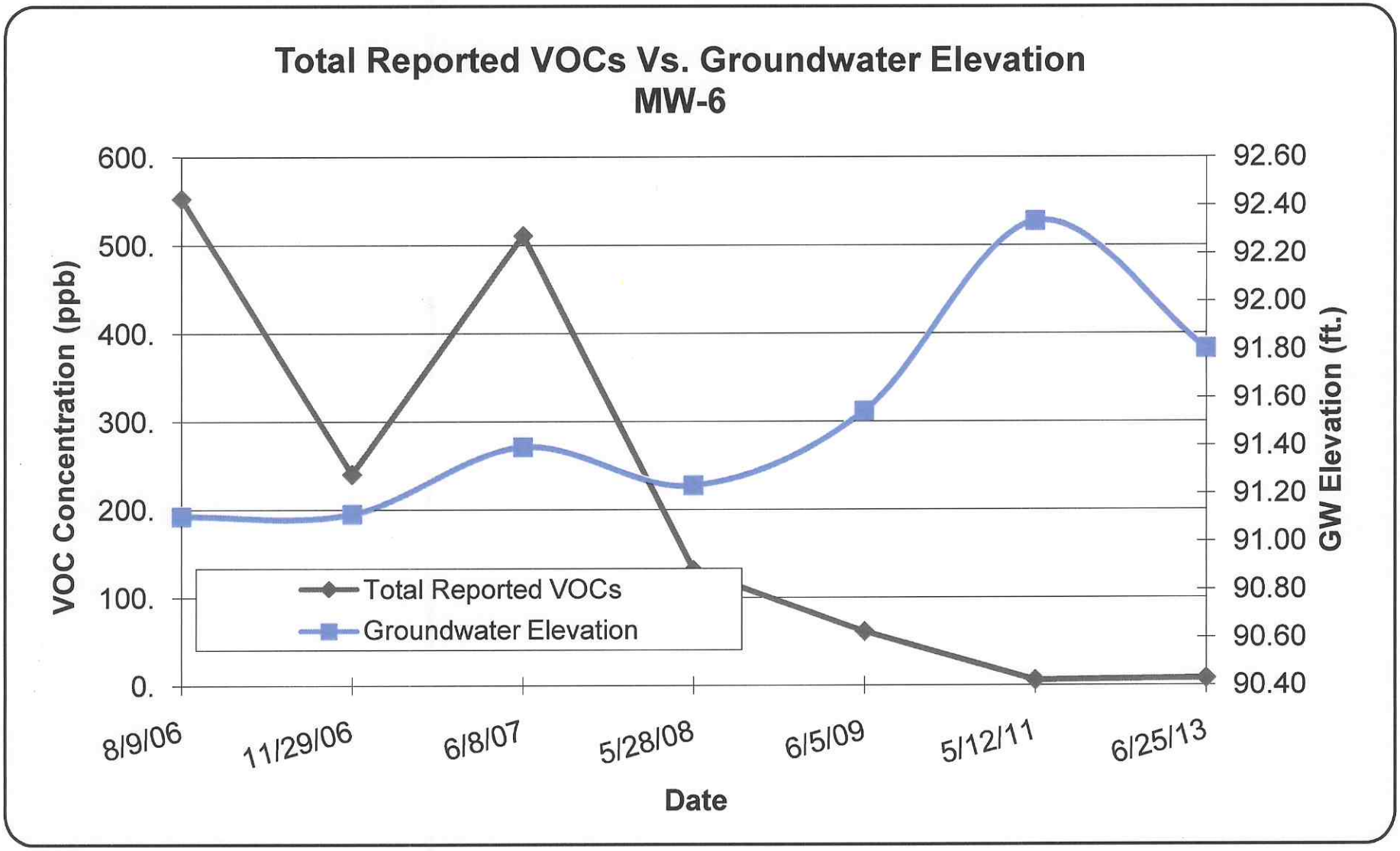

Total Reported VOCs Vs. Groundwater Elevation
MW-5
Total Reported VOCs
Groundwater Elevation
VOC Concentration (ppb)
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
GW Elevation (ft.)
92.20
92.00
91.80
91.60
91.40
91.20
91.00
90.80
90.60
90.40
90.20
8/9/06
11/29/06
6/8/07
5/28/08
6/5/09
5/12/11
6/25/13
Date

# Groundwater Quality Summary
# Mall Mobil
# Rutland, Vermont

| WELL MW-6 | | | | | | |
|---|---|---|---|---|---|---|
| *Sampling Date* | *8/9/2006* | *11/29/2006* | *6/8/2007* | *5/28/2008* | *6/5/2009* | |
| *Laboratory Analysis* | *8021B* | *8021B* | *8021B* | *8021B + LS* | *8021B* | |
| PARAMETER | | | | | | VGES |
| Benzene | ND<1.0 | ND<1.0 | **5.6** | **1.0** | ND<1.0 | 5.0 |
| Toluene | **4.3** | **2.9** | **7.6** | ND<1.0 | ND<1.0 | 1000.0 |
| Ethylbenzene | **87.1** | **45.7** | **82.7** | **27.4** | **13.7** | 700.0 |
| Xylenes | **232.** | **89.7** | **228.** | **30.6** | **19.0** | 10,000.0 |
| Total BTEX | **323.** | **138.3** | **318.** | **58.0** | **32.7** | - |
| 1,3,5-Trimethylbenzene | **40.2** | **15.8** | **34.4** | **13.4** | **6.3** | |
| 1,2,4-Trimethylbenzene | **178.** | **78.7** | **130.** | **51.4** | **19.6** | 350 |
| Naphthalene | **4.5** | **4.5** | **28.5** | **2.4** | **2.9** | 20.0 |
| MTBE | **6.7** | **3.1** | ND<2.0 | **6.4** | ND<2.0 | 40.0 |
| Total VOCs | **553.** | **240.4** | **511.** | **131.6** | **61.5** | - |
| TPH 8015-GRO (mg/L) | **2.23** | NA | NA | NA | NA | - |
| GW Elevation (ft.) | 91.11 | 91.12 | 91.40 | 91.24 | 91.55 | - |

| *Sampling Date* | *5/12/2011* | *6/25/2013* | | | | |
|---|---|---|---|---|---|---|
| *Laboratory Analysis* | *8021B* | *8021B* | | | | |
| PARAMETER | | | | | | VGES |
| Benzene | ND<1.0 | ND<1.0 | | | | 5.0 |
| Toluene | ND<1.0 | ND<1.0 | | | | 1000.0 |
| Ethylbenzene | **6.0** | **8.0** | | | | 700.0 |
| Xylenes | ND<2.0 | ND<2.0 | | | | 10,000.0 |
| Total BTEX | **6.0** | **8.0** | | | | - |
| 1,3,5-Trimethylbenzene | ND<1.0 | ND<1.0 | | | | |
| 1,2,4-Trimethylbenzene | ND<1.0 | ND<1.0 | | | | 350 |
| Naphthalene | ND<2.0 | ND<2.0 | | | | 20.0 |
| MTBE | ND<2.0 | ND<2.0 | | | | 40.0 |
| Total VOCs | **6.0** | **8.0** | | | | - |
| TPH 8015-GRO (mg/L) | NA | NA | | | | - |
| GW Elevation (ft.) | 92.34 | 91.81 | | | | - |

**Notes:**
All values reported in ug/l (ppb) unless otherwise noted
ND<X - Not Detected (Detection Limit)
TBQ <X = Trace Below Quantitation Limit
Results reported above detection limits are indicated in bold
Values greater than the VGES (Table 1 of the Groundwater Protection Rule and Strategy 2/05) are shaded.
Data from 8/26/04 obtained from Griffin International, Inc.
NA = Not Analyzed

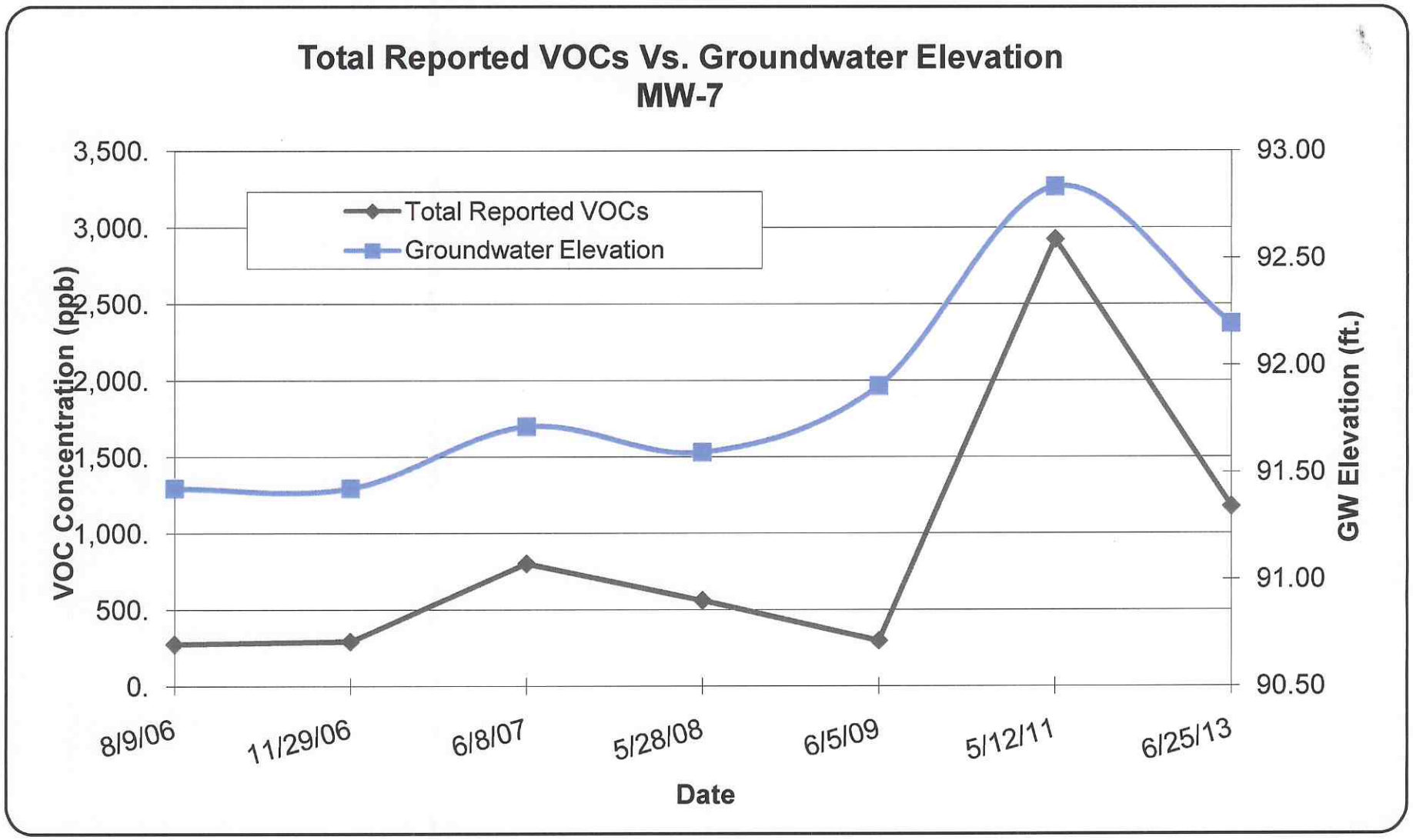

Total Reported VOCs Vs. Groundwater Elevation
MW-6
VOC Concentration (ppb)
600.
500.
400.
300.
200.
100.
0.
GW Elevation (ft.)
92.60
92.40
92.20
92.00
91.80
91.60
91.40
91.20
91.00
90.80
90.60
90.40
Total Reported VOCs
Groundwater Elevation
8/9/06
11/29/06
6/8/07
5/28/08
6/5/09
5/12/11
6/25/13
Date

# Groundwater Quality Summary
# Mall Mobil
# Rutland, Vermont

| WELL MW-7 | | | | | | |
|---|---|---|---|---|---|---|
| *Sampling Date* | *8/9/2006* | *11/29/2006* | *6/8/2007* | *5/28/2008* | *6/5/2009* | |
| *Laboratory Analysis* | *8021B* | *8021B* | *8021B* | *8021B + LS* | *8021B* | |
| PARAMETER | | | | | | VGES |
| Benzene | ND<1.0 | ND<1.0 | **2.6** | ND<5.0 | ND<5.0 | 5.0 |
| Toluene | **23.4** | **19.4** | **46.6** | **21.6** | **5.7** | 1000.0 |
| Ethylbenzene | **21.8** | **25.1** | **63.9** | **40.0** | **36.3** | 700.0 |
| Xylenes | **171.** | **173.** | **536.** | **379.** | **155** | 10,000.0 |
| Total BTEX | **216.** | **218.** | **647.** | **441.** | **197** | |
| 1,3,5-Trimethylbenzene | **13.4** | **11.8** | **32.3** | **23.6** | **20.7** | |
| 1,2,4-Trimethylbenzene | **42.** | **38.7** | **94.9** | **80.1** | **69.3** | 350 |
| Naphthalene | **4.4** | **10.7** | **24.5** | **16.8** | **11.7** | 20.0 |
| MTBE | ND<2.0 | **13.6** | **3.4** | ND<10.0 | ND<10.0 | 40.0 |
| Total VOCs | **276.** | **292.** | **802.** | **561.** | **299** | - |
| TPH 8015-GRO (mg/L) | **0.94** | NA | NA | NA | NA | - |
| GW Elevation (ft.) | 91.43 | 91.43 | 91.72 | 91.60 | 91.91 | - |

| *Sampling Date* | *5/12/2011* | *6/25/2013* | | | | |
|---|---|---|---|---|---|---|
| *Laboratory Analysis* | *8021B* | *8021B* | | | | |
| PARAMETER | | | | | | VGES |
| Benzene | ND<5.0 | ND<10.0 | | | | 5.0 |
| Toluene | **36.0** | ND<10.0 | | | | 1000.0 |
| Ethylbenzene | **292** | **101** | | | | 700.0 |
| Xylenes | **1,640** | **433** | | | | 10,000.0 |
| Total BTEX | **1,968** | **534** | | | | |
| 1,3,5-Trimethylbenzene | **200** | **200** | | | | |
| 1,3,5-Trimethylbenzene | **200** | **72.6** | | | | |
| 1,2,4-Trimethylbenzene | **587** | **293** | | | | 350 |
| Naphthalene | **158** | **75.1** | | | | 20.0 |
| MTBE | **11.3** | ND<20.0 | | | | 40.0 |
| Total VOCs | **2,924** | **1,175** | | | | - |
| TPH 8015-GRO (mg/L) | NA | NA | | | | - |
| GW Elevation (ft.) | 92.84 | 92.20 | | | | - |

**Notes:**
All values reported in ug/l (ppb) unless otherwise noted
ND<X - Not Detected (Detection Limit)
TBQ <X = Trace Below Quantitation Limit
Results reported above detection limits are indicated in bold
Data from 8/26/04 obtained from Griffin International, Inc.
NA = Not Analyzed


Total Reported VOCs Vs. Groundwater Elevation
MW-7
Total Reported VOCs
Groundwater Elevation
VOC Concentration (ppb)
3,500.
3,000.
2,500.
2,000.
1,500.
1,000.
500.
0.
GW Elevation (ft.)
93.00
92.50
92.00
91.50
91.00
90.50
8/9/06
11/29/06
6/8/07
5/28/08
6/5/09
5/12/11
6/25/13
Date

# Attachment D

# Analytical Laboratory Report

ENDYNE Inc.
Environmental Laboratories

Laboratory Report

| | |
|---|---|
| KAS, Inc. | 100306 |
| PO Box 787 | |
| Williston, VT 05495 | |
| Atten: Vince Samolis | |

PROJECT: 410040116 Mall Mobil
WORK ORDER: **1306-11689**
DATE RECEIVED: June 28, 2013
DATE REPORTED: July 09, 2013
SAMPLER: Joe Martell

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

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

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

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

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

# Laboratory Report

CLIENT: KAS, Inc.
PROJECT: 410040116 Mall Mobil
REPORT DATE: 7/9/2013

WORK ORDER: **1306-11689**
DATE RECEIVED: 06/28/2013

TEST METHOD: EPA 8021B

001 Site: MW-3 Date Sampled: 6/25/13 13:10 Analysis Date: 7/3/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | < 10.0 | ug/L | N | | Benzene | < 5.0 | ug/L | N | |
| Toluene | 21.2 | ug/L | N | | Ethylbenzene | 276 | ug/L | N | |
| Xylenes, Total | 316 | ug/L | N | | 1,3,5-Trimethylbenzene | 38.6 | ug/L | N | |
| 1,2,4-Trimethylbenzene | 232 | ug/L | N | | Naphthalene | 12.2 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 101 | % | N | | Unidentified Peaks | >10 | | N | |

TEST METHOD: EPA 8021B

002 Site: MW-5 Date Sampled: 6/25/13 13:29 Analysis Date: 7/2/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | 3.7 | ug/L | N | | Benzene | < 1.0 | ug/L | N | |
| Toluene | < 1.0 | ug/L | N | | Ethylbenzene | < 1.0 | ug/L | N | |
| Xylenes, Total | < 2.0 | ug/L | N | | 1,3,5-Trimethylbenzene | < 1.0 | ug/L | N | |
| 1,2,4-Trimethylbenzene | < 1.0 | ug/L | N | | Naphthalene | < 2.0 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 105 | % | N | | Unidentified Peaks | 0 | | N | |

TEST METHOD: EPA 8021B

003 Site: MW-6 Date Sampled: 6/25/13 13:47 Analysis Date: 7/2/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | < 2.0 | ug/L | N | | Benzene | < 1.0 | ug/L | N | |
| Toluene | < 1.0 | ug/L | N | | Ethylbenzene | 8.0 | ug/L | N | |
| Xylenes, Total | < 2.0 | ug/L | N | | 1,3,5-Trimethylbenzene | < 1.0 | ug/L | N | |
| 1,2,4-Trimethylbenzene | < 1.0 | ug/L | N | | Naphthalene | < 2.0 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 99 | % | N | | Unidentified Peaks | >10 | | N | |

TEST METHOD: EPA 8021B

004 Site: MW-7 Date Sampled: 6/25/13 14:04 Analysis Date: 7/3/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | < 20.0 | ug/L | N | | Benzene | < 10.0 | ug/L | N | |
| Toluene | < 10.0 | ug/L | N | | Ethylbenzene | 101 | ug/L | N | |
| Xylenes, Total | 433 | ug/L | N | | 1,3,5-Trimethylbenzene | 72.6 | ug/L | N | |
| 1,2,4-Trimethylbenzene | 293 | ug/L | N | | Naphthalene | 75.1 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 104 | % | N | | Unidentified Peaks | >10 | | N | |

TEST METHOD: EPA 8021B

005 Site: MW-3 Duplicate Date Sampled: 6/25/13 13:10 Analysis Date: 7/3/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | < 10.0 | ug/L | N | | Benzene | < 5.0 | ug/L | N | |
| Toluene | 22.0 | ug/L | N | | Ethylbenzene | 275 | ug/L | N | |
| Xylenes, Total | 310 | ug/L | N | | 1,3,5-Trimethylbenzene | 37.0 | ug/L | N | |
| 1,2,4-Trimethylbenzene | 227 | ug/L | N | | Naphthalene | 12.4 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 99 | % | N | | Unidentified Peaks | >10 | | N | |

# Laboratory Report

CLIENT: KAS, Inc.
PROJECT: 410040116 Mall Mobil
REPORT DATE: 7/9/2013

WORK ORDER: **1306-11689**
DATE RECEIVED: 06/28/2013

TEST METHOD: EPA 8021B

006 Site: Trip Blank Date Sampled: 6/27/13 10:40 Analysis Date: 7/2/13 W SJM

| Parameter | Result | Unit | Nelac | Qual | Parameter | Result | Unit | Nelac | Qual |
|---|---|---|---|---|---|---|---|---|---|
| Methyl-t-butyl ether (MTBE) | < 2.0 | ug/L | N | | Benzene | < 1.0 | ug/L | N | |
| Toluene | < 1.0 | ug/L | N | | Ethylbenzene | < 1.0 | ug/L | N | |
| Xylenes, Total | < 2.0 | ug/L | N | | 1,3,5-Trimethylbenzene | < 1.0 | ug/L | N | |
| 1,2,4-Trimethylbenzene | < 1.0 | ug/L | N | | Naphthalene | < 2.0 | ug/L | N | |
| Surr. 1 (Bromobenzene) | 103 | % | N | | Unidentified Peaks | 0 | | N | |

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

# CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: _____ Nº 65621

| | | |
|---|---|---|
| Project Name: Mall Mobil 410040116 | Client/Contact Name: Vince Samolis<br>Phone #: 802-383-0486 | Sampler Name: Joe Martell<br>Phone #: 802-383-0486 |
| State of Origin: VT ✓ NY __ NH __ Other __ | Mailing Address: KAS Inc. | Billing Address: KAS Inc |
| Endyne WO # 1306-11689 | | |

| Sample Location | Matrix | GRAB | COMP | Date/Time Sampled 6/25/13 | Sample Containers No. | Type/Size | Sample Preservation | Analysis Required | FieldResults/Remarks | Due Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-3 | $H_2O$ | X | | 13:10 | 2 | 40ml | | 19 | | |
| MW-5 | | | | 13:29 | 2 | | | | | |
| MW-6 | | | | 13:47 | 2 | | | | | |
| MW-7 | | | | 14:04 | 2 | | | | | |
| MW-3 Duplicate | | | | 13:10 | 2 | | | | | |
| Trip Blank | | | | 6/27/13 10:40 | | 40ml | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Relinquished by: | Date/Time | Received by: | Date/Time | Received by: | Date/Time |
|---|---|---|---|---|---|
| [signature] | 6/27/13 | [signature] | 6/28/13 11:05 | [signature] | 6/28/13 11:15 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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: 4.4
Comment:

(White - Laboratory / Yellow - Client)