

SEP 13 1999



September 10, 1999

Mr. Chuck Schwer  
VTDEC Waste Management Division  
103 South Main Street, West Building  
Waterbury, Vermont 05671-0404

RE: Report on the Investigation of Subsurface Petroleum Contamination at the Brisson  
Property, Shoreham, Vermont (VTDEC Site #98-2457)

Dear Ms. Schwer:

On behalf of Ms. Eleanor Brisson of Shoreham, Vermont, enclosed please find the above  
referenced report. Please call if you have any questions regarding the report.

Sincerely,

A handwritten signature in cursive script that reads "Laurie T. Reed".

Laurie T. Reed,  
Senior Geologist

C. File #19941470

**REPORT ON THE INVESTIGATION  
OF SUBSURFACE  
PETROLEUM CONTAMINATION**

**AT**

**ELEANOR BRISSON PROPERTY  
ROUTE 74  
SHOREHAM, VERMONT**

**VTDEC SITE #98-2457**

**August 4, 1999**

**PREPARED FOR:**

**Eleanor Brisson  
RR 1, Box 119  
Shoreham, Vermont 05770**



**PO Box 943 / 20 Commerce Street  
Williston, VT 05495  
(802) 865-4288**

**Griffin Project #19941470**

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## **I. INTRODUCTION**

This report describes the investigation of subsurface petroleum contamination at the Eleanor Brisson property (Brisson property) on Route 74 at in Shoreham, Vermont. This investigation was conducted by Griffin International Inc. (Griffin) for Eleanor Brisson of Shoreham, Vermont, owner of the site.

This investigation was initiated after petroleum contamination was discovered at the site during the closure of three underground storage tanks (USTs) on May 4, 1998. The three former USTs were located in a common field directly northeast of the office/residence (see Site Map, Appendix A). The UST closure is described in a Watershed Environmental Services (WES) report dated May 5, 1998 (1).

Seventy (70) cubic yards of contaminated soil were removed during the UST removal for on-site treatment to facilitate biodegradation of the hydrocarbons in the soil. The location of the soil stockpile is shown on the Area Map, Appendix A. Analysis of soil samples collected at the excavation limits by WES indicated no significantly elevated petroleum compounds remained at the excavation limits.

This investigation was requested by the VTDEC in a letter (dated November 11, 1998) to Eleanor Brisson from Chuck Schwer, VTDEC. Griffin submitted as Site Investigation Expressway Notification to Bob Butler, VTDEC, on January 28, 1999. Work planning was conducted which called for site assessment work to be conducted in two phases. First one well was to be advanced in the area of the former tank field to determine if groundwater quality in that area exceeded Vermont Groundwater Quality Standards (VGES). Secondly, if groundwater quality exceedencies were detected, three additional wells would be advanced, and a complete site assessment would be conducted. This strategy and the Expressway Notification was approved by Bob Butler by e-mail to Griffin on February 1, 1999. This report describes work conducted during both phases and the results of the complete site assessment.

## **II. SITE DESCRIPTION**

The site is located in a rural area on Route 74 in Shoreham, Vermont (See Site Location Map in Appendix A.). The site is currently occupied by an accounting business and by the Eleanor Brisson residence. The site was formerly a filling station and a Cheese Factory. Two buildings are located at the site. One building is the business and residence, and the second building is a barn.

The site is located on the west side of Route 74. Topography is generally level at the front of the residence and at the location of the former tank field. Topography slopes towards the west at approximately 2 to 5% to the western edge of the property and then slopes more steeply toward the west to an undeveloped wetland located directly west of the property and approximately 65 feet west of the former UST field. East of the site, across route 74, topography slopes steeply upward to a northerly trending ridge (Sisson Hill). The area in the vicinity of the

site is undeveloped, with the exception of the northerly abutting property which is occupied by a residence, also owned by Eleanor Brisson. The relative area is shown on the Area Map in Appendix A. The site and surrounding area are served by municipal water (Tri-Town Water District) and on-site septic systems.

Surface water at the site flows west to the aforementioned wetland. The wet land drains to an unnamed tributary located approximately 1,400 feet west of the site. East of the site, an intermittent stream flows west to a culvert located on the east side of Route 74. The stream subsequently flows west through the culvert, under the Brisson office/ residence, and discharges to the aforementioned wetland. A catch basin drains water from the east side of the office/ residence building to this culvert.

According to the Surficial Geologic Map of Vermont (2), overburden at the site consists of Pleistocene, predominantly lake bottom sediments (silt, silty clay, and clay). From this map and from field observations, it can be interpreted that the lake bottom sediments are overlain by a narrow recent alluvium deposit over much of the site. This alluvium deposit is comprised of fluvial sand and gravel. The deposit is northerly trending and flanks the ridge located to the east of the site. The fluvial sands taper off to the west. The ridge east of the site is mantled by glacial till. The Geologic Map of Vermont (3) indicates that bedrock beneath the site is the Ordovician Stony Point Formation which is characterized by predominantly calcareous black shale grading upward into argillaceous limestone. Limestone exposures were observed east of the site.

### **III. INVESTIGATIVE PROCEDURES**

To better define the extent of subsurface petroleum contamination at the site, Griffin first installed monitoring well (MW1) on May 11, 1999, directly west (flanking) the former UST field. After petroleum compounds were detected in a groundwater sample collected from MW1 in concentrations exceeding VGES, three additional monitoring wells (MW2, MW3, and MW4) were installed on June 23, 1999. MW2 was installed directly upgradient (east) of the former UST field, MW3 was installed approximately 20 feet northwest of the former UST field, and MW4 was installed approximately 80 feet downgradient (west) of the former UST field. The locations of the wells are indicated on the Site Map in Appendix A.

Depths to groundwater were measured in MW1 on May 11, 1999, all on-site monitoring wells on July 12, 1999. Groundwater samples were collected from MW1 on May 11, 1999, and from MW2, MW3, and MW4 on July 12, 1999. MW1 was dry on July 12, 1999. The groundwater samples collected from the monitoring wells were submitted to Endyne, Inc., of Williston, Vermont for laboratory analysis. Soil samples collected from the boreholes were screened for volatile organic compounds (VOCs) with a photo ionization detector (PID).

### A. Monitoring Well Installation

Monitoring wells (MW1) was installed by a Griffin Geologist using a hand auger. The well is one-inch inside diameter (id), Monitoring wells MW2, MW3, and MW4 were installed by Adams Engineering of Underhill, Vermont, using a truck mounted vibratory drill rig. Monitoring wells MW2, MW3, and MW4 are 1½-inch id. All four borings are nominally 2.75 inches in diameter. Each well was constructed with 0.010-inch slot, PVC well screen and attached solid PVC riser.

The annulus between the borehole wall and the screened section of each well is filled with grade #0 sand pack to filter fine sediments in groundwater from entering the well. Approximately three feet below grade, the annulus between the borehole wall and the riser is filled with a bentonite clay seal to prevent surface water from entering the borehole. Each well is protected at the surface by a flush mounted steel well head man-hole with a bolt down cover, with the exception of MW1 which PVC riser is not protected and extends approximately 0.8 feet above grade. Well construction details are listed on the Boring Logs in Appendix B.

### B. Soil Boring and Screening

Undisturbed soil samples were collected continuously from the borings. Samples were screened for VOCs using an HNU Model HW-101 PID equipped with a 10.2 electron-volt lamp. Samples were logged by the supervising Geologist. Prior to screening, the PID was calibrated with isobutylene with reference adjusted to benzene. Detailed soil descriptions and VOC concentrations are listed on the Boring Logs in Appendix B.

Soils intersected in the borings at the site generally consisted of interbedded sands, silty sands, and clays. No elevated PID response was observed upon screening soil samples collected from the borings, with one exception. A VOC concentration of 115 parts-per-million (ppm) was detected in soil sample collected from MW1 from 7.0 to 9.2 feet below grade.

### C. Water Table Measurements And Groundwater Flow

Water table elevations measured on July 12, 1999, are plotted on the Groundwater Contour Map in Appendix A. The map indicates that groundwater at the site flows west toward the wetland. The average hydraulic gradient at the site is calculated to be approximately six (6) percent.

No free product was detected in any of the monitoring wells. The groundwater level data are recorded on the Liquid Level Table in Appendix C.

#### D. Groundwater Sampling and Analysis

Analysis of the groundwater sample collected from MW1 indicates the presence of 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and naphthalene in concentration exceeding their respective VGES. Total xylenes and ethylbenzene were detected in concentrations below their respective VGES. No VOCs were detected by analysis in MW2, MW3, or MW4.

Laboratory results are summarized below in Table 1. Laboratory report forms are presented in Appendix D. All collected samples were analyzed for the presence of the petroleum compounds benzene, toluene, ethyl benzene, total xylenes, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, naphthalene, and MTBE. The analytical method used was EPA Method 8021B. All samples were collected according to Griffin's monitoring well sampling protocol. Duplicate and trip blank samples collected during sampling indicate that adequate quality assurance/quality control was maintained during sample collection and analysis.

#### IV. RECEPTOR SURVEY AND RISK ASSESSMENT

Griffin conducted a visual survey of the site and vicinity to identify local potential receptors of subsurface petroleum contaminants and conducted air screening of the Brisson residence/office on May 11, 1999.

The air space in the residence/office and the basement of the building were thoroughly screened with a PID. No VOCs were detected with the PID. The on-site buildings have reportedly not been impacted by petroleum vapors. Based on the facts that no VOCs were detected during air screening and that most of the contaminated soil was removed during the UST closure, the risk of impact to the building from potential hydrocarbon vapors originating from the former UST field appears minimal.

No other buildings are located near the site with the exception of the Brisson rental house. The rental house is not located down gradient from the UST field, and it is sufficiently distant to be protected from potential vapor migration from the former UST field. No subsurface utilities are located downgradient from the UST field.

No water supply wells are located near the site. The site and surrounding area receives water from Tri-town Water District.

A wetland is located downgradient (west) of the former UST field. The significant portion of contaminated soils was removed during the UST closure. No petroleum hydrocarbons were detected in MW4, downgradient from the former UST field. These facts indicate the risk of impact to the wetland from petroleum contaminated groundwater potentially migrating from the former UST field at the site is minimal.

**TABLE 1**

**Brisson Property  
Shoreham, Vermont  
Results of Groundwater Sample Analysis**

<b>SAMPLE LOCATION</b> →	MW-1	MW-2	MW-3	MW-4	VGES
<b>DATE OF SAMPLE</b> →	5/11/99	7/12/99	7/12/99	7/12/99	
<b>VOC PARAMETERS (ug/Kg)</b>					
Benzene	ND>100	ND>1	ND>1	ND>1	5
Toluene	ND>100	ND>1	ND>1	ND>1	1,000
Ethylbenzene	123.	ND>1	ND>1	ND>1	700
Xylenes (Total)	908.	ND>1	ND>1	ND>1	10,000
1,3,5 Trimethylbenzene	247.	ND>1	ND>1	ND>1	4
1,2,4 Trimethylbenzene	633.	ND>1	ND>1	ND>1	5
Napthalene	860.	ND>1	ND>1	ND>1	20
MTBE	ND>1000	ND>10	ND>10	ND>10	40
<b>Total Targeted VOCs (ug/kg)</b>					

Notes:

VGES --- Vermont Groundwater Enforcement Standard

ND>100 ---- None Detected by Analysis greater than the method detection limit stated.

VOC Analysis by Method 8021B; Endyne, Inc., Williston, Vermont.

## V. CONCLUSIONS

Based on this investigation, Griffin has concluded the following:

- 1) There have been release(s) of petroleum product at this site. The amounts and duration of the release(s) are unknown.
- 2) The release(s) resulted in contamination of soil and groundwater at the site. Groundwater at the site is impacted by petroleum compounds in concentrations above regulatory levels. The degree and extent of the groundwater contaminant plume has been adequately defined and appears to be limited to the direct vicinity of the former UST field.
- 3) The significant portion of petroleum contaminated soils were removed during the UST closure. Sampling of the sidewalls and bottom of the excavation at the time of the UST closure (1) confirm this. The soils are stockpiled at the site.
- 4) Soils at the site consist generally of fine sand interbedded with clay and silt. Groundwater flows west toward a wetland at an average hydraulic gradient of approximately 6 percent. MW4 is located between the former tank field and the wetland. Dilution, dispersion, and biodegradation likely significantly reduce petroleum contaminants in groundwater by the time groundwater flows west across the property boundary.
- 5) No sensitive receptors other than groundwater in the direct vicinity of the former UST field appear to have been impacted by subsurface petroleum contamination.

## VI. RECOMMENDATIONS

- 1) Screening of the 70 cubic yard petroleum contaminated soil stockpile at the site should be conducted annually until the VOC concentration as measured by PID is less than 1 ppm.
- 2) The monitoring wells at the site should be properly abandoned by removing the well and grouting the resulting void.
- 3) After soil remediation has been completed, the site should be given a *Sites Management Activities Complete* (SMAC) status by the VTDEC.

## VII. REFERENCES

- 1) *Eleanor Brisson Residence Underground Tank Closure Report*, Watershed Environmental Services, May 5, 1998.
- 2) *Surficial Geologic Map of Vermont*, Vermont Geological Survey, Charles G. Doll, 1970
- 3) *The Geologic Map of Vermont*, Vermont Geological Survey, Charles G. Doll, 1961

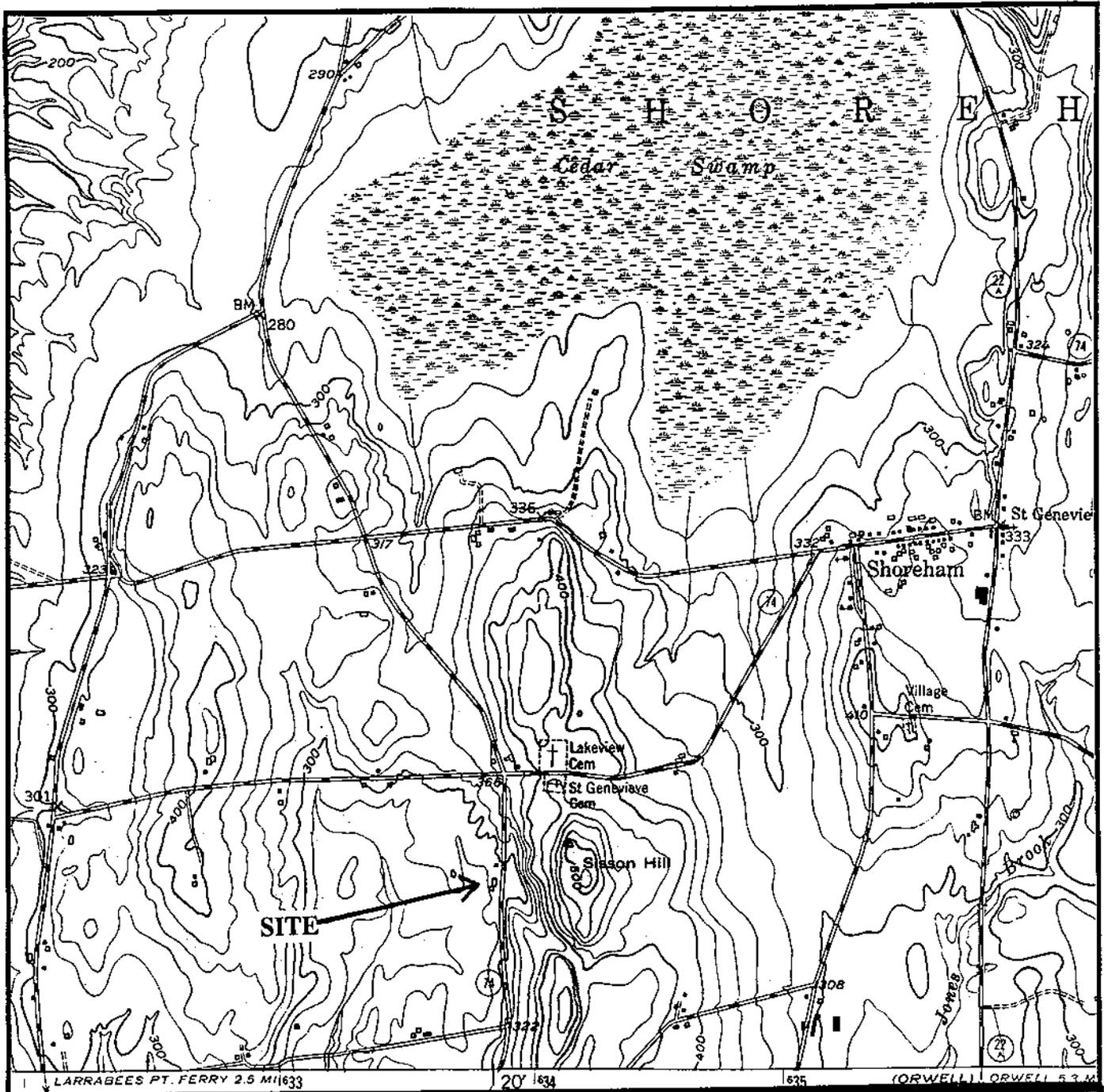
APPENDIX A

Site Location Map

Area Map

Site Map

Groundwater Contour Map

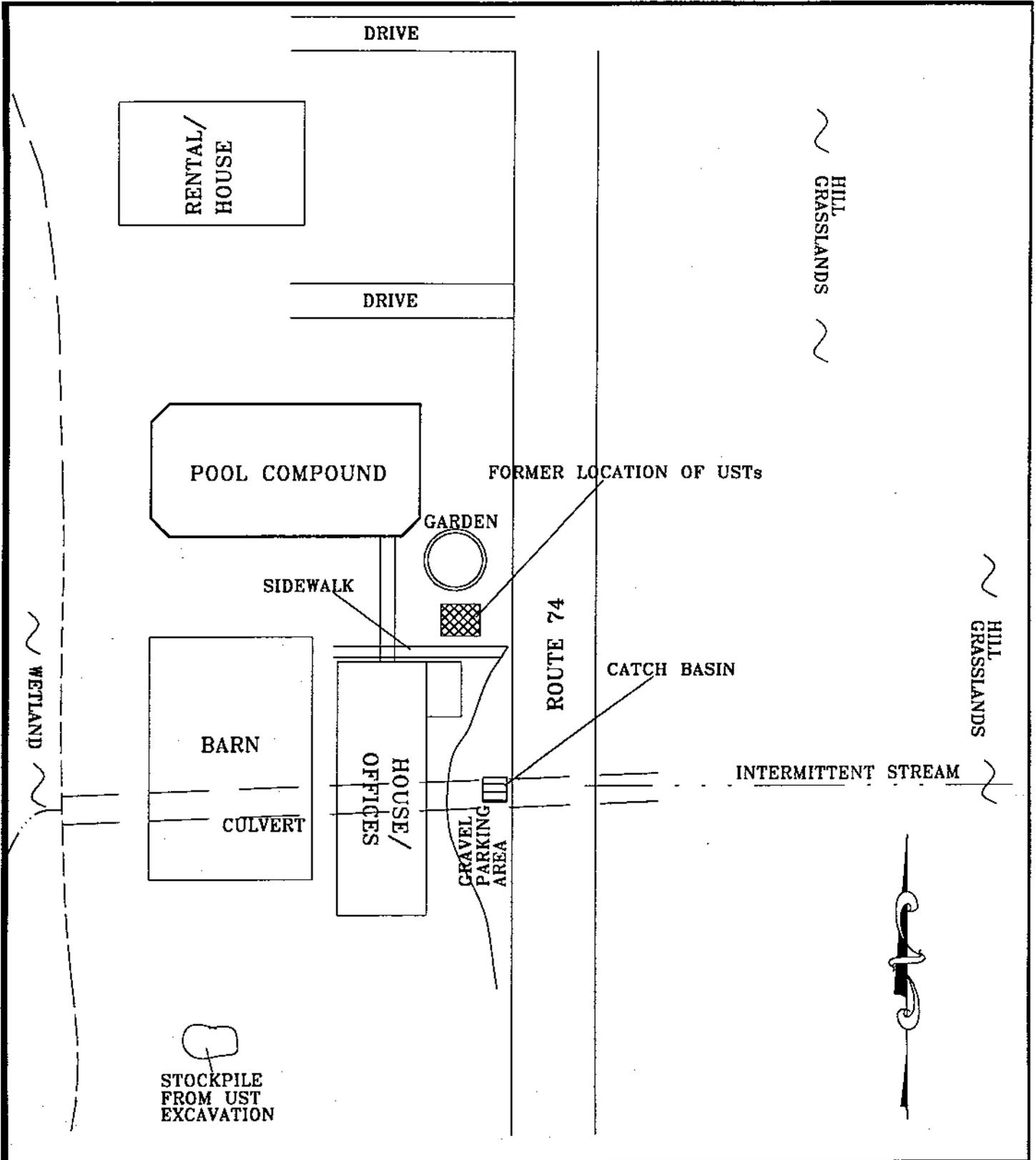


**Site Location Map**

**Brisson Property  
Route 74  
Shoreham, Vermont**



Source: USGS, Bridport, VT Quadrangle, 1983, Scale 1:25,000



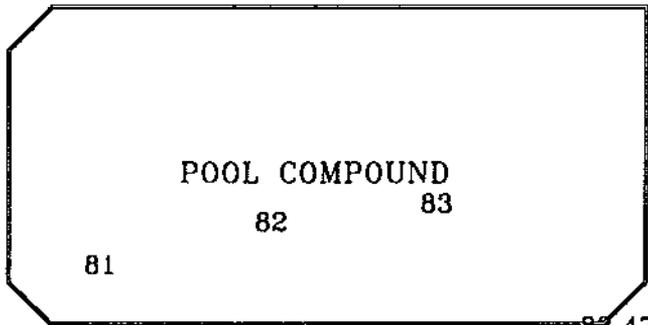
JOB# 19941470

**BRISSON PROPERTY**

ROUTE 74 SHOREHAM, VT

**AREA MAP**

DATE: 7/30/99	DWG.#:3	SCALE: NONE	DRN.:JL	APP.:LR
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FORMER LOCATION OF  
(1) 1K GASOLINE UST  
(1) 2K GASOLINE UST  
(1) 2K DIESEL UST



MW4  
80.86'

MW3  
83.47'

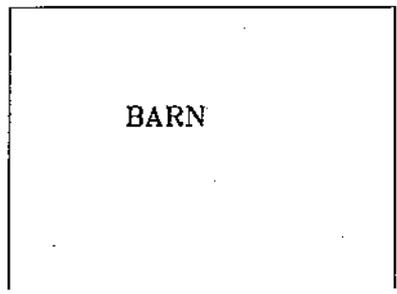
UP

MW2  
84.56'

Approximate  
UST  
Excavation

SIDEWALK

MW1



BARN



HOUSE/  
OFFICES

GRAVEL  
PARKING  
AREA

ROUTE 74

LEGEND

- MW MONITORING WELL
- UST FORMER UST EXCAVATION
- UP UTILITY POLE

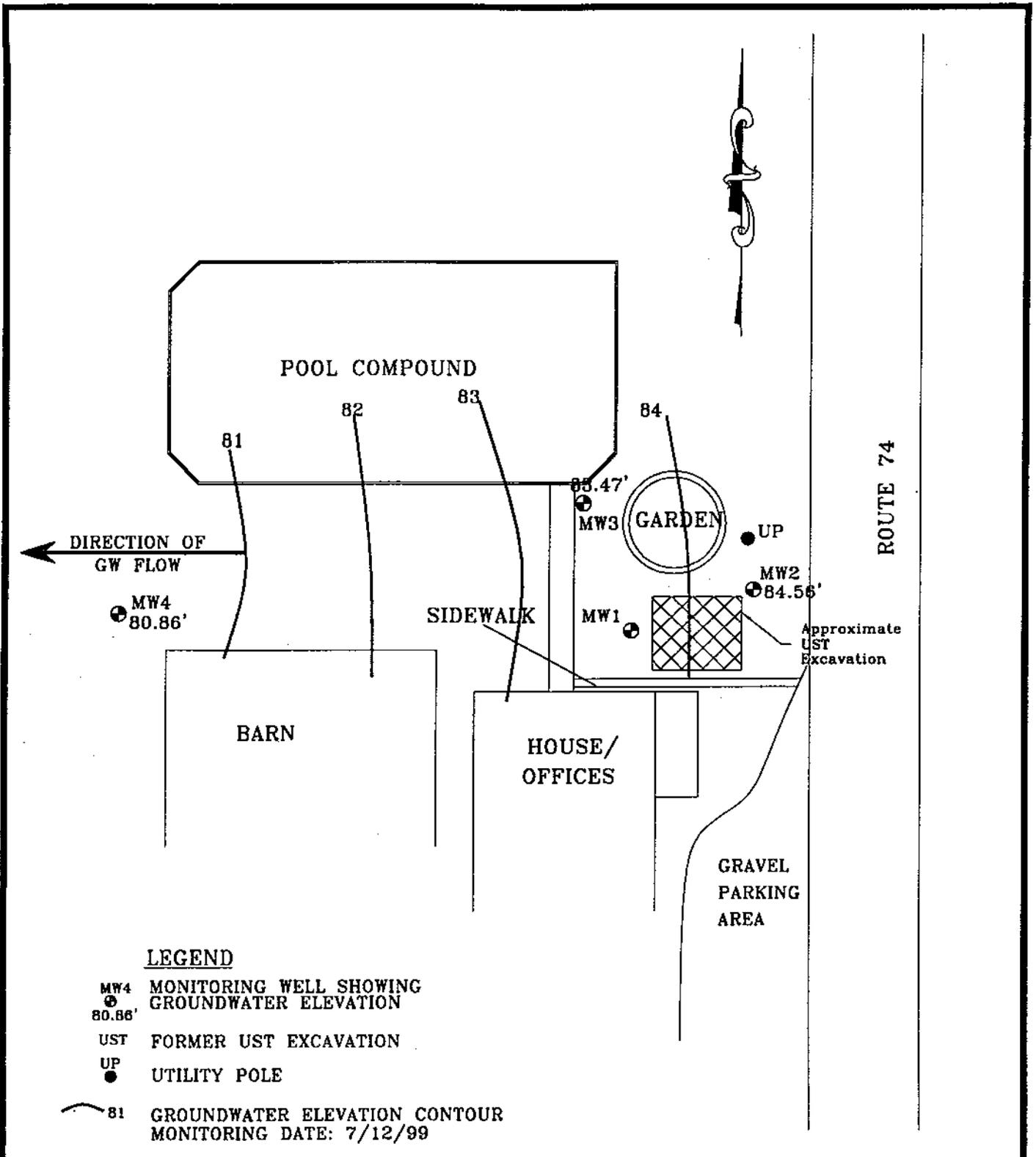


JOB# 19941470

**BRISSON PROPERTY**  
ROUTE 74 SHOREHAM, VT

**SITE MAP**

DATE: 7/8/99	DWG.#:1	SCALE: 1"=20'	DRN.:TG	APP.:TK
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JOB# 19941470

**BRISSON PROPERTY**  
 ROUTE 74 SHOREHAM, VT

**GROUNDWATER CONTOUR MAP**

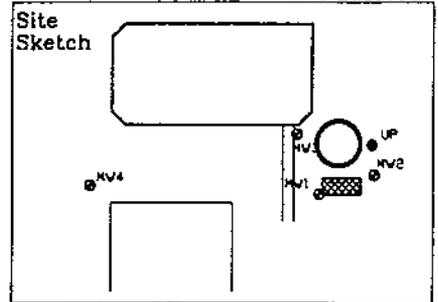
DATE: 7/28/99	DWG.#:2	SCALE: 1"=20'	DRN.:JL	APP.:TK
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APPENDIX B

Boring Logs

PROJECT #19941470 BRISSON PROPERTY  
 LOCATION ROUTE 74, SHOREHAM, VT  
 DATE DRILLED 5/11/99 TOTAL DEPTH OF HOLE 9.2'  
 DIAMETER 2 1/2"  
 SCREEN DIA. 1" LENGTH 5' SLOT SIZE 0.010"  
 CASING DIA. 1" LENGTH 5' TYPE sch 40 pvc  
 DRILLING CO. GRIFFIN INT. DRILLING METHOD HAND AUGER  
 DRILLER T. KELLY LOG BY T. KELLY

WELL NUMBER MW1



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	DEPTH INTERVAL & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		SLIP CAP			0
0-1		NATIVE BACKFILL			1
1-2		BENTONITE			2
2-3					3
3-4		WELL RISER	0-7'	LEAN CLAY (CL)- 5% fine sand, moist, medium brown	4
4-5		SAND PACK			5
5-6		WELL SCREEN			6
6-7					7
7-8		BOTTOM CAP	7.0'-9.2' 115 ppm	POORLY GRADED SAND (SP)- gray sand, wet, locally silty, petroleum odor	8
8-9		UNDISTURBED NATIVE SOIL			9
9-10				BASE OF WELL AT 9.2' END OF EXPLORATION AT 9.2'	10
10-11					11
11-12					12
12-13					13
13-14					14
14-15					15
15-16					16
16-17					17
17-18					18
18-19					19
19-20					20
20-21					21
21-22					22
22-23					23
23-24					24
24-25					25

PROJECT #19941470 BRISSON PROPERTY

LOCATION ROUTE 74, SHOREHAM, VT

DATE DRILLED 6/23/99 TOTAL DEPTH OF HOLE 14.5'

DIAMETER 2.75"

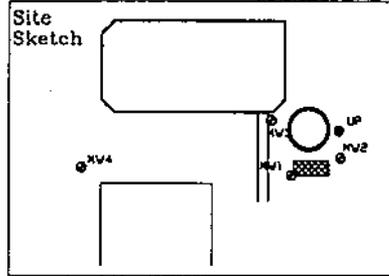
SCREEN DIA. 1.5" LENGTH 10' SLOT SIZE 0.010"

CASING DIA. 1.5" LENGTH 4' TYPE sch 40 pvc

DRILLING CO. ADAMS ENG. DRILLING METHOD VIBRATORY

DRILLER GERRY ADAMS LOG BY T. KELLY

WELL NUMBER MW2

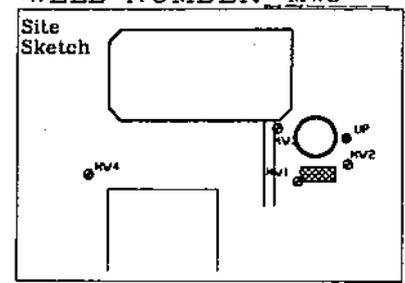


GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	DEPTH INTERVAL & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
0		LOCKING WELL CAP			0
0		CONCRETE			0
1		NATIVE BACKFILL	0-2' 0 ppm	SILTY SAND (SM)- moist, medium brown, weakly stratified	1
2		BENTONITE			2
3			2'-4.5' 0 ppm	LEAN CLAY (CL)- moist, medium brown	3
4		WELL RISER			4
5			4.5'-5.2' 0.1 ppm	LEAN CLAY (CL)- moist, medium brown	5
6					6
7			5.2'-7.7' 0.1 ppm	CLAYEY GRAVEL (GC)- moist, medium brown	7
8					8
9		SAND PACK	7.7'-9.5' 0.1 ppm	POORLY GRADED SAND (SP)- wet, grayish-brown, weakly stratified	9
10				9.5' WATER TABLE	10
11		WELL SCREEN			11
12			9.5'-14.5' 0.1 ppm	WELL GRADED SAND W/SILT (SW-SM)-wet, grayish-brown	12
13		BOTTOM CAP			13
14		UNDISTURBED NATIVE SOIL			14
15				BASE OF WELL AT 14.5' END OF EXPLORATION AT 14.5'	15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT #19941470 BRISSON PROPERTY  
 LOCATION ROUTE 74, SHOREHAM, VT  
 DATE DRILLED 6/23/99 TOTAL DEPTH OF HOLE 14.5'  
 DIAMETER 2.75"  
 SCREEN DIA. 1.5" LENGTH 10' SLOT SIZE 0.010"  
 CASING DIA. 1.5" LENGTH 3.5' TYPE sch 40 pvc  
 DRILLING CO. ADAMS ENG. DRILLING METHOD VIBRATORY  
 DRILLER GERRY ADAMS LOG BY T. KELLY

WELL NUMBER MW3

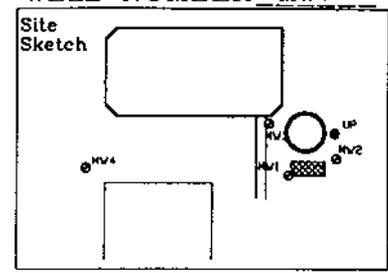


GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	DEPTH INTERVAL & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
0		LOCKING WELL CAP			0
0		CONCRETE			0
1		NATIVE BACKFILL	0-1.5' 0.1 ppm	SILTY SAND (SM)- moist, light brown	1
2		BENTONITE			2
3		WELL RISER	1.5'-4.5' 0.1 ppm	LEAN CLAY (CL)- moist, medium brown	3
4					4
5			4.5'-7.5' 0.1 ppm	SANDY LEAN CLAY (CL)- moist, medium brown, grades into unit below	5
6					6
7					7
8			7.5'-9.5' 0.1 ppm	SILTY SAND (SM)- moist, grayish-brown	8
9		SAND PACK			9
9				9' WATER TABLE	9
10					10
11			9.5'-14.5' 0 ppm	SILTY SAND (SM)- wet, grayish-brown	11
12		WELL SCREEN			12
13		BOTTOM CAP			13
14		UNDISTURBED NATIVE SOIL			14
15				BASE OF WELL AT 14' END OF EXPLORATION AT 14.5'	15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT #19941470 BRISSON PROPERTY  
 LOCATION ROUTE 74, SHOREHAM, VT  
 DATE DRILLED 6/23/99 TOTAL DEPTH OF HOLE 9.5'  
 DIAMETER 2.75"  
 SCREEN DIA. 1.5" LENGTH 7.5' SLOT SIZE 0.010"  
 CASING DIA. 2" LENGTH 1.5' TYPE sch 40 pvc  
 DRILLING CO. ADAMS ENG. DRILLING METHOD VIBRATORY  
 DRILLER GERRY ADAMS LOG BY T. KELLY

WELL NUMBER MW4



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	DEPTH INTERVAL & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
0		LOCKING WELL CAP			0
1		CONCRETE NATIVE BACKFILL			1
2		BENTONITE	0-4.5' 0.1 ppm	LEAN CLAY W/SAND (CL)- moist, medium brown to gray, locally mottled @ 4'-4.5'	2
3		WELL RISER			3
4			4.5'-4.8' 0.1 ppm	LEAN CLAY W/SAND (CL)- wet, light grayish brown	4
5		SAND PACK		4.5' WATER TABLE	5
6		WELL SCREEN	5.8'-7.0' 0.1 ppm	SILTY SAND (SM)- wet, light brown to grayish-brown, silt & sand are inter-bedded	6
7		BOTTOM CAP			7
8			7'-9.5' 0 ppm	SILTY SAND (SM)- wet, grayish-brown	8
9					9
10		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 9.5' END OF EXPLORATION AT 9.5'	10
11					11
12					12
13					13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

APPENDIX C

Water Level Data

**Brisson Residence  
Shoreham, Vermont  
Calculated Water Table Elevations**

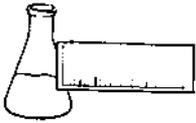
Well I.D.	Well Depth (ft < Grade)	Top of Casing Elevation	Depth To Water	Corrected Water Table Elevation
MW-1	<b>9.2</b>	<b>99.88</b>	<b>dry</b>	
MW-2	<b>14.5</b>	<b>100.00</b>	<b>15.44</b>	<b>84.56</b>
MW-3	<b>14.0</b>	<b>98.99</b>	<b>15.52</b>	<b>83.47</b>
MW-4	<b>9.5</b>	<b>92.44</b>	<b>11.58</b>	<b>80.86</b>

Notes:

Elevations Based on Arbitrary Datum With Top of MW2 Casing Set at 100.00 ft.  
Survey on 7/12/1999  
All Values Reported in feet

APPENDIX D

Laboratory Results



**ENDYNE, INC.**

Laboratory Services

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International

ORDER ID: 2310

PROJECT NAME: Brisson Property/#19941470

REF.#: 138,302

REPORT DATE: May 26, 1999

DATE SAMPLED: May 11, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. No contamination was not observed at levels affecting the analytical results.

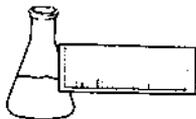
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Bruce P. Locker, Ph.D.

Laboratory Director



**ENDYNE, INC.**

Laboratory Services

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: May 12, 1999

PROJECT NAME: Brisson Property/#19941470

REPORT DATE: May 26, 1999

CLIENT PROJ. #: 19941470

ORDER ID: 2310

Ref. #:	138,302				
Site:	Brisson				
Date Sampled:	5/11/99				
Time Sampled:	7:00				
Sampler:	TK				
Date Analyzed:	5/21/99				
UIP Count:	> 10				
Dil. Factor (%):	1				
Surr % Rec. (%):	98				
Parameter	Conc. (ug/L)				
NI/BE	<1000				
Benzene	<100				
Toluene	<100				
Ethylbenzene	123.				
Xylenes	908.				
1,3,5 Trimethyl Benzene	247.				
1,2,4 Trimethyl Benzene	633.				
Naphthalene	860.				

Note: UIP = Unidentified Peaks    TBQ = Trace Below Quantitation    NI = Not Indicated

**CHAIN-OF-CUSTODY RECORD**

19941470

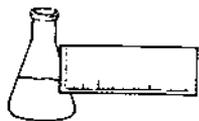
Project Name: <i>Griffin Property</i>	Reporting Address: <i>Griffin</i>	Billing Address: <i>Griffin</i>
Site Location: <i>Shareham, VT</i>		
Endyne Project Number: <i>2310</i>	Company: <i>Griffin</i>	Sampler Name: <i>T Kelly</i>
	Contact Name/Phone #: <i>Laurie Reed</i>	Phone #: <i>865 4281</i>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
<i>138302</i>	<i>Griffin</i>	<i>water</i>	<i>X</i>		<i>5/10/99</i> <i>1900</i>	<i>2</i>	<i>40ml</i>		<i>215</i>	<i>1/01</i>	

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>5/11/99</i>
Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>5/12/99</i>

 New York State Project: Yes  No 
**Requested Analyses**

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD <sub>5</sub>	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										



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REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International

ORDER ID: 3072

PROJECT NAME: Brisson Property/#19941470

REF.#: 140,825 - 140,829

REPORT DATE: July 19, 1999

DATE SAMPLED: July 12, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

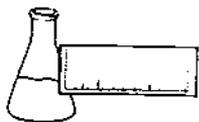
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.  
Laboratory Director

enclosures



**ENDYNE, INC.**

Laboratory Services

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: July 13, 1999

PROJECT NAME: Brisson Property/#19941470

REPORT DATE: July 19, 1999

CLIENT PROJ. #: 19941470

ORDER ID: 3072

Ref. #:	140,825	140,826	140,827	140,828	140,829
Site:	Trip Blank	MW #4	MW #2	MW #3	Duplicate
Date Sampled:	7/12/99	7/12/99	7/12/99	7/12/99	7/12/99
Time Sampled:	8:28	1:47	2:02	2:24	2:24
Sampler:	D.T.	D.T.	D.T.	D.T.	D.T.
Date Analyzed:	7/16/99	7/16/99	7/16/99	7/16/99	7/19/99
UIP Count:	0	0	0	0	0
Dil. Factor (%):	100	100	100	100	100
Surr % Rec. (%):	93	99	95	103	97
Parameter	Conc. (ug/L)				
MTBE	<10	<10	<10	<10	<10
Benzene	<1	<1	<1	<1	<1
Toluene	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1
Xylenes	<1	<1	<1	<1	<1
1,3,5 Trimethyl Benzene	<1	<1	<1	<1	<1
1,2,4 Trimethyl Benzene	<1	<1	<1	<1	<1
Naphthalene	<1	<1	<1	<1	<1

Note: UIP = Unidentified Peaks    TBQ = Trace Below Quantitation    NI = Not Indicated

19941470

**CHAIN-OF-CUSTODY RECORD**

34266

Project Name: <u>BRISSON PROPERTY</u>	Reporting Address: <u>GR...</u>	Billing Address:
Site Location: <u>STEREON...</u>		
Endyne Project Number: <u>172</u>	Company: Contact Name/Phone #: <u>L...</u>	Sampler Name: Phone #: <u>...</u>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
140825	TRIP BEAM	H2O	X		7/1/94						
140826	MW #4	↓	↓		13.4						
140827	MW #2	↓	↓		14.02						
140828	MW #3	↓	↓		14.24						
140829	DUPLICATE	↓	↓		14.24						

Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>[Date/Time]</u>
Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>[Date/Time]</u>

New York State Project: Yes  No

**Requested Analyses**

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD <sub>5</sub>	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										