



Feb 25 10 20 AM '99

February 23, 1999

Mr. Robert G. Butler
State of Vermont
Department of Environmental Conservation
Waste Management Division
Sites Management Section
103 South Main Street/ West Building
Waterbury, VT 05671-0404

RE: Site Investigation at Alburg Sunoco, Alburg, VT (VTDEC Site #98-2416/
Former Site #87-0050)

Dear Mr. Butler:

Enclosed please find Griffin's Site Investigation Report for the Alburg Sunoco in Alburg, Vermont. This report presents the findings from the drilling and groundwater sampling conducted in December, 1998.

If you have any questions regarding this report, please call.

Sincerely,

Kevin McGraw
Project Manager

Enclosure

cc: Ms. Sharon Abbott, Sandri (w/out enclosure)
GI Project #119841414

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

at

**ALBURG SUNOCO
ROUTE 2
ALBURG, VERMONT
(VTDEC Site #98-2416)**

February 15, 1999

Prepared for:

J.W. Sandri, Inc.
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Greenfield, MA 01362-1578

Prepared by:



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Griffin Project #119841414

1999 FEB 15 10 22 AM '99

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I. INTRODUCTION

This report summarizes the investigation of subsurface petroleum contamination at the Alburg Sunoco, a retail gasoline station located on Main Street (Route 2) in Alburg, Vermont (see Site Location Map and Area Map, Appendix A). The following investigation has been conducted to define more clearly the degree and extent of petroleum contamination which was detected in the soils at this site during the replacement of product piping serving gasoline underground storage tanks (USTs) in May of 1998. Included in the report are the findings from the vibratory drilling along with the results of subsequent groundwater sampling conducted at the property. This work has been completed for J.W. Sandri, Inc. (Sandri) by Griffin International, Inc. (Griffin) in accordance with the approved Site Assessment Work Plan and Cost Estimate dated November 9, 1998.

II. HISTORICAL BACKGROUND

On May 26, 27, and 28, 1998, the product piping for one (1) 6,000-gallon and two (2) 4,000-gallon gasoline USTs was replaced to meet system compliance requirements. The USTs are located on the southwest side of the Sunoco building and product piping extended from the tank area northward to the dispenser island (see Site Map in Appendix A).

The piping replacement was performed by Sandri and the excavation of the trenches was performed by C.D. Davenport Excavating. The piping replacement inspection was conducted by Sharon Abbott of Sandri (Ref. 1). During the inspection, soil contamination was evident in the soils above the tanks to approximately four feet below grade. Volatile organic compounds (VOCs) were detected in the soils using a portable photoionization device (PID). PID readings from the soils above the tanks ranged from 4.9 to 76.2 parts per million (ppm). Also during this inspection, soils were screened from an area which was excavated for the installation of new canopy footings. This excavation extended to approximately 7.5 feet below grade. Groundwater was encountered in this area at 7 feet below grade. A PID reading of a composite soil sample was measured to be 786.3 ppm using the Photovac MicroTip PID.

During these site activities, approximately 40 cubic yards of contaminated soils were stockpiled. These soils were eventually approved for transportation to a Sunoco Station in Swanton, Vermont. These soils are scheduled to be screened on an annual basis beginning in the Spring of 1999.

According to the piping replacement inspection report, this property was formerly a hazardous waste site (Former Site #87-0050) as a result of a tank release of approximately 300 gallons of product which occurred in 1985. The tanks were excavated and replaced at that time. A significant volume (reportedly 11 truck loads) of contaminated soils were removed from the site and an eight-inch diameter recovery well

was placed between Route 2 and the former tank which had the release. This well, designated as RW-1, is shown on the Site Map in Appendix A. Free product was reportedly never observed in this well.

In response to contamination detected during the 1998 piping replacement, the VTDEC requested additional work at the site to investigate the degree and extent of contamination beneath the site. The following report presents the findings from Griffin's Site Investigation conducted in December, 1998.

III. SITE DESCRIPTION

The Alburg Sunoco is located in the center of Alburg, Vermont on Main Street, directly across from the Alburg Town Clerk's Office. Lake Champlain is located approximately one-half mile directly west of the property. Local terrain is generally level but slopes gradually downward toward the lake. In addition, an unnamed stream is situated approximately 1,200 feet west-northwest of the site. Based on surface topography and the location of surface waters relative to the site, groundwater flow beneath the site was estimated to be to the west. The elevation of the site is approximately 120 feet above mean sea level.

This property is located in a neighborhood with a mix of commercial and residential uses. A church and local government offices are also situated in this area. The entire area is served by the town's water supply system which obtains its water from Lake Champlain. According to Alton Brousseau of the local water department, the nearest private drinking water supply well is located approximately two miles south of the site.

The Surficial Geologic Map of Vermont maps the surrounding area as glacial till (Ref. 2). Actual subsurface materials included silty sand and gravelly silt with sand. According to the Centennial Geologic Map of Vermont (Ref. 3), the overburden deposits at the site are underlain by the Stony Point formation. This formation consists predominantly of calcareous black shale that grades upward into argillaceous limestone and rare dolomite beds.

IV. SUBSURFACE INVESTIGATION

On December 18, 1998, two monitoring wells were installed by Adams Engineering using a vibratory drill rig under the direct supervision of a Griffin hydrogeologist. The monitoring wells, designated MW-2 and MW-3, were installed to help define the degree and extent of petroleum contamination in the vicinity of the gasoline USTs and pump island. A pre-existing monitoring well installed directly in the tank pit has been designated as MW-1. The boring for MW-2 was advanced near the northwest corner of the tank area in the likely downgradient direction from the piping which runs between the tanks and pump island. MW-3 was installed north of the pump island in a likely cross-

gradient direction from the source area. The locations of the wells are shown on the Site Map in Appendix A.

Five-foot core samples were collected continuously in each boring. Soil samples were screened for VOCs using an HNU (Model PI-101) photoionization device. In addition, soil characteristics were recorded in detailed boring logs by the supervising Griffin Hydrogeologist.

In the boring for MW-2, silty sand was observed from grade to 13 feet below grade. At the base of the boring, from 13 to 13.5 feet below grade, gravelly silt with sand was observed. Groundwater was encountered at approximately 6 feet below grade. Petroleum odors were observed in the soils collected between 5 and 10 feet below grade. A maximum PID reading of 130 ppm was recorded for the soils at this depth.

Soils retrieved from the boring for MW-3 consisted of silty sand from grade to 12 feet below grade. Soils collected at the base of the boring, from 12 to 13.5 feet below grade, were gravelly silt with sand. Groundwater was again encountered at approximately 6 feet below grade. A slight petroleum odor was observed in the soil sample collected from 10 to 12 feet below grade in this boring. A maximum PID reading of 18 ppm was recorded for the soils collected between 5 and 10 feet below grade.

The monitoring wells were constructed using a ten foot section of 1.5-inch diameter screen with 0.010-inch slots. The screened section of the well was set from 3 to 13 feet below grade. The monitoring wells were completed with 1.5-inch diameter, Schedule 40 PVC riser to approximately 0.5 feet below grade. A silica sand pack was placed around the screened portion of each well and a bentonite seal was placed in the annulus immediately above the sand pack. To complete the construction of each of the monitoring wells, a road box was set in concrete at grade level. In addition, a locking well cap was placed on each monitoring well. The boring logs and well construction details for these wells are included in Appendix B.

V. WATER LEVELS AND WATER QUALITY

A. Water Table Elevations

On December 24, 1998, water table elevation measurements were collected from the pre-existing wells, MW-1 and RW-1, as well as the two new monitoring wells, MW-2 and MW-3. In addition, the monitoring wells and recovery well were surveyed in azimuth and elevation relative to the top-of-casing elevation of MW-3 which has been assigned an arbitrary elevation of 100.00 feet. Liquid level monitoring data are presented in Appendix C.

Water table elevations have been plotted and contoured to illustrate the estimated gradient and direction of groundwater flow beneath the site (see Groundwater Contour Map,

Appendix A). According to these data, it appears that groundwater is flowing generally to the west at a hydraulic gradient of 0.019 ft./ft.

B. Water Quality

Griffin collected groundwater samples at the site from MW-1, MW-2, MW-3 and RW-1. RW-1 did not appear to be an eight inch recovery well, as initially reported. A two-foot diameter manhole covered the recovery well which was measured to be 9.80 feet deep and appeared to be a large diameter culvert well instead. The sample from this well may not be truly representative since three well volumes could not be purged from this large well. However, this well was sampled nonetheless since sample results from this well would show whether contamination was present in this area of the site.

All groundwater samples were analyzed for petroleum compounds by EPA Method 8021B. The analytical results have been plotted to show the distribution of contamination across the site (see Contaminant Concentration Map, Appendix A).

Dissolved petroleum hydrocarbons were detected in the groundwater samples collected from MW-1 and MW-2. In the MW-1 sample, ethylbenzene, xylenes, naphthalene, and the two trimethylbenzene compounds were detected at concentrations which exceeded their respective Vermont Groundwater Enforcement Standards (VGESs). In the MW-2 sample, benzene, toluene, ethylbenzene, xylenes (BTEX), the trimethylbenzenes, and naphthalene were detected at concentrations which exceeded the VGESs for these compounds.

Contamination was also detected in the samples collected from MW-3 and RW-1. In the MW-3 sample, the two trimethylbenzene compounds were the only contaminants detected at concentrations in excess of their VGESs. In the sample from RW-1, benzene, MTBE, and 1,2,4-trimethylbenzene were detected at concentrations in excess of their respective VGESs. A groundwater quality summary for this sampling event is presented in Appendix D. The Endyne laboratory report is also included in this appendix.

The trip blank and duplicate sample analytical results indicate that proper quality assurance and quality control were maintained during the sampling and analysis.

VI. RECEPTOR RISK ASSESSMENT

A receptor risk assessment was conducted to identify known and potential receptors of the petroleum contamination detected at the Alburg Sunoco. A visual survey was conducted at the time of monitoring well installation. A determination of the potential risk to identified receptors was conducted based on proximity, groundwater flow direction and gradient, and contaminant concentration levels.

Water Supplies ✓

As outlined in Section III of this report, the area in the vicinity of the Alburg Sunoco is served by the town's water supply which obtains its water from Lake Champlain. The nearest private water supply was reported to be approximately two miles south of the site. These public and private drinking water supplies do not appear to be at risk from the contamination evident at the site given their location and distance from the subject site.

Buildings in the Vicinity

The Alburg Sunoco Station is constructed on a slab and likely has minimal potential for the accumulation of vapors, especially since it appears to be located upgradient of the source area. There are other buildings in the area which appear to have basements including the town clerk's office/ town library to the west, a church located to the northwest, and several residences to the north, east, and south. The nearest residence is approximately 50 feet south of the site, and the nearest downgradient basement is the town clerk's office/ town library which is located approximately 80 feet west of the site. Based on the level of contamination evident in the soils at the site, the apparent age of the contamination, and the direction of groundwater flow, it is likely that there is a low potential for impact to the indoor air quality in the identified basements.

Surface Water ✓

The nearest surface water is an unnamed stream located approximately 1,200 feet west-northwest of the site. This stream flows into Lake Champlain which is located approximately one-half mile west of the site. Because of the distance between the site and these surface waters, it is unlikely that there is a significant risk of impact as a result of subsurface petroleum contamination at the Alburg Sunoco. However, since the downgradient extent of dissolved contamination has not been determined by this investigation, it is not possible to fully assess the risk to these surface waters.

Wetlands

According to the U.S.G.S. topographic map for this area (Ref. 4), a wetland area appears to be located approximately 1,200 feet northwest of the site. The unnamed stream described above appears to flow out of this wetland area. The risk to this wetland is likely to be low. However, for the same reasons outlined above for the surface water receptors, it is not possible to fully assess the risk to the wetland until the downgradient extent of dissolved contamination is more completely defined.

VII. CONCLUSIONS

Based on the investigation at this site, Griffin has reached the following conclusions:

1. In each of the two soil borings, silty sand was observed to overlay gravelly silt with sand. Adsorbed petroleum contamination was detected in the soils from both borings. The observed soil contamination was minimal in the MW-3 boring located cross-gradient from the apparent source area. Soil contamination was more prevalent in the MW-2 boring which appears to be located directly downgradient from the source area.
2. The water table elevation beneath the site, as measured using the interface probe, was approximately 6 feet below grade. Based on the water table elevation data collected in December, 1998, groundwater beneath the site appears to be flowing generally west at a hydraulic gradient of 0.019.
3. Dissolved VOC contamination was detected in the groundwater samples collected from all four on-site wells. MW-1 appears to be located in the source area and MW-2 is located directly downgradient of the source area. The Vermont Groundwater Enforcement Standards for select VOCs were exceeded in all of the samples. An evaluation of the water level data in conjunction with these analytical results shows that the downgradient extent of contamination has not been determined. ✓
4. The high ratio of xylenes concentrations to benzene concentrations in the groundwater samples collected from MW-1 and MW-2 indicate that the dissolved contamination observed in these wells is likely relatively old. This suggests that the contamination evident at the Alburg Sunoco may have resulted primarily from a release of petroleum which occurred in the distant past. This site was formerly on the hazardous waste sites list as a result of a 300 gallon gasoline spill which occurred in 1985. The contamination detected during this investigation may be a result of that previous release.
5. The risk assessment for this site has determined that there is a potential risk to downgradient receptors to the west including Lake Champlain, an unnamed stream, and a wetland area. The risk to these potential receptors is likely to be low given their significant distance from the site, however, since the downgradient extent of contamination has not been determined, the risk can not be fully assessed at this time. No water supplies appear to be at risk in the area and there appears to be a low potential risk to indoor air quality of buildings in the vicinity of the site.

VIII. RECOMMENDATIONS

Based on the above conclusions, Griffin recommends the following:

1. Additional monitoring wells should be installed to determine the downgradient extent and distribution of petroleum contamination offsite. This additional investigation will help determine the risk to potential receptors in the area.
2. The recovery well, RW-1, should not be sampled as part of future investigations. Its well construction suggests that a representative sample can not be collected from this well.
3. After installation of the new monitoring wells, they should be sampled along with MW-1, MW-2 and MW-3. Groundwater samples should be analyzed for VOCs by EPA Method 8021B.
4. Upon completion of the groundwater sampling, a summary report should be prepared outlining the findings of the investigation. This report will include a Groundwater Contour Map, Contaminant Concentration Map, water level data, groundwater analytical data, an updated sensitive receptor survey, conclusions and recommendations.

REFERENCES

1. A.R. Sandri, Inc., (not dated), Piping Inspection Report.
2. Doll, Charles G., ed., 1970, *Surficial Geologic Map of Vermont*, State of Vermont.
3. Doll, Charles G., ed., 1961, *Centennial Geologic Map of Vermont*, State of Vermont.
4. U.S.G.S. Topographic Map, Rouses Point, VT-NY, Photoinspected 1972.

APPENDICES

APPENDIX A

Maps

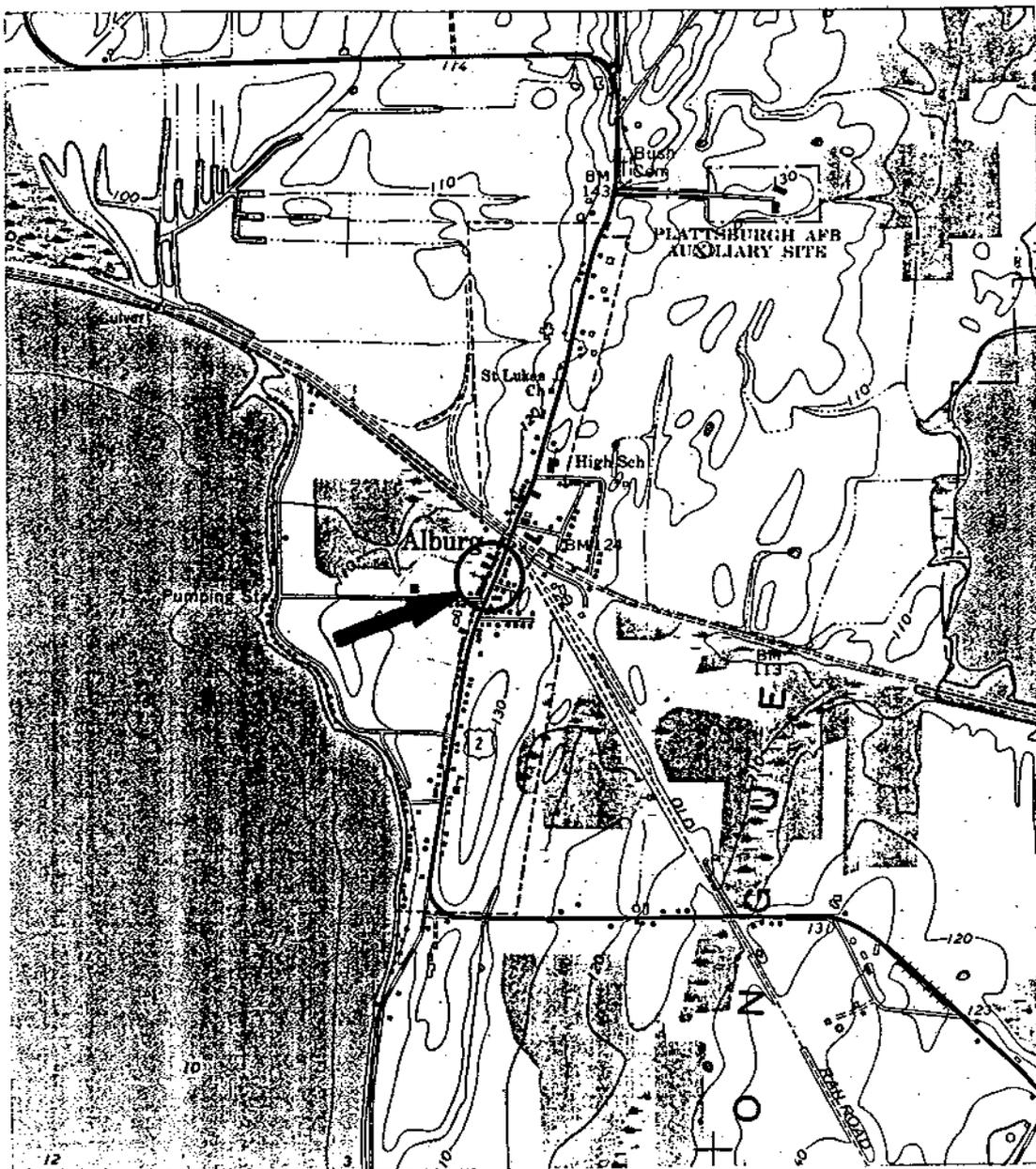
Site Location Map

Area Map

Site Map

Groundwater Contour Map

Contaminant Concentration Map



SOURCE: USGS- ROUSES POINT, VT.-N.Y. QUADRANGLE



JOB #: 119841414

ALBURG SUNOCO

ROUTE 2, ALBURG, VERMONT

SITE LOCATION MAP

DATE: 12/24/98 DWG.#:1

SCALE: 1:24000 DRN.:SB APP.:KM

ALBURG
VILLAGE
STORE

POST
OFFICE

CHURCH

TOWN
CLERK'S
OFFICE

PARKING LOT

LAKE STREET

RESIDENCE

RESIDENCE

RESIDENCE

RESIDENCE

RES.

ROUTE 2

MW3

MW2

MW1

RW1

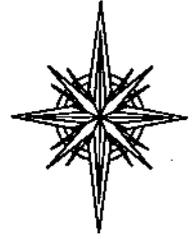
ALBURG
SUNOCO

RES.

RESIDENCE

RESIDENCE

N



JOB #: 119841414

ALBURG SUNOCO

ROUTE 2, ALBURG, VERMONT

AREA MAP

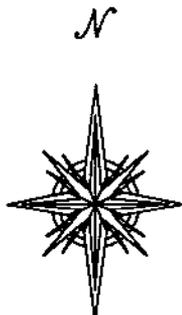
DATE: 2/12/99

DWG.#:2

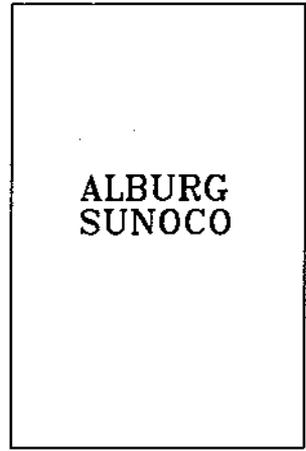
SCALE: NONE

DRN.:SB

APP.:KM



ROUTE 2

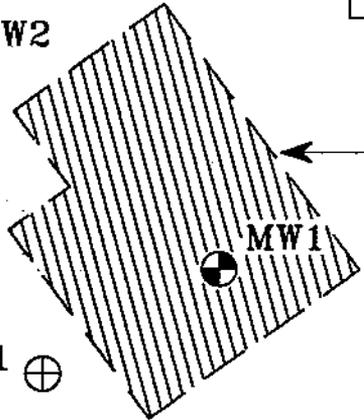


MW3



MW2

APPROXIMATE LOCATION OF EXISTING TANK PIT



MW1

RW1

LEGEND

-  MW2 MONITORING WELL
-  RW1 RECOVERY WELL



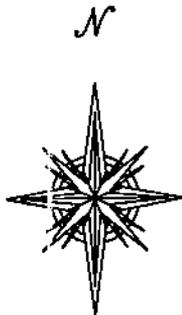
JOB #: 119841414

ALBURG SUNOCO

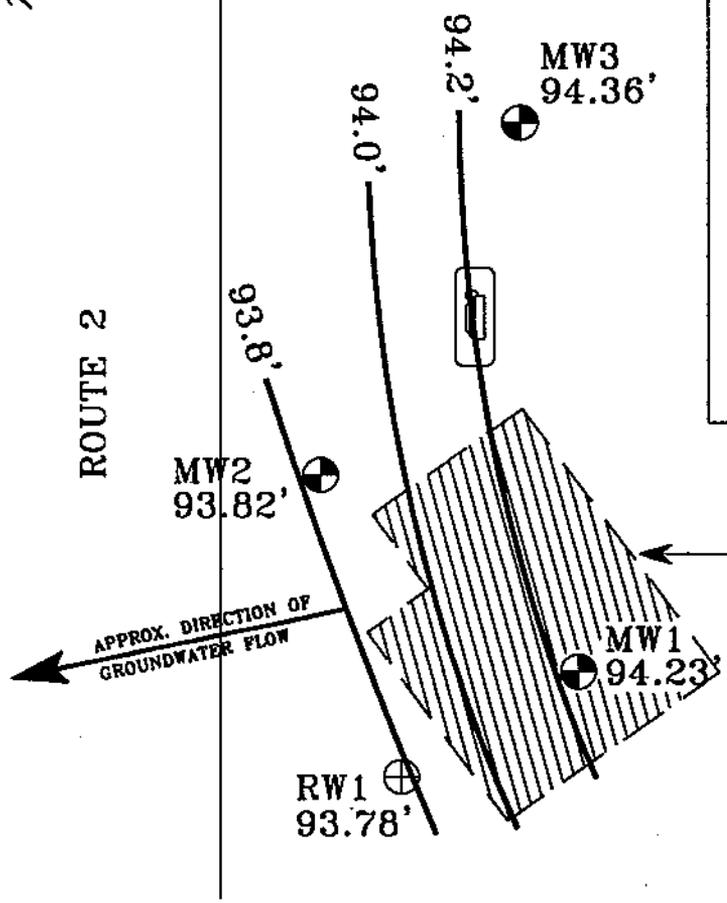
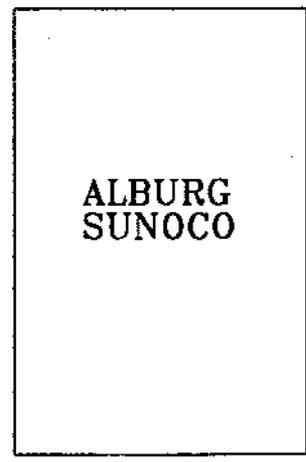
ROUTE 2, ALBURG, VERMONT

SITE MAP

DATE: 2/12/98	DWG.#:3	SCALE: 1"=20'	DRN.:SB	APP.:KM
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ROUTE 2



LEGEND

- MW2 93.82' MONITORING WELL AND WATER TABLE ELEVATION IN FEET
- 94.0' GROUNDWATER CONTOUR IN FEET (DASHED WHERE INFERRED)
- ⊕ RW1 RECOVERY WELL



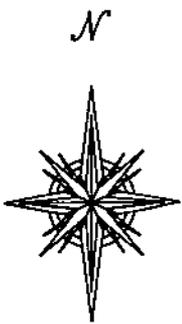
JOB #: 119841414

ALBURG SUNOCO

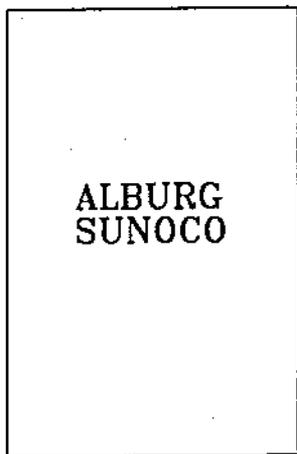
ROUTE 2, ALBURG, VERMONT

GROUNDWATER CONTOUR MAP
MEASUREMENT DATE: 12/24/98

DATE: 2/12/99	DWG.#:4	SCALE: 1"=20'	DRN.:SB	APP.:KM
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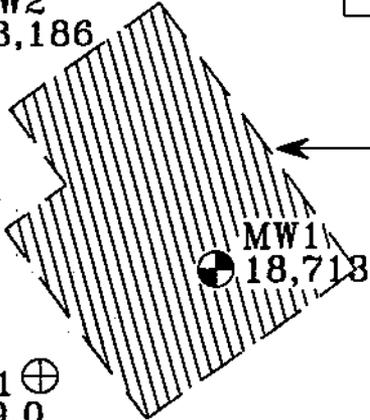
ROUTE 2



MW3
37.9



MW2
33,186



MW1
18,718



RW1
139.0



← APPROXIMATE LOCATION
OF EXISTING TANK PIT

LEGEND

-  MW2 33,186 MONITORING WELL AND TOTAL 8021B VOCs (ppb)
-  RW1 RECOVERY WELL



JOB #: 119841414

ALBURG SUNOCO

ROUTE 2, ALBURG, VERMONT

CONTAMINANT CONCENTRATION MAP
SAMPLE DATE: 12/24/98

DATE: 2/12/99	DWG.#:5	SCALE: 1"=20'	DRN.:SB	APP.:KM
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APPENDIX B

Well Logs

PROJECT ALBURG SUNOCO

LOCATION ROUTE 2, ALBURG, VERMONT

DATE DRILLED 12/18/98 TOTAL DEPTH OF HOLE 13.5'

DIAMETER 2.75"

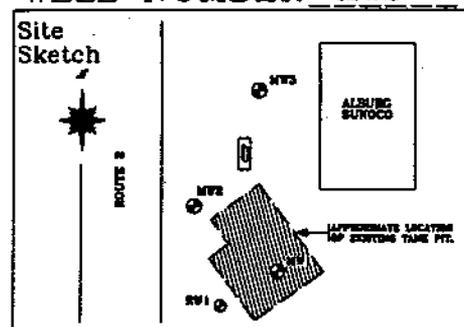
SCREEN DIA. 1.5" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 1.5" LENGTH 2.5' TYPE sch 40 pvc

DRILLING CO. ADAMS ENGR DRILLING METHOD VIBRATORY

DRILLER GERRY ADAMS LOG BY K. McGRAW

WELL NUMBER MW2

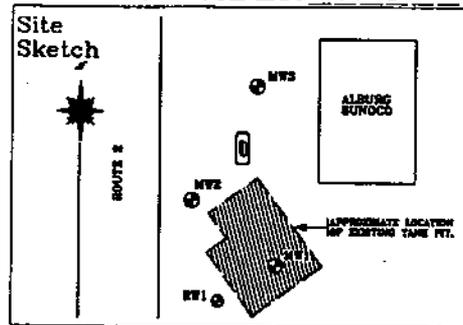


GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX	LOCKING WELL CAP			0
1	CONCRETE	NATIVE BACKFILL			1
2	BENTONITE		0'-5'	SILTY SAND (SM)- 25% silt, rapid dilatancy, low toughness, low plasticity, low dry strength, firm consistency; 75% fine to medium sand, trace fine, subrounded gravel, well graded, moderate cementation, olive gray, moist, homogeneous, no HCL reaction, no odor.	2
3	WELL RISER		0.8 ppm		3
4					4
5					5
6	SAND PACK			6.0' WATER TABLE	6
7			5'-10'	SILTY SAND (SM)- 35% silt, rapid dilatancy, low toughness, low plasticity, low dry strength, firm consistency; 85% fine to medium sand, trace fine, subrounded gravel, well graded, moderate cementation, olive gray, wet, homogeneous, no HCL reaction, petroleum odor.	7
8			130 ppm		8
9	WELL SCREEN				9
10					10
11			10'-13'	Same as above; no odor.	11
12	BOTTOM CAP		4.0 ppm		12
13	UNDISTURBED NATIVE SOIL		13'-13.5'	GRAVELLY SILT WITH SAND (ML)- 80% silt; 15% fine to coarse, subangular to subrounded sand, 25% fine to medium, subangular to subrounded gravel, well graded, strong cementation, dark gray, moist, blocky structure, no HCL reaction, no odor.	13
14			0.6 ppm		14
15					15
16					16
17				BASE OF WELL AT 13'	17
18				END OF EXPLORATION AT 13.5'	18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT ALBURG SUNOCO
 LOCATION ROUTE 2, ALBURG, VERMONT
 DATE DRILLED 12/18/98 TOTAL DEPTH OF HOLE 13.5'
 DIAMETER 2.75"
 SCREEN DIA. 1.5" LENGTH 10.0' SLOT SIZE 0.010"
 CASING DIA. 1.5" LENGTH 2.5' TYPE sch 40 pvc
 DRILLING CO. ADAMS ENGR. DRILLING METHOD VIBRATORY
 DRILLER GERRY ADAMS LOG BY K. McGRAW

WELL NUMBER MW3



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & 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			1
2		BENTONITE			2
3		WELL RISER	0'-5' 0 ppm	SILTY SAND (SM)- 15% silt, rapid dilatancy, low toughness, no plasticity, low dry strength, firm consistency; 85% fine to medium sand, trace fine, subrounded gravel, well graded, weak cementation, brown, moist, homogeneous, no HCL reaction, no odor.	3
4					4
5					5
6		SAND PACK		6.0' WATER TABLE	6
7			5'-10' 18 ppm	SILTY SAND (SM)- 15% silt, rapid dilatancy, low toughness, no plasticity, low dry strength, firm consistency; 85% fine to medium sand, trace fine, subrounded gravel, well graded, weak cementation, brown, wet, homogeneous, no HCL reaction, no petroleum odor.	7
8					8
9		WELL SCREEN			9
10					10
11			10'-12' 17 ppm	Same as above; slight petroleum odor.	11
12		BOTTOM CAP			12
13		UNDISTURBED NATIVE SOIL	12'-13.5' 4.0 ppm	GRAVELLY SILT WITH SAND (ML)- 80% silt; 15% fine to medium sand, 25% fine to medium, subangular gravel, well graded, moderate cementation, dark gray, moist, blocky structure, no HCL reaction, no odor.	13
14					14
15				BASE OF WELL AT 13'	15
16				END OF EXPLORATION AT 13.5'	16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

APPENDIX C

Liquid Level Monitoring Data

Liquid Level Monitoring Data
Alburg Sunoco, Alburg, VT

12/24/98

Well I.D.	Top of Casing Elevation	Depth To Product	Depth To Water	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	99.44		5.21					94.23
MW-2	99.39		5.57					93.82
MW-3	100.00		5.64					94.36
RW-1	99.40		5.62					93.78

All Values Reported in Feet

Top-of-Casing Elevations Measured in Feet Relative to MW-3 set at 100.00'

APPENDIX D

Groundwater Quality Summary

Laboratory Report

Groundwater Quality Summary
Alburg Sunoco
Alburg, Vermont

ND L50
ND L500
ND L1000

December 24, 1998

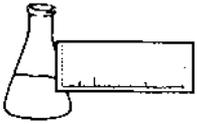
PARAMETER	Sample Point				VGES
	MW-1	MW-2	MW-3	RW-1	
MTBE	ND	ND	ND	58.8	40.
Benzene	ND	121.	ND	17.9	5.
Toluene	226.	3,780.	1.5	1.2	1,000.
Ethylbenzene	1,950.	4,320.	1.4	18.4	700.
Xylenes	11,400.	20,100.	3.0	7.2	10,000.
1,3,5-Trimethylbenzene	977.	922.	6.6	1.9	4.
1,2,4-Trimethylbenzene	3,290.	3,180.	18.6	29.3	5.
Naphthalene	870.	763.	6.8	4.3	20.
Total 8021B VOCs	18,713.	33,186.	37.9	139.0	-

All Values Reported in ug/L (ppb)

VGES - Vermont Groundwater Enforcement Standard

ND - None Detected

TBQ - Trace Below Quantitation Limit



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Alburg Sunoco
REPORT DATE: January 6, 1999
DATE SAMPLED: December 24, 1998

PROJECT CODE: GIAL1297
REF.#: 133,230 - 133,235

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.

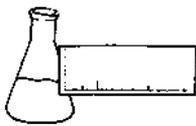
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

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



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EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: December 28, 1998

PROJECT NAME: Alburg Sunoco

REPORT DATE: January 6, 1999

CLIENT PROJ. #: 119841414

PROJECT CODE: GIAL1297

Ref. #:	133,230	133,231	133,232	133,233	133,234
Site:	Trip Blank	RW#1	MW#1	Duplicate	MW#2
Date Sampled:	12/24/98	12/24/98	12/24/98	12/24/98	12/24/98
Time Sampled:	7:12	9:20	9:42	9:42	10:00
Sampler:	D. Tourangeau				
Date Analyzed:	12/31/98	12/31/98	12/31/98	1/6/99	1/5/99
UIP Count:	0	>10	>10	>10	>10
Dil. Factor (%):	100	100	2	2	1
Surr % Rec. (%):	94	97	95	99	102
Parameter	Conc. (ug/L)				
MTBE	<10	58.8	<500	<500	<1000
Benzene	<1	17.9	<50	<50	121.
Toluene	<1	1.2	226.	224.	3,780.
Ethylbenzene	<1	18.4	1,950.	2,000.	4,320.
Xylenes	<1	7.2	11,400.	11,700.	20,100.
1,3,5 Trimethyl Benzene	<1	1.9	977.	1,010.	922.
1,2,4 Trimethyl Benzene	<1	29.3	3,290.	3,370.	3,180.
Naphthalene	<1	4.3	870.	1,030.	763.

Ref. #:	133,235				
Site:	MW#3				
Date Sampled:	12/24/98				
Time Sampled:	10:21				
Sampler:	D. Tourangeau				
Date Analyzed:	12/31/98				
UIP Count:	>10				
Dil. Factor (%):	100				
Surr % Rec. (%):	83				
Parameter	Conc. (ug/L)				
MTBE	<10				
Benzene	<1				
Toluene	1.5				
Ethylbenzene	1.4				
Xylenes	3.0				
1,3,5 Trimethyl Benzene	6.6				
1,2,4 Trimethyl Benzene	18.6				
Naphthalene	6.8				

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

CHAIN-OF-CUSTODY RECORD

31464

Project Name: <u>ALBURN SWIMMO</u> Site Location: <u>ALBURN, VT</u>	Reporting Address: <u>6710 125th</u>	Billing Address: <u>6710 125th</u>
Endyne Project Number:	Company: <u>KEVIN MCGAHAN</u> Contact Name/Phone #:	Sampler Name: Phone #:

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				
	TRIP BLANK	H ₂ O	✓		07:12	2	40ml L		80213	110	
	TRIP #1	H ₂ O	↓		09:20	↓	↓		↓	↓	
	TRIP #2		↓		09:42	↓	↓		↓	↓	
	Duplicate		↓		09:42	↓	↓		↓	↓	
	TRIP #2		↓		10:00	↓	↓		↓	↓	
	TRIP #3		↓		10:21	↓	↓		↓	↓	

Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>12-28-98 10:15</u>
Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>12-28-98 10:15</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 ₅	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):										