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RECEIVED  
MAY 29 1997

R15232P-1C

September 22, 1997

Mr. Matthew Moran  
Sites Management Section  
Waste Management Division  
Agency of Natural Resources  
103 South Main Street / West Office  
Waterbury, Vermont 05671-0404

**SUBJECT: Marshall Arbo Site - SMS #95-1759  
Suspected Release Investigation**

Dear Mr. Moran:

DuBois & King, Inc., has completed an investigation into a suspected release of gasoline product at the Marshall Arbo, in East Randolph, Vermont, as required by your letter of May 29, 1997.

Please feel free to call if you have any questions about this investigation.

Very truly yours,

DuBOIS & KING, INC.

Robert B. Nichols, P.E.  
Project Engineer

RBN/mbt  
cc: Marshall Arbo

I:\R15232P\MORAN.RBN

**SUSPECTED RELEASE INVESTIGATION**

**MARSHALL ARBO PROPERTY**

**ROUTE 14, EAST RANDOLPH, VERMONT  
(SMS SITE # 95-1759)**

**September 22, 1997**

Prepared for:

Dr. Marshall Arbo  
P.O. Box 291  
East Randolph, Vermont 05041

DuBois & King Project # R15232P

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## 1.0 INTRODUCTION

This report summarizes the results of an investigation into a suspected release of gasoline at two underground storage tanks that have been out-of-service since the 1950s. The two 750-gallon tanks were closed on February 14, 1995 by North Country Environmental Services. Certification of closure conditions was completed by DuFresne-Henry, Inc. Due to the proximity of the tanks to an outside stair well and the porch foundation, the tanks were closed in place by filling them with concrete after cleaning. Soil samples, evidently obtained by drilling through the bottom of each tank at the time of closure, were screened with a Photovac Micro-tip HL-2000 organic vapor analyzer. According to the tank closure documentation, the results of the soil screening were 1744 ppm in the sample collected below tank # 1, the southern tank, and 1175 ppm in the sample collected below tank # 2, the northern tank. See the site plan included in Appendix B for the location of the tanks. The closure memorandum does not indicate if the soil samples were screened in place or if they were withdrawn and placed in a closed container and warmed to room temperature before the readings were recorded. Photographs of the tank were not taken at the time of tank closure. The closure report indicates that tank #1 was in "average" condition and tank #2 was in poor condition. Both tanks had liquid in them when they were opened for cleaning. Soils excavated from above each tank were not contaminated. The engineer certifying closure conditions suspected a release of gasoline product and prepared a site investigation expressway notification. The Sites Management Section assigned the site the control number 95-1759 and requested an investigation.

On May 29, 1997, the Sites Management Section requested the owners of the property to retain an environmental consultant to investigate the degree and extent of contamination to the soil and to assess the potential for sensitive receptors to be impacted. DuBois & King, Inc., was selected to perform this assessment and a work plan was submitted to the Section on June 26, 1997. The work plan was approved by the Section on July 2, 1997, and the owner authorized the work.

The site is located on Vermont Route 14, in East Randolph, 800 feet south of the east end of Route 66. The region is primarily residential and commercial in character. The East Randolph Fire Station is located directly across from the site on the west side of Route 14. The onsite structure was used as a "Mom and Pop" general store with retail gasoline sales from (approximately) 1920 to 1950. It currently houses a dental office, a martial arts studio, and an apartment.

## 2.0 SOIL BORINGS

The field work was completed on August 8, 1997. The work plan provided for the installation of a soil boring under each tank, downgradient borings installed near the property line and collection of soil samples at five foot intervals in each boring using a spilt spoon sampler. The borings installed under the tanks were installed at an angle to intercept the region of soil directly beneath each tank.

Soil boring B-1 was installed at an angle under tank #1. Soil samples were collected at 5, 10, and 15 feet into the boring. The depths were measurements of the auger lengths; the actual depths below ground surface at an entrance angle of approximately 60° from horizontal would be 4.3, 8.7, and 13 feet, respectively. Groundwater was encountered at approximately eight feet below ground surface. The soil samples were collected from the split spoon, placed in plastic Zip Lok bags, shaken and screened with a portable photoionization detector calibrated on the morning of the field activities with isobutylene span gas. None of the three screenings produced a measurement above background. None of the soils were discolored or exhibited olfactory evidence of contamination. Soil samples were collected for laboratory analysis from the split spoon samples at 10 feet and 15 feet.

Soil boring B-2 was installed at an angle under tank #2. Soil samples were collected at 5, 10, and 15 feet (4.3, 8.7, and 13 feet below ground surface) into the boring. Groundwater was encountered at approximately 10 feet below ground surface. The soil samples were collected from the split spoon, placed in plastic Zip Lok bags, shaken and screened with a PID. None of these samples produced a measurement above background. Soil samples were collected for laboratory analysis from the split spoon samples at 10 and 15 feet.

Soil boring B-3 was installed (vertically) near the southern property line at the edge of a drainage swale which flows toward the Second Branch of the White River at a location approximately 75 feet downgradient from tank #1. Soil samples were collected at 5 and 10 feet. Groundwater was encountered at approximately 10 feet below ground surface. The soil samples were collected from the split spoon, placed in plastic Zip Lok bags, shaken and screened with a PID. Neither of these samples produced a measurement. A soil sample was collected for laboratory analysis from the split spoon sample at 10 feet.

The soil boring logs are contained in Appendix C.

### 3.0 SOIL SAMPLING RESULTS

The soil samples were placed in sample vials, refrigerated, and delivered to the analytical laboratory for aromatic volatile organic analysis using EPA Method 8020. The results are contained in Appendix D. None of the five soil samples exhibited volatile aromatic compound concentrations above the detection limit of the 8020 method.

### 4.0 SENSITIVE ENVIRONMENTAL RECEPTORS

The western end of the basement of the building was screened with the PID on the day the soil borings were drilled. No measurements above background were noted. The basement was also screened by DuBois & King in 1994 when the former owner, Lee Clark, was soliciting cost quotations for closure of the tanks. No indication of volatile organic contamination was present in the basement at either time.

The water supply to the building is a bedrock well located in the parking lot under the pavement approximately 16 feet from tank #1. This well was sampled in January 1995 by the present owner. The sample was analyzed for volatile organics using EPA Method 524.2 and for a partial list of primary and secondary drinking water parameters. The results, which are included in Appendix E, indicate that the well has not been impacted by volatile organic compounds in gasoline and is in compliance with drinking water standards for all parameters measured.

The nearest surface water bodies to the site are the Second Branch of the White River (which flows generally southward) and Osgood Brook, a tributary. The confluence of these two streams is approximately 800 feet due west of the site. Storm water from areas upland of the site flows in a drainage swale along the southern edge of the property, under Route 14 in a culvert, and toward Osgood Brook.

Based on the dominant topographic features of the area, groundwater flow through the site would be expected to flow from Osgood Hill toward the Second Branch and Osgood Brook in a generally south westerly to westerly direction.

The tank closure report estimated the number of drinking water supplies within one half mile of the site at 15. The Water Supply Division well driller logs were reviewed to identify the location of nearby wells. These records show the approximate location of wells installed between 1967 and the present. According to these records, there are 14 private wells within one quarter mile of the site including the onsite well.

No other potential sensitive receptors are identified in the vicinity of this site.

## 5.0 CONCLUSIONS

DuBois & King, Inc., has completed an investigation into a suspected release of gasoline product from two 750 gallon tanks which have been out of service for nearly 50 years. Based on the evidence generated during the course of this investigation, soils in the immediate vicinity of each of the two tanks do not exhibit contamination above method detection limits by volatile or aromatic organic compounds. The allegation, made by the engineer certifying tank closure conditions in February 1995, that a significant release of gasoline product has occurred from these tanks is not confirmed by the present investigation.

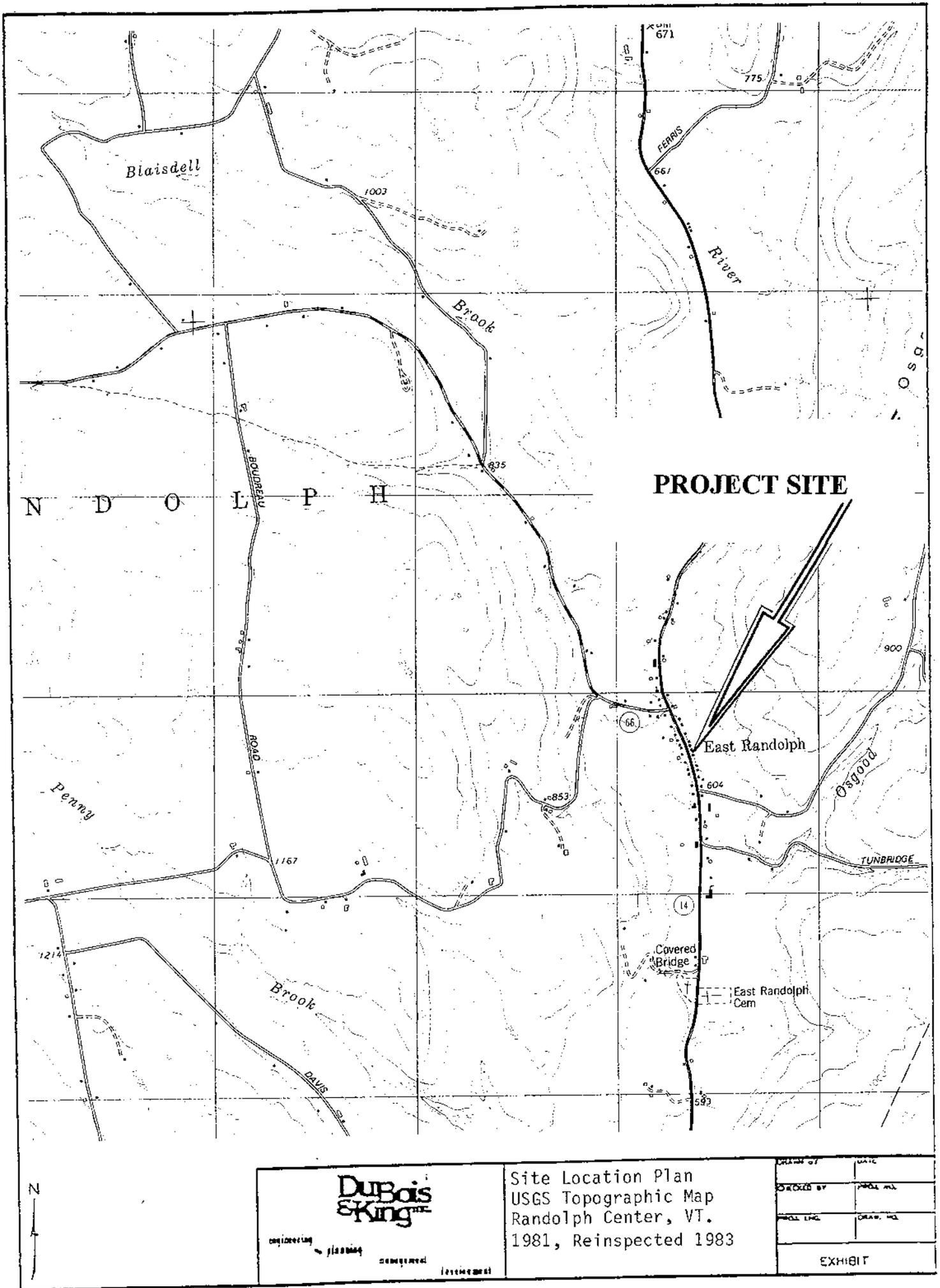
A clear explanation for the high levels of organic vapors measured in the soils below each tank during the closure of these two tanks in 1995 is not forthcoming. Based on observations completed by the owner at the time of tank closure, liquid was present in the tanks when the holes were drilled to collect the soil samples. This liquid could have flowed out of the holes and into the soils below the drill holes contaminating the soils before the samples were collected. It is also possible that the instrument used to measure the concentration of organic vapors in the soil samples collected from below the tanks was improperly calibrated or was functioning

improperly or was contaminated by product in the sensing probe. Since the method of soil sample collection through these holes is not described, it is also possible that a sampling error was made. Based on the occurrence of the high readings in soil samples collected at the time of tank closure under **both** tanks, a sampling error or instrument calibration error seem the most plausible of all possible explanations.

## **6.0 RECOMMENDATIONS**

The present investigation has revealed no evidence of a release of gasoline product into the soils or groundwater at this site from the historical operation of two 750 gallon gasoline underground storage tanks. It is our opinion that additional investigations into the degree and extent of contamination at this site are not warranted. We recommend that the Sites Management Section move to closure on this site.

APPENDIX A  
SITE LOCATION MAP



**PROJECT SITE**

N D O L P H

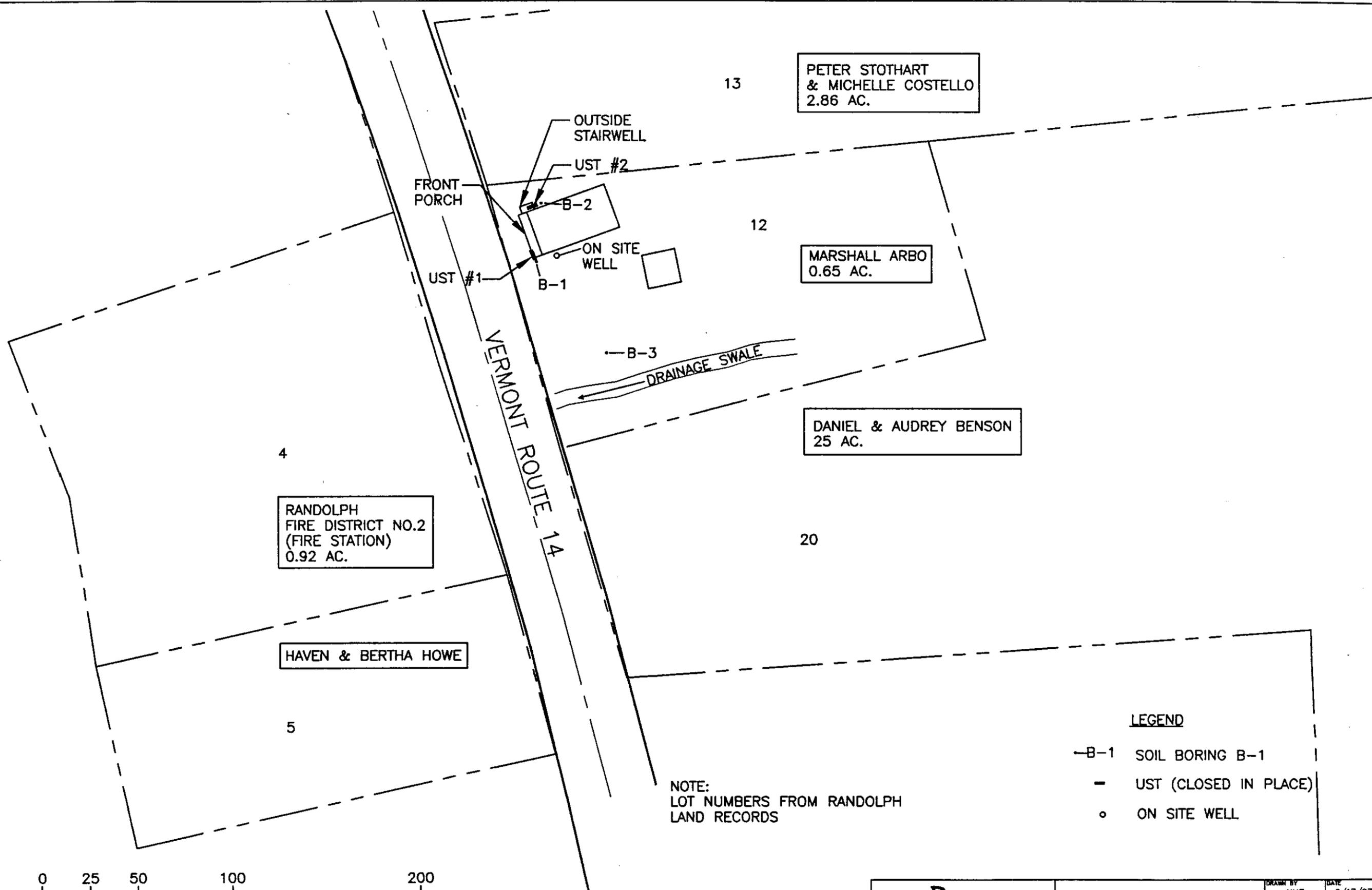
**DUBOIS SKING**  
engineering planning development investment

Site Location Plan  
 USGS Topographic Map  
 Randolph Center, VT.  
 1981, Reinspected 1983

DATE	DATE
DRAWN BY	SCALE
CHECKED BY	DATE
<b>EXHIBIT</b>	

APPENDIX B

SITE PLAN



RANDOLPH  
FIRE DISTRICT NO.2  
(FIRE STATION)  
0.92 AC.

HAVEN & BERTHA HOWE

PETER STOTHART  
& MICHELLE COSTELLO  
2.86 AC.

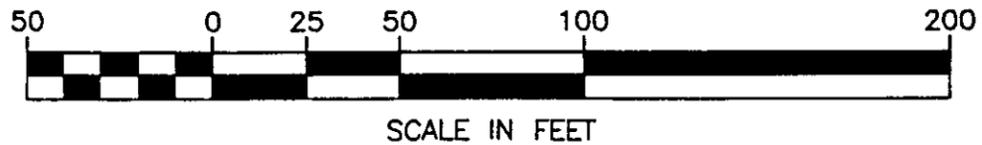
MARSHALL ARBO  
0.65 AC.

DANIEL & AUDREY BENSON  
25 AC.

VERMONT ROUTE 14

- LEGEND**
- B-1 SOIL BORING B-1
  - UST (CLOSED IN PLACE)
  - o ON SITE WELL

NOTE:  
LOT NUMBERS FROM RANDOLPH  
LAND RECORDS



<p>engineering planning management development</p>	<p>MARSHALL ARBO PROPERTY EAST RANDOLPH, VERMONT</p>		<p>DRAWN BY KMP</p>	<p>DATE 9/17/97</p>
	<p>SMS # 95-1759</p>		<p>CHECKED BY R15232</p>	<p>PROJ. NO. R15232</p>
	<p>SITE PLAN</p>		<p>PROJ. ENG.</p>	<p>DRAW. NO.</p>
	<p>SHEET 1 OF 1</p>		<p>PROJ. ENG.</p>	<p>DRAW. NO.</p>

APPENDIX C  
SOIL BORING LOGS



ATLANTIC TESTING LABORATORIES, Limited

September 5, 1997

DUBOIS & KING, INC.  
FILE # \_\_\_\_\_  
SUBJ \_\_\_\_\_

P.O. Box 29  
6431 U.S. Highway 11  
Canton, NY 13617  
Phone: (315) 386-4578  
Fax: (315) 386-1012

SEP 10 1997

DuBois & King, Inc.  
Route 66 Professional Center  
P.O. Box 339  
Randolph, Vermont 05060

REFD TO: \_\_\_\_\_  
NOTED: \_\_\_\_\_

P.O. Box 91  
23685 Cemetery Road  
Felts Mills, NY 13638  
Phone: (315) 773-5390  
Fax: (315) 773-0334

Attn: Subsurface Investigation  
Dr. Marshall Arbo Property  
East Randolph, Vermont  
ATL Report No. CD1704-1-8-97

5866 State Route 31  
Cicero, NY 13039  
Phone: (315) 699-5281  
Fax: (315) 699-3374

Ladies/Gentlemen:

Atlantic Testing Laboratories, Limited (ATL) is pleased to submit the boring logs for the subsurface exploration performed at Dr. Marshall Arbo's office in East Randolph, Vermont. The work was performed in accordance with ATL proposal number CD998-177-6-97 (Revised) dated July 24, 1997, and Dr. Marshall Arbo's signed acceptance on July 28, 1997.

The site is located at geodetic coordinates N 43°56'15" latitude and W 72°33'10" longitude in East Randolph, Orange County, Vermont. Three borings (B-1, B-2, B-3) were advanced in the vicinity of underground storage tank locations. Each boring was advanced utilizing 4-1/4" I.D. hollow stem augers. Soil samples were obtained at five foot intervals in accordance with ASTM D 1586. All field work was directed by Mr. Bob Nichols of DuBois & King, Inc.

Borings B-1 and B-2 were advanced at an angle of 30° from vertical to ascertain conditions below the underground storage tanks. These borings were terminated at 17'. Boring Number B-3 was a vertical hole and was terminated at 12'. No monitoring wells were installed in the boreholes. The borings were backfilled with on-site soil upon completion. The samples were retained by Dubois & King. The soil boring logs are attached. No boring location plan was provided for inclusion in ATL's report.

ATL appreciates the opportunity to provide subsurface exploration services for your project. If any questions arise, or if we may be of further assistance, please do not hesitate to contact our office. We look forward to our continued association.

Respectfully submitted,  
Atlantic Testing Laboratories, Limited

  
Michael P. Talbot, Geologist  
Project Manager

MPT/cs

cc: Dr. Marshall Arbo



SUBSURFACE INVESTIGATION

Report No. CD1704-8-97

CLIENT Dubois & King  
Randolph, Vermont  
 PROJECT Dr. Marshall Arbo  
East Randolph, Vermont

Location of Boring As Staked

Date, Start 08/08/97 Finish 08/08/97

Boring No. B-1 Sheet 1 of 2

Groundwater Observations			
Date	Time	Depth	Casing at
8/8/97	AM	7.0'	15.0'

Casing Hammer \_\_\_\_\_ Sampler Hammer \_\_\_\_\_  
 Wt \_\_\_\_\_ lbs. Wt 140 lbs.  
 Fall \_\_\_\_\_ in. Fall 30 in.  
 Ground Elev. \_\_\_\_\_ Casing \_\_\_\_\_  
 H.S. Auger 4-1/4" I.D.

Water Readings May Not Represent Stabilized Water Table.

DEPTH	CASING BLOWS/FT.	SAMPLE NO.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	GRAPHICS	CLASSIFICATION OF MATERIAL		RECOVERY (INCHES)
			FROM	TO							
1									Boring advanced 30° from vertical.		
2											
3											
4											
5		1	5.0	7.0	SS	3 6 6 6			Grey Brown SILT; and f SAND (moist)		
6											
7											
8	A U G E R										
9											
10		2	10.0	12.0	SS	1 1 1 2			Similar Soils (saturated)		
11											
12											
13											
14											
15		3	15.0	17.0	SS	W* 3 5 6			Similar Soils (saturated)		
16											
17											

SS SPLIT SPOON SAMPLE DRILLERS: Mark Hawkins, Don Hamilton  
 NX ROCK CORE INSPECTOR: B. Nichols, D & K  
 SH UNDISTURBED SHELBY TUBE  
 \* ESTIMATED GROUNDWATER



Boring No. B-1

Report No. CD1704-8-97

Sheet 2 of 2

DEPTH	CASING BLOWS/FT.	SAMPLE NO.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	GRAPHICS	CLASSIFICATION OF MATERIAL  f - fine m - medium c - coarse  and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	RECOVERY (INCHES)
			FROM	TO						
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										

Boring Terminated at 17.0'

\*Sample Advanced Due to Weight of Hammer

Soil classifications based on visual examination of the sample by the drillers in the field.

Initial set up encountered the top of the tank. Moved 7 ft and advanced boreholes as noted above. Borehole backfilled with on-site soil upon completion.

**SUBSURFACE INVESTIGATION**

Report No. CD1704-8-97

CLIENT Dubois & King  
Randolph, Vermont  
 PROJECT Dr. Marshall Arbo  
East Randolph, Vermont

Location of Boring As Staked

Date, Start 08/08/97 Finish 08/08/97

Boring No. B-2 Sheet 1 of 2

Groundwater Observations			
Date	Time	Depth	Casing at
8/8/97	PM	12.0'	15.0'

Casing Hammer Wt \_\_\_\_\_ lbs. Fall \_\_\_\_\_ in.  
 Sampler Hammer Wt 140 lbs. Fall 30 in.  
 Casing \_\_\_\_\_  
 H.S. Auger 4-1/4" I.D.  
 Ground Elev. \_\_\_\_\_

Water Readings May Not Represent Stabilized Water Table.

DEPTH	CASING BLOWS/FT.	SAMPLE NO.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	GRAPHICS	CLASSIFICATION OF MATERIAL	RECOVERY (INCHES)
			FROM	TO						
1								Boring Advanced 30° from vertical.		
2										
3										
4										
5		1	5.0	7.0	SS	4 5 5 6			Brown cmf SAND; some SILT; little f GRAVEL (possible till)	
6										
7										
8										
9	AUGER									
10	R	2	10.0	12.0	SS	2 2 2 2	10.0		Green and Brown SILT; little f SAND (wet)	
11										
12										
13										
14										
15		3	15.0	17.0	SS	W* 2 2 2		Similar Soils (saturated)		
16										
17								Boring Terminated at 17.0'		

SS SPLIT SPOON SAMPLE  
 NX ROCK CORE  
 SH UNDISTURBED SHELBY TUBE  
 \* ESTIMATED GROUNDWATER

DRILLERS: Mark Hawkins, Donnie Hamilton  
 INSPECTOR: B. Nichols, D & K



Boring No. B-2

Report No. CD1704-8-97

Sheet 2 of 2

DEPTH	CASING BLOWS/FT.	SAMPLE NO.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	GRAPHICS	CLASSIFICATION OF MATERIAL		RECOVERY (INCHES)
			FROM	TO					f - fine m - medium c - coarse	and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

\*Sample Advanced Due to Weight of Hammer.

Soil classifications based on visual examination of the sample by the drillers in the field.

Borehole backfilled with on-site soil upon completion.



SUBSURFACE INVESTIGATION

Report No. CD1704-8-97

CLIENT Dubois & King  
Randolph, Vermont  
 PROJECT Dr. Marshall Arbo  
East Randolph, Vermont

Location of Boring As Staked

Date, Start 08/08/97 Finish 08/08/97

Boring No. B-3 Sheet 1 of 1

Groundwater Observations  
 Date 8/8/97 Time PM Depth 9.5' Casing at 12.0'

Casing Hammer Wt \_\_\_\_\_ lbs. Fall \_\_\_\_\_ in.  
 Sampler Hammer Wt 140 lbs. Fall 30 in.  
 Casing \_\_\_\_\_  
 H.S. Auger 4-1/4" I.D.

Water Readings May Not Represent Stabilized Water Table.

DEPTH	CASING BLOWS/FT.	SAMPLE NO.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	GRAPHICS	CLASSIFICATION OF MATERIAL		RECOVERY (INCHES)
			FROM	TO					f - fine	m - medium	
1											
2											
3											
4											
5		1	5.0	7.0	SS	2 3 5 6			Brown cmf SAND; little SILT; little f GRAVEL (possible fill)		
6											
7											
8							8.0				
9	AUGER										
10		2	10.0	12.0	SS	W* W 1 1 O O H H			Brown SILT; some f SAND (saturated)		
11											
12									Boring Terminated at 12.0'		
13									* Sample Advanced Due to Weight of Hammer		
14									Borehole backfilled with on site soil upon completion.		
15									Soil classifications based on visual examination of the sample by the drillers in the field.		
16											
17											

SS SPLIT SPOON SAMPLE  
 NX ROCK CORE  
 SH UNDISTURBED SHELBY TUBE  
 \* ESTIMATED GROUNDWATER

DRILLERS: Mark Hawkins, Don Hamilton  
 INSPECTOR: B. Nichols, D & K

APPENDIX D

LABORATORY REPORT - SOIL SAMPLES



ANALYTICAL REPORT

P.O. Box 339  
Randolph, Vermont 05060-0339  
(802) 728-6313

Dubois & King  
P.O. Box 339  
Rte 66 Professional Center  
Randolph, VT 05060

Work Order No.: 9708-02579

Project Name: Marshall Arbo Site  
Customer Nos.: 080439

Date Received: 8/08/97  
Date Reported: 8/21/97

Sample Desc.:	Soil B-1/10'	Sample Date:	8/08/97		
Sample Nos:	1	Collection Time:	11:00		
Test Performed	Method	Results	Units	Analyst	Analysis Date
Methyl Tertiary Butyl Ether	EPA 8020	< 2	ug/kg	JPM	8/12/97
Benzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Toluene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Ethylbenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Total Xylenes	EPA 8020	< 2	ug/kg	JPM	8/12/97
Chlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,2-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,3-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,4-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Surrogate:				JPM	8/12/97
**1-Bromo-4-Fluorobenzene	EPA 8020	115	% Recovery	JPM	8/12/97
Total Solids	SM18 2540B	72.2	%	JPM	8/13/97

Sample Desc.:	Soil B-1/15'	Sample Date:	8/08/97		
Sample Nos:	2	Collection Time:	11:15		
Test Performed	Method	Results	Units	Analyst	Analysis Date
Methyl Tertiary Butyl Ether	EPA 8020	< 2	ug/kg	JPM	8/12/97
Benzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Toluene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Ethylbenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Total Xylenes	EPA 8020	< 2	ug/kg	JPM	8/12/97
Chlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,2-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,3-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,4-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Surrogate:				JPM	8/12/97
**1-Bromo-4-Fluorobenzene	EPA 8020	108	% Recovery	JPM	8/12/97
Total Solids	SM18 2540B	75.1	%	JPM	8/13/97

## ANALYTICAL REPORT

Project Name: Marshall Arbo Site  
Project No.: 080439

Work Order No.: 9708-02579

Sample Desc.: Soil B-2/10'				Sample Date: 8/08/97	
Sample Nos: 3				Collection Time: 12:45	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Methyl Tertiary Butyl Ether	EPA 8020	< 2	ug/kg	JPM	8/12/97
Benzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Toluene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Ethylbenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Total Xylenes	EPA 8020	< 2	ug/kg	JPM	8/12/97
Chlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,2-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,3-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,4-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Surrogate:				JPM	8/12/97
**1-Bromo-4-Fluorobenzene	EPA 8020	111	% Recovery	JPM	8/12/97
Total Solids	SM18 2540B	72.5	%	JPM	8/13/97

Sample Desc.: Soil B-2/15'				Sample Date: 8/08/97	
Sample Nos: 4				Collection Time: 13:00	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Methyl Tertiary Butyl Ether	EPA 8020	< 3	ug/kg	JPM	8/12/97
Benzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
Toluene	EPA 8020	< 1	ug/kg	JPM	8/12/97
Ethylbenzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
Total Xylenes	EPA 8020	< 1	ug/kg	JPM	8/12/97
Chlorobenzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
1,2-Dichlorobenzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
1,3-Dichlorobenzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
1,4-Dichlorobenzene	EPA 8020	< 1	ug/kg	JPM	8/12/97
Surrogate:				JPM	8/12/97
**1-Bromo-4-Fluorobenzene	EPA 8020	109	% Recovery	JPM	8/12/97
Total Solids	SM18 2540B	76.5	%	JPM	8/13/97

Sample Desc.: Soil B-3/10'				Sample Date: 8/08/97	
Sample Nos: 5				Collection Time: 14:00	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Methyl Tertiary Butyl Ether	EPA 8020	< 2	ug/kg	JPM	8/12/97
Benzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Toluene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Ethylbenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Total Xylenes	EPA 8020	< 2	ug/kg	JPM	8/12/97
Chlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97

## ANALYTICAL REPORT

Project Name: Marshall Arbo Site  
Project No.: 080439

Work Order No.: 9708-02579

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Sample Desc.: Soil B-3/10'				Sample Date:	8/08/97
Sample Nos: 5				Collection Time:	14:00
Test Performed	Method	Results	Units	Analyst	Analysis Date
1,2-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,3-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
1,4-Dichlorobenzene	EPA 8020	< 2	ug/kg	JPM	8/12/97
Surrogate:				JPM	8/12/97
**1-Bromo-4-Fluorobenzene	EPA 8020	107	% Recovery	JPM	8/12/97
Total Solids	SM18 2540B	75.4	%	JPM	8/13/97

Authorized by: *Joann Slusoff*

APPENDIX E

LABORATORY REPORT - DRINKING WATER



AMERICAN ENVIRONMENTAL  
LABORATORIES, INC.

REPORT NUMBER: AA54596

LAB ID #: MA076

TO: Marshall Arbo  
P.O. Box 291 - Rte. 14  
E. Randolph, VT 05041

DATE RECEIVED : 01/10/95

DATE COLLECTED 01/09/95

COLLECTED BY : SAME

MATRIX : Water

PO/ID NUMBER : AA54596

SAMPLE DESCRIPTION: Same

- ANALYTICAL RESULTS -

PARAMETER	RESULT	UOM	TEST DATE	MDL	METHOD
Dichlorodifluoromethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Chloromethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Vinyl Chloride	ND	UG/L	01/10/95	0.5	EPA # 524.2
Bromomethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Chloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Trichlorofluoromethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1-Dichloroethene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Methylene Chloride	ND	UG/L	01/10/95	0.5	EPA # 524.2
Trans-1,2-Dichloroethene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1-Dichloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
2,2-Dichloropropane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Cis-1,2-Dichloroethene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Chloroform (THM)	ND	UG/L	01/10/95	0.5	EPA # 524.2
Bromochloromethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1,1-Trichloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1-Dichloropropene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Carbon Tetrachloride	ND	UG/L	01/10/95	0.5	EPA # 524.2
Benzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2-Dichloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Trichloroethene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2-Dichloropropane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Bromodichloromethane (THM)	ND	UG/L	01/10/95	0.5	EPA # 524.2
Dibromomethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Cis-1,3-Dichloropropene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Toluene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Trans-1,3-Dichloropropene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1,2-Trichloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,3-Dichloropropane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Tetrachloroethene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Dibromochloromethane (THM)	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2-Dibromoethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Chlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1,1,2-Tetrachloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Ethylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2

60 Elm Hill Avenue, Leominster, Massachusetts 01453  
(508) 534-1444 • 1-(800) 522-0094 • Fax: (508) 537-6252


**AMERICAN ENVIRONMENTAL  
LABORATORIES, INC.**

PARAMETER	RESULT	UOM	TEST DATE	MDL	METHOD
Total Xylenes	ND	UG/L	01/10/95	0.5	EPA # 524.2
Styrene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Bromoform (THM)	ND	UG/L	01/10/95	0.5	EPA # 524.2
Isopropylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,1,2,2-Tetrachloroethane	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2,3-Trichloropropane	ND	UG/L	01/10/95	0.5	EPA # 524.2
Bromobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
N-Propylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
2-Chlorotoluene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,3,5-Trimethylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
4-Chlorotoluene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Tert-Butylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2,4-Trimethylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Sec-Butylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
4-Isopropyltoluene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,3-Dichlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,4-Dichlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
N-Butylbenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2-Dichlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2-Dibromo-3-Chloropropane	ND	UG/L	01/10/95	1.0	EPA # 524.2
1,2,4-Trichlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Hexachlorobutadiene	ND	UG/L	01/10/95	0.5	EPA # 524.2
Napthalene	ND	UG/L	01/10/95	0.5	EPA # 524.2
1,2,3-Trichlorobenzene	ND	UG/L	01/10/95	0.5	EPA # 524.2

DILUTION FACTOR: NONE

PERCENT SURROGATE RECOVERY:

4-Bromofluorobenzene	112%
1,2-Dichlorobenzene D-4	112%

ANALYZED BY: (TAT)  
REVIEWED BY: (JP)

These results apply only to the actual sample as tested. The integrity of results is dependent upon the quality of the sampling technique and subsequent handling. Actual detection limits are the above reported MDL's multiplied by dilution factors, if any. American Environmental Laboratories, Inc. shall not be held liable for any interpretation of analytical results.

60 Elm Hill Avenue, Leominster, Massachusetts 01453  
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\* - Exceeds EPA Guidelines  
MDL - Method Detection Limit

ND - Not Detected  
UOM - Unit of Measure

Please Recycle ♻️



AMERICAN ENVIRONMENTAL  
LABORATORIES, INC.

REPORT NUMBER: AA54596

- LAB ID #: MA076 -

TO: Marshall Arbo P.O. Box 291 - Rte. 14 E. Randolph, VT 05041	DATE RECEIVED : 01/10/95 DATE COLLECTED : 01/09/95 COLLECTED BY : SAME MATRIX : Water
PO/ID NUMBER : AA54596	
SAMPLE DESCRIPTION: Same	

- ANALYTICAL RESULTS -

PARAMETER	RESULT	UOM	TEST DATE	MDL	METHOD
COLIFORM BACTERIA	NEGATIVE	POS/NEG	01/10/95	NEGATIVE	SM # 9222B
NITRATE	0.10	MG/L	01/10/95	0.02	EPA # 353.3
TURBIDITY	0.70	N.T.U.	01/10/95	0.10	SM # 214 A
SODIUM	3.00	MG/L	01/10/95	0.05	EPA # 200.7
POTASSIUM	3.40	MG/L	01/10/95	1.0	EPA # 200.7
COPPER	0.01	MG/L	01/10/95	0.006	EPA # 200.7
IRON	0.06	MG/L	01/10/95	0.003	EPA # 200.7
MANGANESE	0.01	MG/L	01/10/95	0.003	EPA # 200.7
MAGNESIUM	5.10	MG/L	01/10/95	0.004	EPA # 200.7
CALCIUM	39.30	MG/L	01/10/95	0.007	EPA # 200.7
HARDNESS	119.10	MG/L	01/10/95	1.0	SM # 314 B
ALKALINITY	85.00	MG/L	01/10/95	1.0	SM # 403
CHLORIDE	ND	MG/L	01/10/95	1.0	EPA # 407A
AMMONIA	ND	MG/L	01/10/95	0.01	EPA # 350.2
NITRITE	ND	MG/L	01/10/95	0.01	EPA # 354.1
SULFATE	23.10	MG/L	01/10/95	1.0	SM # 426 C
TDS	148.20	MG/L	01/10/95	1.0	SM # 209 B
SEDIMENT	NEGATIVE	POS/NEG	01/10/95	NEG	SM # 209 E
COLOR	2.00	C.U.	01/10/95	1.0	SM # 204 A
ODOR	ND	T.O.N.	01/10/95	0.50	SM # 207
pH	8.00	S.U.	01/10/95	0-14	SM # 423
LEAD SCAN	ND	MG/L	01/10/95	0.006	EPA # 200.7
ARSENIC SCAN	ND	MG/L	01/10/95	0.006	EPA # 206.2
SELENIUM SCAN	ND	MG/L	01/10/95	0.010	EPA # 200.7

ANALYZED BY: *MB*  
REVIEWED BY: *JP*

FOR THE ITEMS TESTED ON THIS PAGE ONLY, THIS SAMPLE MEETS THE FOLLOWING  
EPA GUIDELINES FOR DRINKING WATER :

[  ] PRIMARY [  ] SECONDARY [  ] NEITHER  
THIS STATEMENT IS INTENDED TO STATE THAT THE SAMPLE MEETS THE EPA GUIDELINES FOR DRINKING WATER FOR THE PARAMETERS ANALYZED.

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\* - Exceeds EPA Guidelines  
MDL - Method Detection Limit

ND - Not Detected  
LOM - Unit of Measure

APPENDIX F  
CORRESPONDENCE



State of Vermont

8:00-9:00  
728-4782

Department of Fish and Wildlife  
Department of Forests, Parks and Recreation  
Department of Environmental Conservation  
State Geologist  
RELAY SERVICE FOR THE HEARING IMPAIRED  
1-800-253-0191 TDD>Voice  
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation  
Waste Management Division  
103 South Main Street/West Office  
Waterbury, Vermont 05671-0404  
(802) 241-3888  
FAX (802) 241-3296

May 29, 1997

MARSHALL AND ELLALOU ARBO  
PO Box 291  
EAST RANDOLPH VERMONT 05041

RE: Gasoline contamination at the Marshall Arbo Property, East Randolph, Vermont (Site #95-1759)

Dear Mr. and Mrs. Arbo:

The Sites Management Section (SMS) received a site assessment report outlining the subsurface conditions at the above referenced site, conducted by Oscar Garcia of Dufresne-Henry, Inc. on February 14, 1995. This report summarized the degree and extent of contamination encountered during the tank closure assessment. The tanks that were closed included two (2) 750-gallon gasoline underground storage tanks (USTs). After removing the tank contents, both USTs were filled in place with concrete due to structures surrounding the tanks. According to Dufresne-Henry, Inc., one of these tanks was in poor condition.

Following the thorough cleaning of the USTs, the tank bottoms were cut and soil samples were obtained through the base of each UST. Soil samples obtained from beneath each tank had peak concentrations of 1,744 parts per million (ppm) and 1,175 ppm, as measured by a photoionization detector (PID). No petroleum contaminated soils were excavated during the UST closures. The location of the former UST piping and pump island(s) remains unclear, as neither were encountered during the assessment. Depth to groundwater is unknown, as it was not encountered during the tank closures. There is a bedrock well on-site, and according to Dufresne-Henry, Inc., all residences and businesses in the village have their own private water supplies. It was estimated that at least 15 private drinking water wells are located within a 0.5 mile radius of the site. Any potential sensitive environmental receptors (i.e., surface water bodies, wetlands, etc.) were not addressed in the assessment report.

Based on the above information, additional work is clearly needed at the site in order to determine the severity of contamination present. As such, you had agreed with your consultant to perform an expedited site investigation under the expressway program. This was indicated by the "Site Investigation Expressway Notification" form you submitted which estimated the completion of the investigation and the submittal of a summary report by April 10, 1995. Also, Chuck Schwer, SMS Supervisor, has verbally requested that you proceed with an investigation on more than one occasion. To date, no investigation report has been received indicating that no subsurface investigation was conducted. Due to the possibility of contaminant impact to nearby receptors, the SMS is now formally requesting that Marshall and Ellalou Arbo retain the services of a qualified environmental consultant to perform the following:

- Further define the degree and extent of contamination to the soil. This may be accomplished by obtaining soil borings, digging test pits, performing a soil gas survey or by another method approved by the SMS.
- Determine the degree and extent of contamination, if any, to groundwater. If soil is found to contain evidence of contamination at the water table, then a sufficient number of monitoring wells should be installed in locations which will adequately define the severity of contamination at the site. All groundwater samples taken should be analyzed for BTEX and MTBE compounds.
- Perform an assessment of the site to determine the potential for sensitive receptors to be impacted

by the contamination. This should include basements of adjacent buildings, nearby surface water, and any public or private drinking water wells which are located within the vicinity of the site. If the onsite building has a basement, then it should be screened for gasoline vapors. The onsite supply well should be sampled and analyzed for BTEX and MTBE compounds. If any other water supplies appear at risk from this contamination, they should also be sampled accordingly.

- Determine the need for a long term treatment and/or monitoring plan which addresses the contamination present at the site. The need for such a plan should be based on the results of the above investigations.
- Submit to the SMS a summary report which outlines the work performed, as well as provides conclusions and recommendations. Included should be analytical data, a site map showing the location of any potential sensitive receptors, an area map, and if monitoring wells are installed, detailed well logs and a groundwater contour map.

According to Section 8-604(5.) of the "Vermont Underground Storage Tank Regulations", *"owners or operators shall perform site investigations to determine the extent of soil and groundwater contamination. Information to be collected as part of such an investigation shall be reported in accordance with a schedule established by the Agency."* By way of this letter, the SMS requests the submittal of a work plan and cost estimate for the above requests within 15 days of your receipt of this letter. The schedule to follow also includes completing the investigation and submitting a summary report to the SMS within 60 days of your receipt of this letter. Failure to comply with this schedule is considered a significant violation of the Vermont UST Regulations. Ultimately, this means that you are jeopardizing use of the Petroleum Cleanup Fund at this site. In addition, your failure to comply with these requests may result in an action for injunctive relief (10 V.S.A. §1934) or the imposition of penalties and/or fines (10 V.S.A. §1935). Enclosed, please find a list of consultants who perform this type of work in the area as well as the brochure "Selecting Your UST Cleanup Contractor," which will help you in choosing an environmental consultant.

Based on current information, the underground storage tanks closed at the Marshall Arbo property are eligible for participation in the Petroleum Cleanup Fund (PCF) as set forth in 10 V.S.A. §1941. An owner or permittee of an underground storage tank that does not hold private insurance that would otherwise provide coverage for this situation, is eligible for reimbursement from the fund for certain expenses. You must provide written proof to the SMS that you hold no other applicable insurance in order to receive reimbursement from the PCF. The owner or permittee must pay for the removal and/or repair of the failed tank(s), and for the initial \$10,000.00 of the cleanup. The fund will reimburse the tank owner or permittee for additional eligible cleanup costs of up to \$1 million. All expenditures must be pre-approved by the Agency or performed in accordance with the "Site Investigation Guidance" expressway program in order for reimbursement to occur. Also, once the \$10,000.00 spending requirement has been met, reimbursement may *only* occur for submitted invoices that are less than one year old. Please refer to the enclosed guidance document titled, "Procedures for Reimbursement from the Petroleum Cleanup Fund" for additional information concerning the PCF. The Secretary of the Agency of Natural Resources reserves the right to seek cost recovery of fund monies spent at the Marshall Arbo Property site if the Secretary concludes that Marshall and Ellalou Arbo are in significant violation of the Vermont Underground Storage Tank Regulations or the Underground Storage Tank statute (10 V.S.A., Chapter 59). The SMS appreciates your immediate attention in this matter.

Sincerely,

  
Matthew Moran, Project Manager  
Sites Management Section

241-3243

Enclosures - (3)

cc: w/o enclosures  
Randolph Selectboard  
Randolph Health Officer  
Patrick French, Assessor for Randolph Board of Listers  
DEC Regional Office  
Oscar Garcia, Dufresne-Henry, Inc.