

DEC 21 1992



December 18, 1992

Mr. Richard Spiese
Petroleum Sites Management Section
Vermont Department of
Environmental Conservation
103 South Main Street
Waterbury, Vermont 05676

RE: Roseman Residence, Stowe, Vermont VDEC Site #92-1188

Dear Rich:

Lincoln Applied Geology, Inc. (LAG) has prepared a summary report for the Allstate Insurance Company describing the results of the CAP that has been implemented for the Roseman site. Mr. Toolin, Allstate's Claims Representative, has authorized us to provide you with the enclosed copy of that report.

Mr. Toolin has further authorized us to proceed with our recommendations delineated in the summary report. Those recommendations include continued VES operations through the winter with monthly LAG monitoring and maintenance. Quarterly water quality monitoring will be continued for one year commencing in February.

Please feel free to contact me or Bill Norland, LAG site manager, with any questions or comments you may have.

Sincerely,

John F. Amadon, CPSS

JFA/smd

Enclosures

cc: Robert Toolin



December 7, 1992

Mr. Robert Toolin
Allstate Insurance
Sr. Staff Claims Representative
P.O. Box 486
Williston, Vermont 05495

RE: Status Report on Roseman Residence, Stowe, Vermont (VDEC Site #92-1188)

Dear Mr. Toolin:

Lincoln Applied Geology, Inc. (LAG) has successfully implemented the corrective action plan (CAP) approved this past July by the Vermont Department of Environmental Conservation (VDEC) for the Roseman residence fuel oil leak. This letter report summarizes our CAP activities and the monitoring results, as well as our recommendations to reach site closure.

The CAP can be reviewed as three separate components; the soil vapor extraction system (SVE), the land farming of contaminated soils, and the continued water quality monitoring of the ground water and nearby private water supplies.

Construction of the SVE was completed essentially as delineated in **Figure 1**, and the regenerative blower and carbon treatment system have remained operational since early August. Weekly site visits were performed by LAG to assure that effective SVE operation and extracted vapor containment were occurring. A summary of the monitoring results obtained during the site visits is presented as **Table 1**.

The monitoring data includes ground water level measurements in MW-1 which was installed in May 1992. Boring log with well construction details are attached as **Appendix A**, and the location of MW-1 is depicted in **Figure 1**. At no point during any site monitoring was free floating product detected in MW-1.

HNU photoionization (PID) assays were obtained from MW-1, VP-1, VP-2, and several points before, between, and after the carbon vapor treatment system. These data are presented in **Table 1** HNU (PPM) for the respective monitor points. PID assays are utilized as a relative indicator of vapor concentrations.

Mr. Robert Toolin
Page 2
December 7, 1992

Magnehelic and manometer readings were regularly obtained to ascertain vacuums and pressures at various points in the SVE to assure effective operation. These data were also utilized to calculate the overall VES flow rate of 77.5 cfm (cubic feet per minute). The data has been further analyzed and the **Figure 2** Trend Graph was prepared which shows an overall decrease in extracted vapor concentration over time. The fluctuations in ground water levels, as evidenced by MW-1, do not appear to have any impact on vapor recovery rate. While the vapor flow rate has remained constant and vapor concentrations have decreased, some vapors continue to be removed.

Due to the smooth operation of the SVE, coupled with limited breakthrough of the carbon treatment, site monitoring has been phased back to once every two weeks. We anticipate a further phase back to monthly monitoring over the course of the winter. Prior to this, however, the carbon canisters should be rotated and a new canister brought on-line.

The land farming operations also commenced in early August to treat the contaminated soils which had been stockpiled following the initial evaluations performed by Heindel and Noyes, Inc. The five cubic yards of soil were thin spread approximately 20 feet from where they had been stockpiled. Following the VDEC land farming protocols, samples were obtained for laboratory analysis, manure was added to the land farm, and the soils were regularly rototilled to provide aeration for the biological breakdown of oil products within the soils. Following the last rototilling on October 13, 1992, soil samples were again taken for laboratory analyses, and the site was seeded down with a conservation grass mix. Based on the analytical results summarized in **Table 2** no further tilling is necessary and the land farming operation is completed as defined in the VDEC protocols.

The data points in **Table 3** refer to the land farm grid originally delineated for both PID monitoring and composite soil sampling for laboratory analyses. **Table 3** also delineates the rototilling schedule that was followed.

Copies of the formal analytical results of the soil samplings are included in **Appendix B**. These results shows that total hydrocarbons by the 418.1 methodology decreased from 180 ppm (mg/kg) to less than the detection limit of 6.1 ppm. Results of the method 8240 volatile organics analyses show a BTEX decrease from 670 ppb (ug/kg) to less than the detection limit of 20 ppb.

The third component of the CAP involved continued monitoring of several of the nearby private water supplies and MW-1. No impact to any of these sampling points has been detected. Copies of the analytical results and



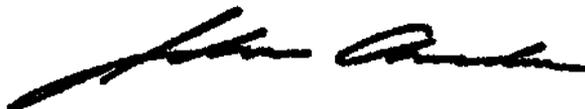
Mr. Robert Toolin
Page 3
December 7, 1992

chain of custody forms are included in **Appendix C**. A summary of the analytical results is presented in **Table 3**. The locations of the wells and the Roseman site are depicted on **Figure 3**, which has already been presented in previous reports.

In summary, we believe that the fuel oil release has been adequately investigated and remediated. We do, however, recommend that the SVE continue to be operated through the winter with monthly site evaluations by LAG staff. Prior to phasing back to monthly site visits the vapor phase carbon treatment system needs to be exchanged in order to assure that no breakthrough of vapors from the carbon to the atmosphere will occur. We further recommend that quarterly ground water sampling and analysis be continued for a minimum one year period.

Please feel free to contact me or Bill Norland, LAG site manager, with any questions or comments you may have. We appreciate the opportunity to be of assistance to you and, upon your approval, we will forward a copy of this summary report to Mr. Spiese of the VDEC.

Sincerely,



John F. Amadon
Project Manager

JFA/smd

Enclosures



Table 2

Project: Roseman ResidenceJob # 9114Location: Stowe, VermontSheet # 1 of 1**Soil Landfarm: HNu PID Readings (ppm), Rototill Schedule, and Analytical Results**

Data Point	8-7-92	9-4-92	9-15-92	9-24-92	10-13-92			
SP-1		0.4	0.2		BG			
SP-2		1.0	6.0		BG			
SP-3		0.2	0.2		0.2			
SP-4		BG	1.0		BG			
SP-5		0.2	0.4		0.2			
SP-6		5.0	0.4		BG			
SP-7		BG	5.0		0.2			
SP-8		BG	0.4		0.4			
SP-9		0.4	BG		1.0			
SP-10		BG	0.2		BG			
Rototilled?	Yes	Yes	No	Yes	Yes			
Native Soil 0"-12" Total Hydrocarbons (ppm)	ND							
Total Hydrocarbons (ppm)	ND							
Land farm 0"-6" Total Hydrocarbons (ppm)	180							
Land farm 0"-12" Total Hydrocarbons (ppm)					ND			
Land farm 12"-18" Total Hydrocarbons (ppm)					ND			
Land Farm 0"-6" BTEX/MTBE (ppb)	670 / ND							
Land Farm 0"-12" BTEX/MTBE (ppb)					ND / ND			

Table 3

Project: Roseman Residence
 Location: Stowe, Vermont

Job # 9114
 Sheet # 1 of 1

Chemical Ground Water Quality Results (ppb)								
Data Point	5-4-92	5-29-92	8-12-92	8-19-92	8-28-92	11-10-92		
MW-1		<5	<4		<5	<4		
Roseman Spring	<5	<4			<5	<4		
Holden Spring	<5	<4			<5	<4		
Douglas Well	<5	<4	<5	<4		<5	<4	
Cortes Well	<5	<4	<5	<4		<5	<4	
Trip Blank	<5	<4				<5	<4	

BTEX
MTBE Concentration (ppb)

PLAN VIEW

Roseman House

Former Location of LUST

Figure 1

Roseman Residence

Location:

Stowe, VT

Scale:

Not to Scale

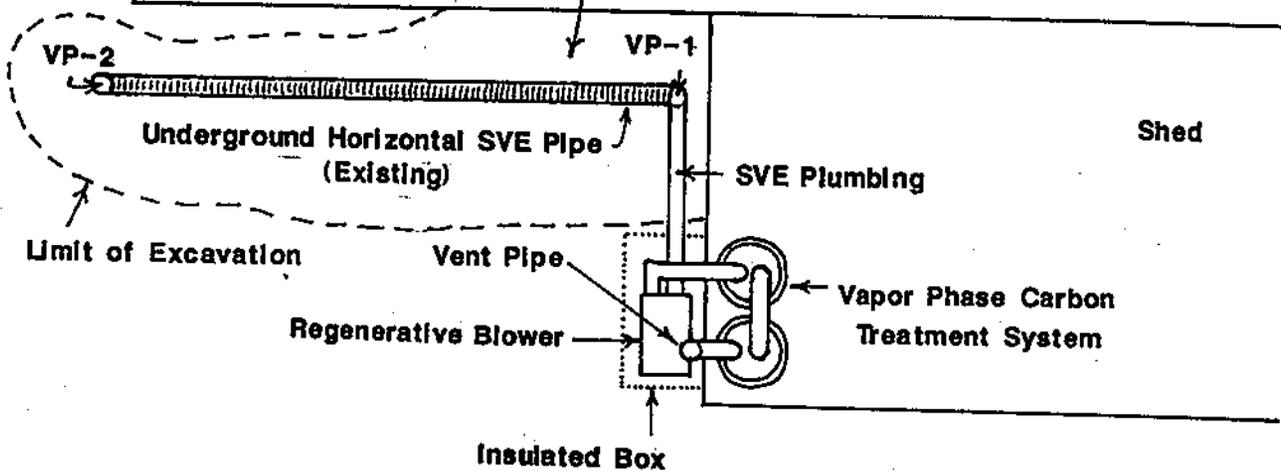
Existing
Soil Vapor Extraction Piping
and
Existing Treatment System

Date:

June 1992

Job Type:

Fuel Oil Contamination



CROSS-SECTION

Roseman House

Vent Pipe
(Discharge above roofline)

Shed

2" PVC Solid Riser with Cap

Insulated Box

Carbon Treatment System

MW-1

Ground Surface

Regenerative Blower

15'

15'

6 mil. Polyethylene
Plastic Sheet

VP-2 Backfill

VP-1

6'

8.7'

Weathered Bedrock Surface

1" Crushed Stone

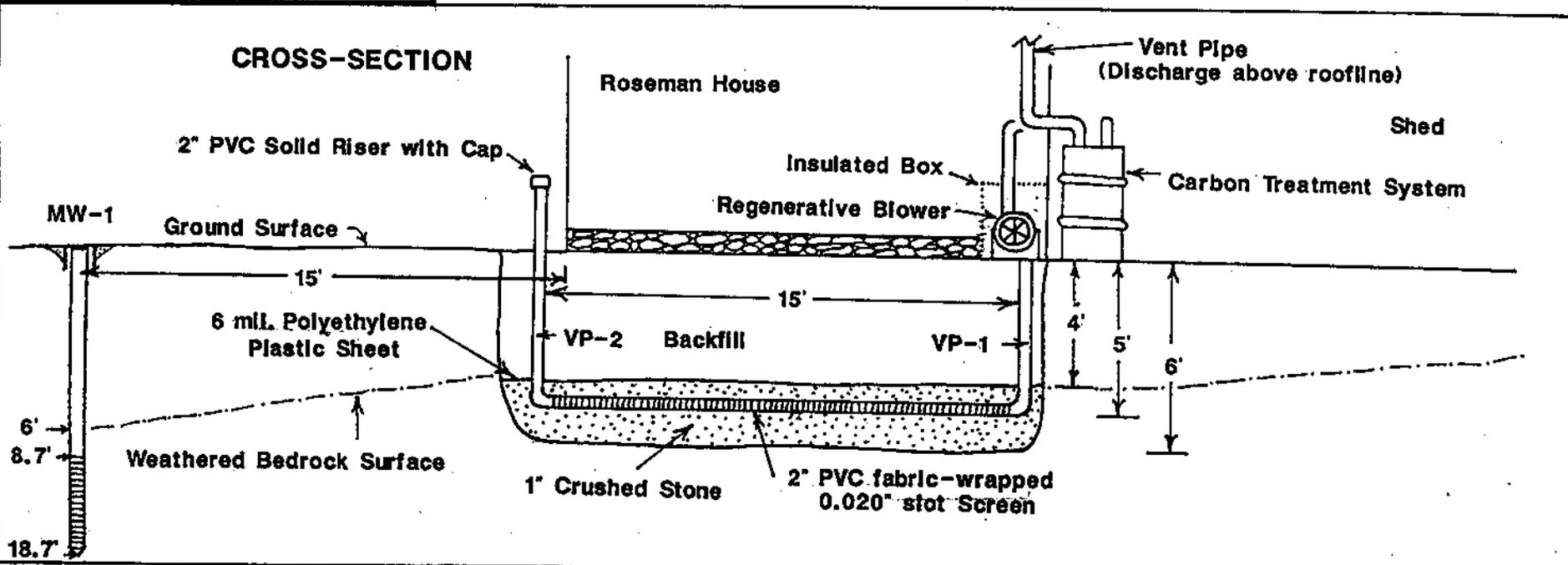
2" PVC fabric-wrapped
0.020" slot Screen

4'

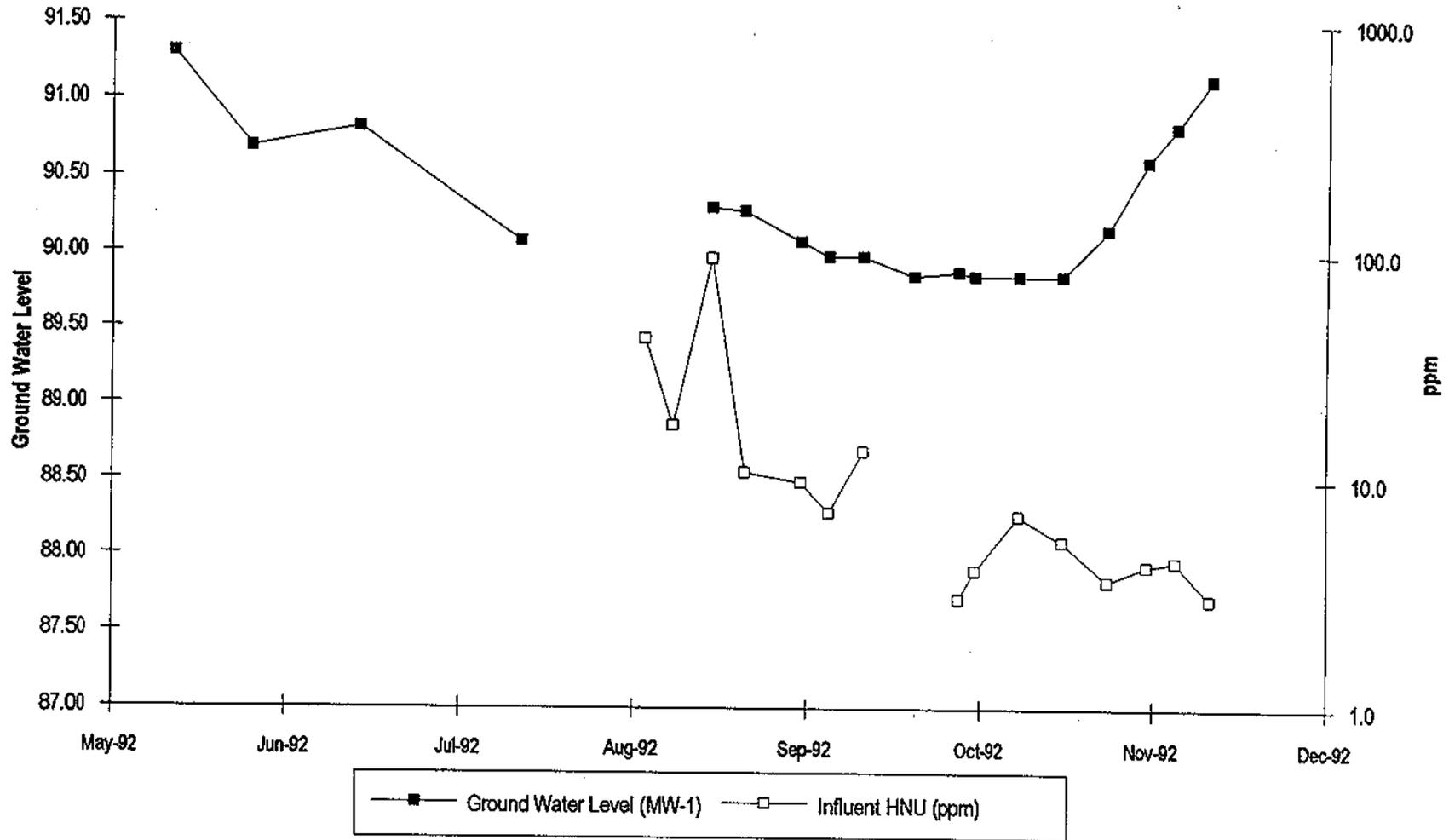
5'

6'

18.7'



Roseman Residence Ground Water Level and Influent HNU



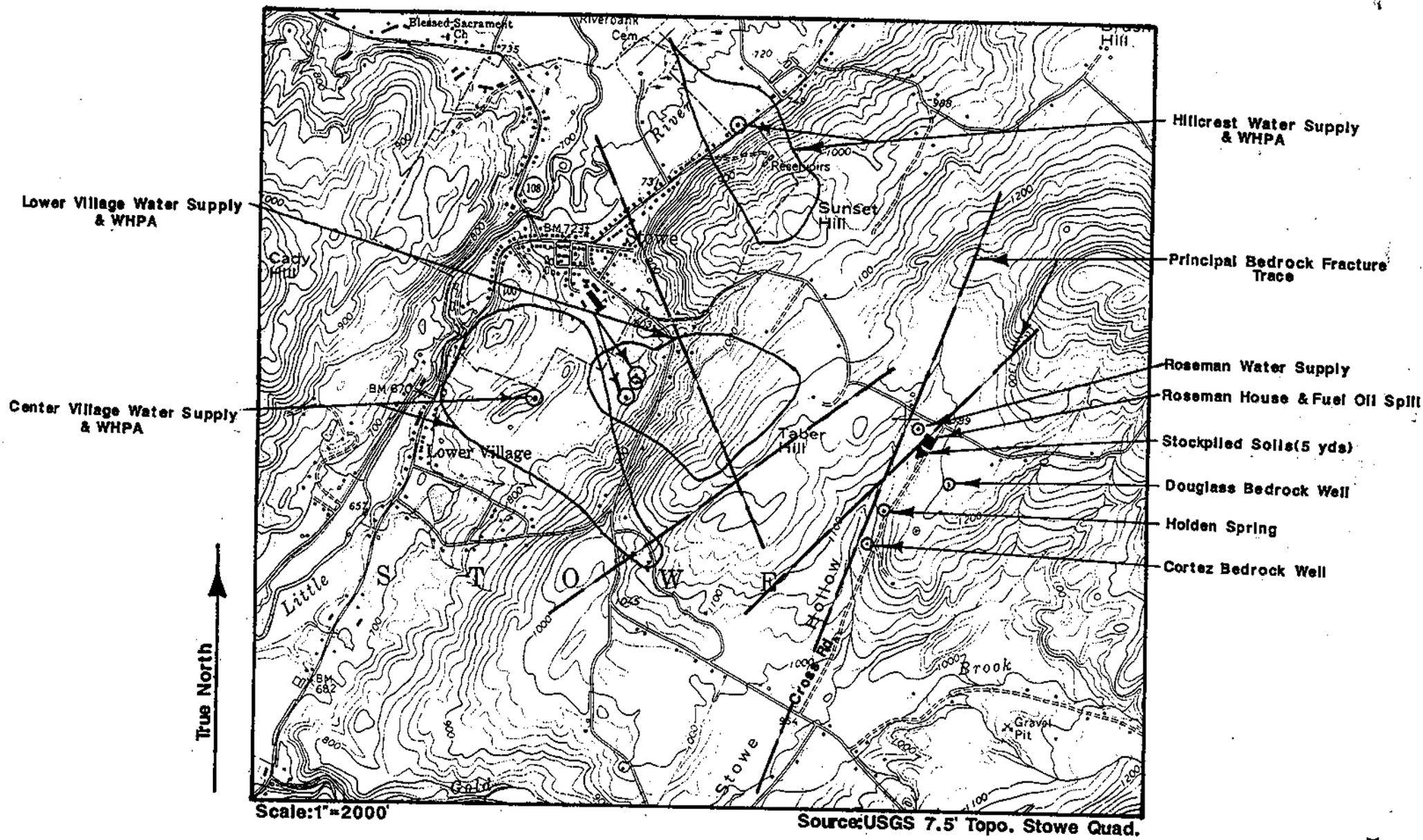


FIGURE 3

APPENDIX A

Boring Log and Well Construction Details

ADAMS ENGINEERING
Gerard Adams
RD #1, Box #3700
Underhill, Vt. 05489
899-4945 FAX 899-4376
Fed. ID 03-0296943

May 14, 1992

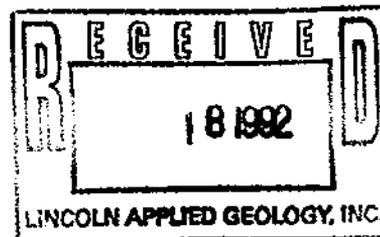
Mr. Bill Norland
Lincoln Applied Geology

The following are the boring logs for the Roseman/Stowe project conducted under your direction:

SOILS	WELL	
	-.2'	Top of well 10' solid riser.
	-1.5'+-	Top of sand over bentonite pellets over Pure Gold grout.
-2.8'		Bottom of 5" surface casing.
-3.9'		Bottom of 4" casing initial set, not solid rock.
-6.7'		Bottom of 4" casing, reset. Not solid rock.
	-7.2'	Bottom of bentonite grout top of sand pack 1-50# bags .49 mm pool filter sand placed wet.
	-8.8'	Top of well screen 10' X 2" X .010" slot Pyramid.
-9.1'		Bottom of 3.875" Tricone had been drilling soft schist for some depth.
-9.1>9.3'		NW. Core, terminated as advance was so fast it was believed that rock was penetrated and coring of soils.
-9.3>14.4'		Core. Weathered schist. Pumped hole dry water level and point of entry about -9'.
-14.4>20.2'		Core. Same. Water level dropping toward -9', pumped hole dry, water level rose toward -9'.
	-18.4'	Bottom of screen.
	-18.7'	Bottom of pack & well.

Well pumped out after completion.

sa
Gerard Adams



WELL LOG

WELL: MW-1
LOCATION: Roseman Residence, Stowe, Vermont
DRILLER: Adams Engineering, Underhill, Vermont
HYDROGEOLOGIST: Bill Norland, Lincoln Applied Geology, Inc.
DATE: May 13, 1992

Soils Description

BG = 0.3 ppm

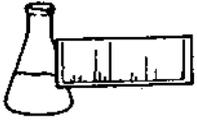
<u>Depth</u>	<u>Description</u>	<u>HNU (ppm)</u>
0'	Grass and topsoil.	
3.9'	4" diameter casing set.	
4.1'	Rollerbit with Tri-Cone from surface to 9.1' depth.	
6.0'	Weathered mica schist bedrock.	
9.1 - 9.3'	Core: gray, fractured mica schist.	BG
9.3 - 14.4'	Core: green, mica schist with quartz layers (9.3 - 11.5'); green, fractured mica schist (12.5 - 13.8'); orange rust, weathered fracture zone with schist fragments (13.8 - 14.3').	BG
14.4 - 20.2'	Core: recover only two fragments of gray to green mica schist - probably within large fracture zone, highly weathered.	BG

Well Construction

Bottom of Boring: 20.2'
Well Screen: (10') 8.7 - 18.7'; 2" PVC, sch. 40, 0.020" slot
Solid Riser: (8.5') 0.2 - 8.7'; 2" PVC, sch. 40
Sand Pack: (11.5') 7.2 - 18.7'
Bentonite Seal: (5.2') 2.0 - 7.2' slurry, then 1.5 - 2.0' pellets
Backfill: (1') 0.5 - 1.5'
Well Box: One, cemented flush with ground surface

APPENDIX B

Analytical Analyses of Soil Samples



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (SOIL)

CLIENT: Lincoln Applied Geology
REPORT DATE: August 21, 1992
PROJECT NAME: Roseman/Stowe
PROJECT CODE: LARS1914
DATE SAMPLED: August 7, 1992
DATE RECEIVED: August 11, 1992
DATE ANALYZED: August 20, 1992
SAMPLER: Bill Norland

Reference number:

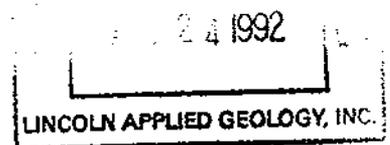
Concentration (mg/kg)¹

34,227
34,228
34,229

ND²
ND
180.

Sample ID:

34,227: Native Soil 0"-12"
34,228: Native Soil 12"-18"
34,229: Landfarm 0"-6"



Notes:

- 1 Method detection limit is 6.1 ppm
- 2 None detected

Reviewed by

Sean G. Hill



Laboratory Services

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Williston, Vermont 05495
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FAX 879-7103

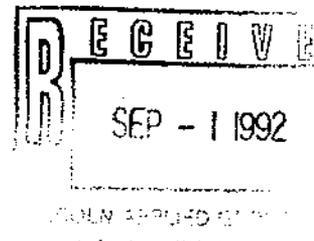
LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman/Stowe
REPORT DATE: September 1, 1992
SAMPLER: Bill Norland
DATE SAMPLED: August 7, 1992
DATE RECEIVED: August 11, 1992

PROJECT CODE: LARS1915
ANALYSIS DATE: August 25, 1992
STATION: Landfarm 0"-6"
REF.#: 34,230
TIME SAMPLED: Not Indicated

<u>Parameter</u>	<u>Quantitation Limit (ug/kg)</u>	<u>Concentration (ug/kg dry wt.)</u>
Acetone	100	ND ¹
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzene	5	ND
1,2 Dichlorobenzene	5	ND
1,4 Dichlorobenzene	5	ND





Laboratory Services

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Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 8240 (continued)

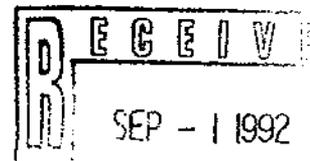
Ref.#: 34,230

<u>Parameter</u>	<u>Quantitation Limit (ug/kg)</u>	<u>Concentration (ug/kg dry wt.)</u>
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	670.
MTBE	5	ND

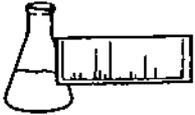
NUMBER OF UNIDENTIFIED PEAKS FOUND: >25

NOTES:

1 None detected



Reviewed by Susan Dade



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (SOIL)

CLIENT: Lincoln Applied Geology
REPORT DATE: October 23, 1992
PROJECT NAME: Roseman's
PROJECT CODE: LARS1459
DATE SAMPLED: October 13, 1992
DATE RECEIVED: October 13, 1992
DATE ANALYZED: October 20, 1992
SAMPLER: Not Indicated

Reference number:

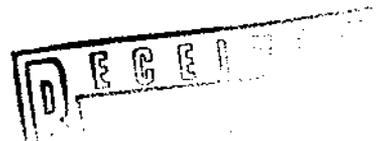
Concentration (mg/kg)¹

37,053
37,054

ND²
ND

Sample ID:

37,053: Composite #1; 10:30 (Landfarm 0"-12")
37,054: Composite #2; 11:00 (Landfarm 12"-18")

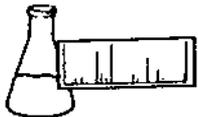


Notes:

- 1 Method detection limit is 6.1 ppm
- 2 None detected

APPLIED GEO

Reviewed by _____



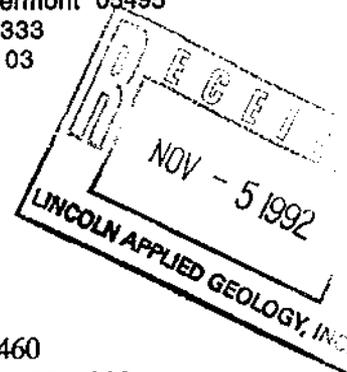
ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

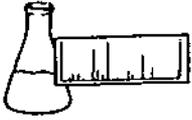
EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES



CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 3, 1992
SAMPLER: Not Indicated
DATE SAMPLED: October 13, 1992
DATE RECEIVED: October 13, 1992

PROJECT CODE: LARS1460
ANALYSIS DATE: October 27, 1992
STATION: Composit #3 (Landfarm 0"-12")
REF.#: 37,055
TIME SAMPLED: 11:30

<u>Parameter</u>	<u>Quantitation Limit (ug/kg)</u>	<u>Concentration (ug/kg dry wt.)</u>
Acetone	100	ND ¹
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzene	5	ND
1,2 Dichlorobenzene	5	ND
1,4 Dichlorobenzene	5	ND



ENDYNE, INC.

Laboratory Services

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

NOV - 5 1992
LINCOLN APPLIED GEOLOGY, INC.

EPA METHOD 8240 (continued)

Ref.#: 37,055

<u>Parameter</u>	<u>Quantitation Limit (ug/kg)</u>	<u>Concentration (ug/kg dry wt.)</u>
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Total Xylenes	5	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >25

NOTES:

1 None detected

Reviewed by _____

APPENDIX C

Endyne Laboratory Reports



ENDYNE, INC.

Laboratory Services

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

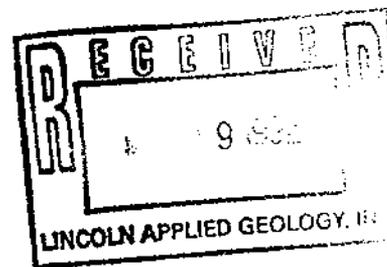
LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: May 15, 1992
SAMPLER: Bill Norland
DATE SAMPLED: May 4, 1992
DATE RECEIVED: May 4, 1992

PROJECT CODE: LARS7534
ANALYSIS DATE: May 11, 1992
STATION: Roseman Spring
REF.#: 30,404
TIME SAMPLED: 14:00

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	1.	ND ¹
Chlorobenzene	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	1.	ND
MTBE	1.	ND

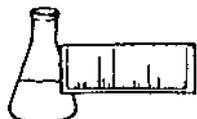


NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by Suzanne Daulton



ENDYNE, INC.

Laboratory Services

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

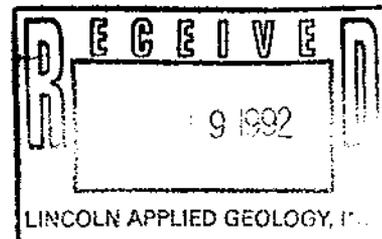
LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: May 15, 1992
SAMPLER: Bill Norland
DATE SAMPLED: May 4, 1992
DATE RECEIVED: May 4, 1992

PROJECT CODE: LARS7534
ANALYSIS DATE: May 11, 1992
STATION: Holden Spring
REF.#: 30,402
TIME SAMPLED: 15:00

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	1.	ND ¹
Chlorobenzene	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	1.	ND
MTBE	1.	ND



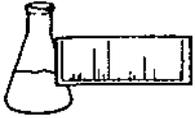
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by

Susan F. Stahl



ENDYNE, INC.

Laboratory Services

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

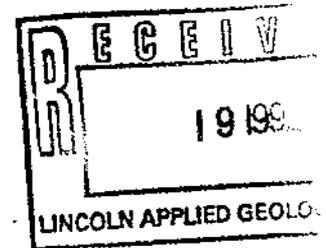
LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: May 15, 1992
SAMPLER: Bill Norland
DATE SAMPLED: May 4, 1992
DATE RECEIVED: May 4, 1992

PROJECT CODE: LARS7534
ANALYSIS DATE: May 11, 1992
STATION: Douglas Well
REF.#: 30,405
TIME SAMPLED: 14:45

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	1.	ND ¹
Chlorobenzene	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	1.	ND
MTBE	1.	ND



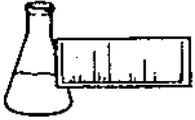
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by

Stan Anderson



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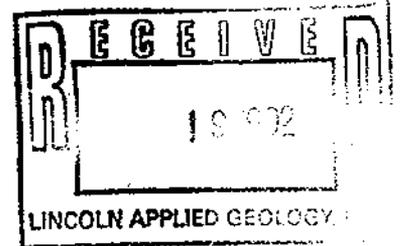
LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: May 15, 1992
SAMPLER: Bill Norland
DATE SAMPLED: May 4, 1992
DATE RECEIVED: May 4, 1992

PROJECT CODE: LARS7534
ANALYSIS DATE: May 11, 1992
STATION: Cortes Well
REF.#: 30,403
TIME SAMPLED: 15:30

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	1.	ND ¹
Chlorobenzene	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	1.	ND
MTBE	1.	ND



NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by *Susan D. [Signature]*



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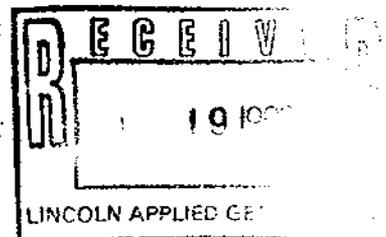
LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: May 15, 1992
SAMPLER: Bill Norland
DATE SAMPLED: May 4, 1992
DATE RECEIVED: May 4, 1992

PROJECT CODE: LARS7534
ANALYSIS DATE: May 11, 1992
STATION: Trip Blank
REF.#: 30,406
TIME SAMPLED: 9:15

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	1.	ND ¹
Chlorobenzene	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	1.	ND
MTBE	1.	ND

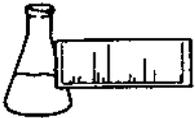


NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by *Sevan Arslan*



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman
REPORT DATE: June 13, 1992
DATE SAMPLED: May 29, 1992
DATE RECEIVED: May 29, 1992
ANALYSIS DATE: June 11, 1992

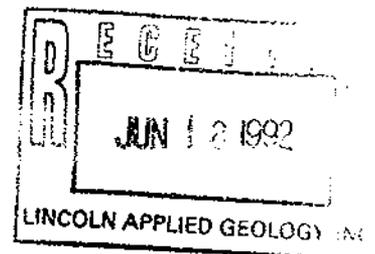
PROJECT CODE: LARS1105
REF.#: 31,378
STATION: MW-1
TIME SAMPLED: 12:00
SAMPLER: James

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	1	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



Reviewed by _____



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Rosemans
REPORT DATE: August 26, 1992
DATE SAMPLED: August 12, 1992
DATE RECEIVED: August 12, 1992
ANALYSIS DATE: August 26, 1992

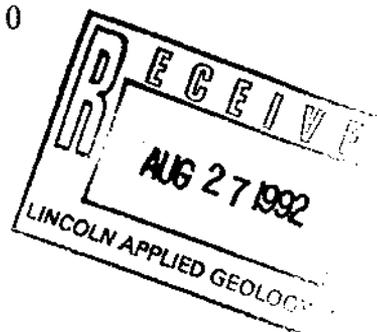
PROJECT CODE: LARS1930
REF.#: 34,282
STATION: John Douglas
TIME SAMPLED: 10:05
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



Reviewed by _____



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Rosemans
REPORT DATE: August 26, 1992
DATE SAMPLED: August 12, 1992
DATE RECEIVED: August 12, 1992
ANALYSIS DATE: August 25, 1992

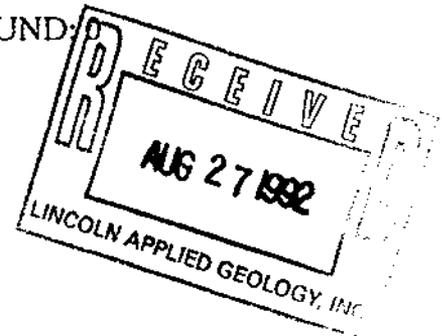
PROJECT CODE: LARS1930
REF.#: 34,281
STATION: Jose Cortes
TIME SAMPLED: 9:55
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND:

NOTES:

1 None detected



Reviewed by _____



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Rosemans
REPORT DATE: August 30, 1992
DATE SAMPLED: August 19, 1992
DATE RECEIVED: August 19, 1992
ANALYSIS DATE: August 29, 1992

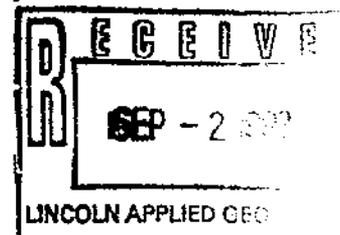
PROJECT CODE: LARS1983
REF.#: 34,521
STATION: MW1
TIME SAMPLED: 10:30
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:

1 None detected



Reviewed by

Syann Gilde



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LABORATORY REPORT

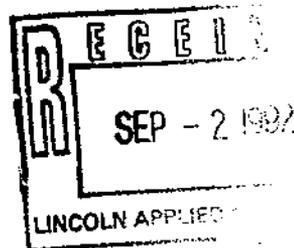
GC METHOD -- BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: August 31, 1992
DATE SAMPLED: August 28, 1992
DATE RECEIVED: August 28, 1992
ANALYSIS DATE: August 31, 1992

PROJECT CODE: LARO1071
REF.#: 34,977
STATION: Roseman's
TIME SAMPLED: 10:15
SAMPLER: Jim Holman

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0



NOTES:

- 1 Compound not detected in analysis

Reviewed by Bryan Fisher



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LABORATORY REPORT

GC METHOD -- BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: August 31, 1992
DATE SAMPLED: August 28, 1992
DATE RECEIVED: August 28, 1992

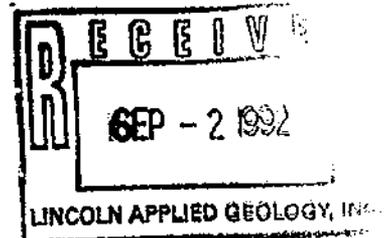
PROJECT CODE: LARO1071
REF.#: 34,978
STATION: Holden
TIME SAMPLED: 10:30

ANALYSIS DATE: August 31, 1992

SAMPLER: Jim Holman

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	1	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0



NOTES:

- 1 Compound not detected in analysis

Reviewed by Sean Doble



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 24, 1992
DATE SAMPLED: November 10, 1992
DATE RECEIVED: November 10, 1992
ANALYSIS DATE: November 21, 1992

PROJECT CODE: LARS1505
REF.#: 38,400
STATION: MW 1
TIME SAMPLED: 10:15
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

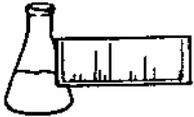
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Reviewed by _____



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 24, 1992
DATE SAMPLED: November 10, 1992
DATE RECEIVED: November 10, 1992
ANALYSIS DATE: November 21, 1992

PROJECT CODE: LARS1505
REF.#: 38,401
STATION: Roseman Well
TIME SAMPLED: 10:25
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

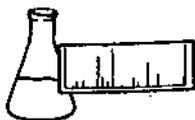
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 24, 1992
DATE SAMPLED: November 10, 1992
DATE RECEIVED: November 10, 1992
ANALYSIS DATE: November 23, 1992

PROJECT CODE: LARS1505
REF.#: 38,404
STATION: Douglas
TIME SAMPLED: 11:02
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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FAX 879-7103

LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 24, 1992
DATE SAMPLED: November 10, 1992
DATE RECEIVED: November 10, 1992
ANALYSIS DATE: November 21, 1992

PROJECT CODE: LARS1505
REF.#: 38,403
STATION: Cortes
TIME SAMPLED: 10:43
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

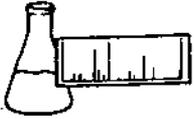
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Reviewed by _____



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LABORATORY REPORT

GC METHOD--BTEX (BENZENE, TOLUENE, ETHYLBENZENE,XYLENES)

CLIENT: Lincoln Applied Geology
PROJECT NAME: Roseman's
REPORT DATE: November 24, 1992
DATE SAMPLED: November 10, 1992
DATE RECEIVED: November 10, 1992
ANALYSIS DATE: November 21, 1992

PROJECT CODE: LARS1505
REF.#: 38,399
STATION: Trip Blank
TIME SAMPLED: 8:00
SAMPLER: D. Gale

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____

LINCOLN APPLIED GEOLOGY, INC.



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CHAIN-OF-CUSTODY RECORD

003934

Project Name: <i>Roseman</i> Site Location: <i>Stowe, VT</i>	Reporting Address: <i>LAG</i>	Billing Address: <i>LAG</i>
Endyne Project Number:	Contact Name: <i>Bill Norland 453-4384</i> Company/Phone #: <i>Lincoln Applied Geology</i>	Sampler Name: <i>Bill Norland</i> Company/Phone #: <i>LAG</i>

Lab #	Sample Description	Time	Matrix	Date/Time	Container		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
					No.	Type/Size				
	<i>Holden Well</i>	<i>1500</i>	<i>Water</i>	<i>5/4/92</i>	<i>2</i>	<i>40ml Glass</i>		<i>602</i>	<i>HCl</i>	
	<i>Cortes Well</i>	<i>1530</i>	↓	↓	↓	↓		↓	↓	
	<i>Roseman Spring</i>	<i>1400</i>	↓	↓	↓	↓		↓	↓	
	<i>Douglas Well</i>	<i>1445</i>	↓	↓	↓	↓		↓	↓	
	<i>Trip Blank</i>	<i>0915</i>	↓	↓	↓	↓		↓	↓	

Relinquished by: Signature <i>William Norland</i>	Received by: Signature <i>Loretta Sandoz</i>	Date/Time <i>5/4/92</i>
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 606 Pcs/PCB	29	EPA 8060
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	EPTOX
31	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
32	Other (Specify):										

LABORATORY: WHITE

PROJECT MANAGER: YELLOW

SAMPLER: PINK

CHAIN-OF-CUSTODY RECORD

004426

Project Name: <i>Roseman / Stowe</i>	Reporting Address: <i>L.A.G. RD 1 Box 710 Bristol VT 05443</i>	Billing Address: <i>- same -</i>
Site Location: <i>Stowe, VT</i>		
Endyne Project Number:	Contact Name: <i>Bill Norland</i>	Sampler Name: <i>Bill Norland</i>
	Company/Phone #: <i>LAG / 453-4384</i>	Company/Phone #: <i>- same -</i>

Lab #	Sample Description	Matrix	Date/Time	Container		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
				No.	Type/Size				
	<i>Native Soil 0"-12"</i>	<i>Soil</i>	<i>8/7/92</i>	<i>2</i>	<i>40 ml VOA</i>		<i>418.1</i>		
	<i>Native Soil 12"-18"</i>	<i>Soil</i>	<i>8/7/92</i>	<i>2</i>	<i>40 ml VOA</i>		<i>418.1</i>		
	<i>Landfarm 0"-6"</i>	<i>Soil</i>	<i>8/7/92</i>	<i>2</i>	<i>40 ml VOA</i>		<i>418.1</i>		
	<i>Landfarm 0"-6"</i>	<i>Soil</i>	<i>8/7/92</i>	<i>2</i>	<i>40 ml VOA</i>		<i>8240</i>		

Relinquished by: Signature <i>William Norland</i>	Received by: Signature <i>James W. ...</i>	Date/Time <i>10-11-92 11:45 AM</i>
---	--	------------------------------------

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>Laura M. Chambers</i>	Date/Time <i>11 Aug 92 3:45</i>
---	---	---------------------------------

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 606 Pests/PCB	29	EPA 8060
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	EPTOX
31	TCCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
32	Other (Specify) <i>see above</i>										

