



OK (1108)
RF 9/21/95

August 15, 1995

Mr. Bizhan Yahyazadeh
Facilities Operations Manager
Vermont College
College St.
Montpelier, VT 05602

RE: 1995 Annual Report , Vermont College, VTDEC Site #91-1108

Dear Mr. Yahyazadeh,

Since our last report on July 7, 1994 Griffin has continued monthly gauging of four monitoring wells and has completed the June 1995 annual sampling of all monitoring wells. This report will describe the results of the well gauging and recent groundwater sampling, and conclusions and recommendations are presented. Please note that Griffin is recommending the complete removal of the remaining above ground components, as they likely will not be utilized in the future.

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

Sincerely,

Peter G. Hack, EIT

c: Richard Spiese, VTDEC

**REPORT ON THE SUBSURFACE INVESTIGATIONS
AT
VERMONT COLLEGE
MONTPELIER, VT**

VTDEC Site # 91-1108

Prepared for:

**Vermont College
College Street
Montpelier, VT 05602**

Prepared by:



**19 Commerce Street, PO Box 943
Williston, VT 05495**

(802) 865-4288

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I. Introduction

Subsurface petroleum contamination was detected during a 1991 routine replacement of a fuel oil underground storage tank at Vermont College. Griffin International, Inc. was contracted by Vermont College to perform groundwater monitoring, remove petroleum product from the subsurface, and operate a groundwater collection and treatment system at this site. On-going groundwater monitoring and operation of the collection system has provided data indicating that contamination has not migrated beyond the vicinity of the original tank. Therefore, in September, 1993, the collection system was shut off, and some components were subsequently removed in December, 1994. Through June, 1995, Griffin has continued to gauge the four contaminated monitoring wells on a monthly basis, and has performed sampling and analysis of all monitoring wells on a bi-annual and annual basis.

This July, 1995 report details the latest groundwater sampling and analysis and monthly gauging activities, and presents recommendations for future site monitoring. A site map is included in Appendix 1.

II. Well Gauging and Free Product Recovery

In order to address the free product that is sometimes present in MW1, MW3, and MW4, Griffin performed monthly gauging of these wells to document the amount of free product floating on the water table. A "Soak-Ease" petroleum absorption tube has been installed, changed, and rotated in these wells to aid in the recovery of free product. A record of "Free Product Measurements" is included in Appendix 2.

The amount of free product detected in monitoring wells MW1 and MW3 has been 0.02' or less since July 1994, with few exceptions. The gauging data is attached for reference.

Monitoring well #4 has contained free product since the beginning of this project. The average product thickness measured since June, 1994 is calculated to be 0.44', with a maximum and minimum thickness of 0.75' and 0.19', respectively. This amount appears to be relatively stable, and there is usually not a sufficient amount of product to effectively bail. However, Griffin has recovered approximately two gallons of free product from MW4 by manually bailing when initial product thickness is greater than 6".

The free product that has been detected in MW1 and MW3 does not appear to be significantly dissolved in the groundwater, as indicated by the water quality analyses of these wells.

III. Groundwater Sampling and Analysis

On June 27, 1995, Griffin collected groundwater samples from five of the nine on site groundwater monitoring wells. Free product was detected in three wells, as described above, and MW9 did not contain a sufficient amount of water for sampling. All samples were collected,

Monitoring Well 9

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	ND	no	ND	ND	no	no	no
Chlorobenzene	ND	sample	ND	ND	sample	sample	sample
1,2-DCB	ND	available	ND	ND	available	available	available
1,3-DCB	ND	(dry well)	ND	ND	(dry well)	(dry well)	(dry well)
1,4-DCB	ND		ND	ND			
Ethylbenzene	ND		4.9	ND			
Toluene	ND		ND	ND			
Xylenes	ND		3.2	ND			
Total BTEX	ND		8.1	ND			
MTBE	ND		ND	ND			
BTEX + MTBE	ND		8.1	ND			
TPH	ND		N/A	ND			

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

Monitoring Well 10

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	ND		ND	ND	ND	ND	ND
Chlorobenzene	ND		ND	ND	ND	ND	ND
1,2-DCB	ND		ND	ND	ND	ND	ND
1,3-DCB	ND		ND	ND	ND	ND	ND
1,4-DCB	ND		ND	ND	ND	ND	ND
Ethylbenzene	ND		ND	ND	ND	ND	ND
Toluene	ND		ND	ND	ND	ND	ND
Xylenes	ND		ND	ND	ND	ND	ND
Total BTEX	ND		ND	ND	ND	ND	ND
MTBE	ND		ND	ND	ND	ND	ND
BTEX + MTBE	ND		ND	ND	ND	ND	ND
TPH	3.7	1.	1.6	1.	1.	6.9	2.0

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

Monitoring Well 11

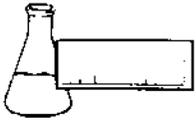
PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	ND		ND	ND	ND	ND	ND
Chlorobenzene	ND		ND	ND	ND	ND	ND
1,2-DCB	ND		ND	ND	ND	ND	ND
1,3-DCB	ND		ND	ND	ND	ND	ND
1,4-DCB	ND		ND	ND	ND	ND	ND
Ethylbenzene	ND		ND	ND	ND	ND	ND
Toluene	ND		ND	ND	ND	ND	ND
Xylenes	ND		ND	ND	ND	ND	ND
Total BTEX	ND		ND	ND	ND	ND	ND
MTBE	ND		ND	ND	ND	ND	ND
BTEX + MTBE	ND		ND	ND	ND	ND	ND
TPH	ND	TBO	TBO	ND	no sample	1.2	1.6

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

APPENDIX 4

Analytical Laboratory Results



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: VT College
DATE REPORTED: July 17, 1995
DATE SAMPLED: June 27, 1995

PROJECT CODE: GIVT1358
REF. #: 76,171 - 76,176

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation upon arrival at the laboratory.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

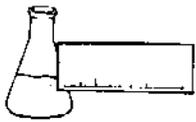
Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
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FAX 879-7103

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (WATER)

CLIENT: Griffin International
REPORT DATE: July 17, 1995
PROJECT NAME: VT College
PROJECT CODE: GIVT1358
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE EXTRACTED: July 10, 1995
DATE ANALYZED: July 13, 1995
SAMPLER: Not Indicated

<u>Reference #</u>	<u>Sample ID</u>	<u>Conc. (mg/L)¹</u>
76,171	MW 2; 12:44	2.6
76,172	MW 5; 12:27	1.4
76,173	MW 6; 11:45	1.2
76,174	MW 10; 10:58	2.0
76,175	MW 11; 10:31	1.6
76,176	Duplicate (MW 10); 10:58	2.4

Notes:

1 Method detection limit is 0.8 ppm.

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CHAIN-OF-CUSTODY RECORD

14851

Project Name: VT College	Reporting Address: 19 Commercial St Williston	Billing Address:
Site Location: Montpelier, VT		
Endyne Project Number: G1VT1358	Company: Griffin Contact Name/Phone #: P. Hark 8654288	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				
76.171	mw2	H ₂ O			6/27/95 12:44	1	1L		23	HCl	
76.172	mw5	}			12:27	1	}		}	}	
76.173	mw6		11:45	1							
76.174	mw10		10:58	2							
76.175	mw11		10:31	2							
76.176	Duplicate (mw10)		10:58	1							

Relinquished by: Signature <i>P. Hark</i>	Received by: Signature <i>R. Breen</i>	Date/Time <i>6/27/95 3:00 p.m.</i>
Relinquished by: Signature	Received by: Signature	Date/Time

 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 Post/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Post/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										

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CHAIN-OF-CUSTODY RECORD
14851

2024175

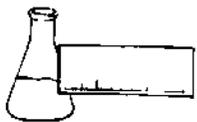
Project Name: VT College	Reporting Address: 19 Commercial St Williston	Billing Address:
Site Location: Montpelier, VT	Company: Griffin	Sampler Name:
Endyne Project Number:	Contact Name/Phone #: P. Hark RC542PE	Phone #:

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				
	mw2	H ₂ O			6/27/95 12:44	1	1E		23	HCl	
	mw5	}			12:27	1	}		}	}	
	mw6		6/27/95 11:45	1							
	mw10		10:58	2							
	mw11		10:31	2							
	Duplicate		12:44	X							
	pgn										

Relinquished by: Signature <i>P. Hark</i>	Received by: Signature <i>R. Beane</i>	Date/Time 6/27/95 3:00pm
Relinquished by: Signature	Received by: Signature	Date/Time

 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):										



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
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(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995

PROJECT CODE: GIVT1359
REF.#: 76,177 - 76,184

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated samples were preserved 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

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,177
STATION: MW2
TIME SAMPLED: 12:44
SAMPLER: P. Hack

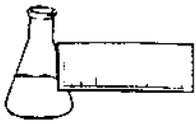
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	2.7
Chlorobenzene	1	ND ¹
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	3.8
Toluene	1	ND
Xylenes	1	1.1
MTBE	10	ND

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: > 10

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,178
STATION: MW5
TIME SAMPLED: 12:27
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 91%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,179
STATION: MW6
TIME SAMPLED: 11:45
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

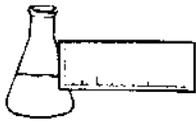
Bromobenzene Surrogate Recovery: 92%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,180
STATION: MW10
TIME SAMPLED: 10:58
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 92%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,181
STATION: MW11
TIME SAMPLED: 10:31
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

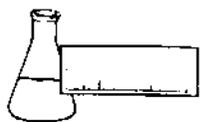
Bromobenzene Surrogate Recovery: 97%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,182
STATION: Trip Blank
TIME SAMPLED: 10:11
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

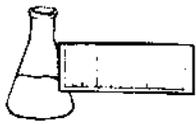
Bromobenzene Surrogate Recovery: 96%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Laboratory Services

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Williston, Vermont 05495
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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,183
STATION: Duplicate
TIME SAMPLED: 12:44
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	1.5
Chlorobenzene	1	ND ¹
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	4.8
Toluene	1	ND
Xylenes	1	2.9
MTBE	10	ND

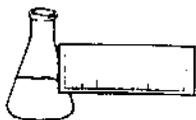
Bromobenzene Surrogate Recovery: 97%

NUMBER OF UNIDENTIFIED PEAKS FOUND: > 10

NOTES:

1 None detected

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Laboratory Services

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Vermont College
REPORT DATE: July 8, 1995
DATE SAMPLED: June 27, 1995
DATE RECEIVED: June 27, 1995
DATE ANALYZED: July 7, 1995

PROJECT CODE: GIVT1359
REF.#: 76,184
STATION: Equipment Blank
TIME SAMPLED: 1:00
SAMPLER: P. Hack

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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2924175

CHAIN-OF-CUSTODY RECORD

RECEIVED 11/11/05
@ 10:15 am

14850

Project Name: VT College	Reporting Address: 19 Commerce St Williston	Billing Address:
Site Location: Montpelier		
Endyne Project Number: G/VT 1359	Company: Griffin Contact Name/Phone #: P. Hoxe 8654288	Sampler Name: Same Phone #:

Lab #	Sample Location	Matrix	GRAH	COMP	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
76.177	mw2	H ₂ O			6/27/95 12:44	2	40ml	100 BE 710	20	HCl	
76.178	mw5	"			12:27	2	"	100 - -	"	"	
76.179	mw6	"			1:45	"	"	100 J 3	"	"	
76.180	mw10	"			10:58	"	"	100 - -	"	"	
76.181	mw11	"			10:31	"	"	100 - -	"	"	
76.182	Trip Blank	"			10:11	"	"	100 - -	"	"	
76.183	Duplicate mw2	"			12:44	"	"		"	"	
76.184	Equipment Blank	"			1:00	"	"	100 - -	"	"	

Relinquished by: Signature P AM	Received by: Signature Roscoe Bean	Date/Time 6/27/95 3:00 p.m.
Relinquished by: Signature	Received by: Signature	Date/Time

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):										

RECEIVED 11/11/05 13 1995

CHAIN-OF-CUSTODY RECORD

14850

292475

Project Name: <u>VT College</u>	Reporting Address: <u>10 Commerce St</u>	Billing Address:
Site Location: <u>Mundpelice</u>	<u>Williston</u>	
Endyne Project Number:	Company: <u>G.I.F.</u>	Sampler Name: <u>Shane</u>
	Contact Name/Phone #: <u>P. Hark 802-879-4333</u>	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				
	<u>mw2</u>	<u>H₂O</u>			<u>6/27/65</u>	<u>2</u>	<u>40ml</u>		<u>20</u>	<u>4c1</u>	
	<u>mw5</u>	<u>"</u>			<u>12:27</u>	<u>2</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>mw6</u>	<u>"</u>			<u>11:45</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>mw10</u>	<u>"</u>			<u>10:58</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>mw11</u>	<u>"</u>			<u>10:31</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>Trip Blank</u>	<u>"</u>			<u>10:11</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>Duplicate</u>	<u>"</u>			<u>12:44</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	
	<u>Equipment Blank</u>	<u>"</u>			<u>1:00</u>	<u>"</u>	<u>"</u>		<u>"</u>	<u>"</u>	

Relinquished by: Signature <u>P. Hark</u>	Received by: Signature <u>Shane</u>	Date/Time <u>6/29/65</u>
Relinquished by: Signature	Received by: Signature	Date/Time

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):										

APPENDIX 5

Cost Estimate for Site Restoration

**COST ESTIMATE FOR
DISMANTLING REMEDIATION EQUIPMENT AND SITE RESTORATION
AT
VERMONT COLLEGE, VTDEC Site # 91-1108**

1) Remove electric power service (subcontract)	\$500
2) Remove equipment shed and monitoring wells, seed and mulch (Griffin labor and expenses)	\$580
3) Remove recovery well, add topsoil, grading (subcontract)	\$500
<hr/>	
TOTAL	\$1580

Monitoring Well 5

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	ND		ND	ND	ND	ND	ND
Chlorobenzene	ND		ND	ND	ND	ND	ND
1,2-DCB	ND		ND	ND	ND	ND	ND
1,3-DCB	ND		ND	ND	ND	ND	ND
1,4-DCB	ND		ND	ND	ND	ND	ND
Ethylbenzene	ND		ND	ND	ND	ND	ND
Toluene	ND		1.2	1.4	ND	ND	ND
Xylenes	ND		ND	ND	ND	ND	ND
Total BTEX	ND		1.2	1	ND	ND	ND
MTBE	ND		ND	ND	ND	ND	ND
BTEX + MTBE	ND		1.2	1.4	ND	ND	ND
TPH	ND	1	1.0	1	ND	ND	1.4

BTEX + MTBE Values Reported in ug/L (ppb)

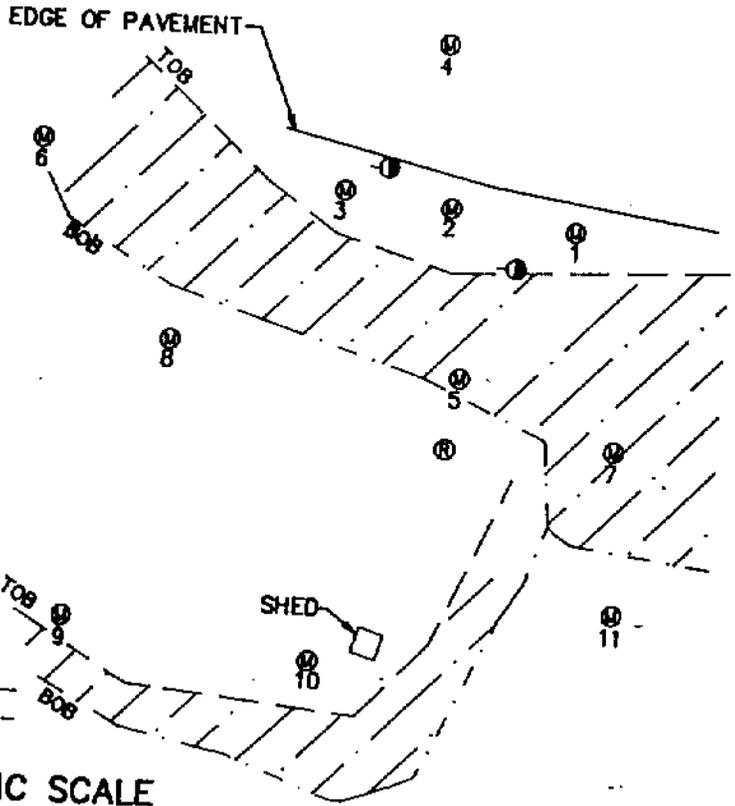
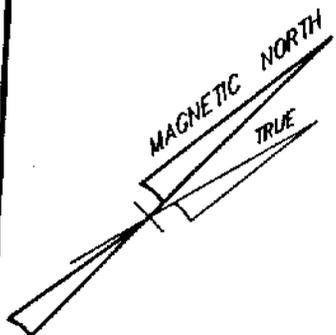
TPH Values Reported in mg/L (ppm)

Monitoring Well 6

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	ND		ND	ND	NO	ND	ND
Chlorobenzene	ND		ND	ND	SAMPLE	ND	ND
1,2-DCB	ND		ND	ND		ND	ND
1,3-DCB	ND		ND	ND		ND	ND
1,4-DCB	ND		ND	ND		ND	ND
Ethylbenzene	ND		ND	ND		ND	ND
Toluene	ND		ND	ND		ND	ND
Xylenes	ND		ND	ND		ND	ND
Total BTEX	ND		ND	ND		ND	ND
MTBE	ND		ND	ND		ND	ND
BTEX + MTBE	ND		ND	ND		ND	ND
TPH	ND	TBO	2	ND		ND	1.2

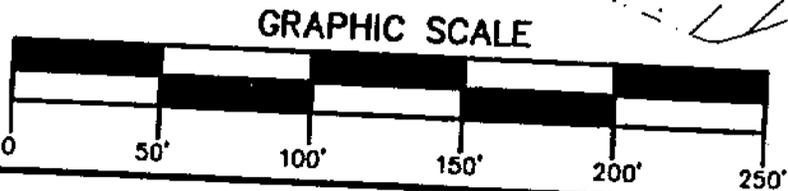
BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)



MW #	ELEV. (ASSUMED)
1	97.98'
2	98.77'
3	98.57'
4	100.00
5	80.40'
6	79.30'
7	76.16'
8	75.56'
9	74.91'
10	73.56'
11	62.60'

LEGEND
 MONITOR WELL (circle with number)
 RECOVERY WELL (circle with 'R')
 TOP OF BANK (TOB - dashed line)
 BOTTOM OF BANK (BOB - solid line)



NOTES

- ELEVATIONS SHOWN FOR MONITOR WELLS ARE AT RIM OF P.V.C. PIPE. ELEVATION OF RECOVERY WELL ON INSIDE RIM.
- ALL ELEVATIONS SHOWN ON THIS PLAN ARE ASSUMED. MONITOR WELL 4 HELD AS 100.00' PER REQUEST GRIFFIN INTERNATIONAL
- THIS SURVEY PERFORMED UTILIZING A GEODIMETER 420 TOTAL STATION EQUIPPED WITH E.D.M..
- THIS PLAN IS FOR LOCATION OF BUILDINGS, TOP OF BANK, BOTTOM OF BANK AND MONITOR WELLS AND IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY.

LOCATION OF MONITOR WELLS FOR GRIFFIN INTERNATIONAL
 LOCATED AT VERMONT COLLEGE
 MONTPELIER, VERMONT

DATE : 01/30/83
 SURVEY : VT. LAND SUR.
 DRAWN : T.P.L.
 CHECKED : M.V.W.
 SCALE : 1"=50'
 PROJECT NO.: 9318

APPENDIX 2

Free Product Measurements

FREE PRODUCT MEASUREMENTS
at VERMONT COLLEGE
1993

DATE	MW1		MW3		MW4	
	DTW	THICKNESS	DTW	THICKNESS	DTW	THICKNESS
3/2/93	12.80'	0.26'	-----	-----	12.31'	0.46'
3/16/93	13.00'	0.39'	-----	-----	12.30'	0.42'
3/31/93	12.07'	0.02'	-----	-----	10.83	0.06'
4/14/93	10.85'	0.07'	11.07'	0.01'	9.67'	0.05'
4/19/93	10.61'	0.05'	11.14'	sheen	9.57'	0.06'
4/26/93	10.46'	0.07'	11.15'	0.0'	9.49'	0.09'
5/18/93	11.14'	0.39'	11.84'	0.17'	9.90'	0.29'
6/3/93	11.14'	0.21'	12.19'	0.05'	9.96'	0.56'
6/10/93	11.03' *	0.14'	12.08'	0.0'	10.02'	0.11'
7/7/93	11.24' *	0.0'	13.11'	0.0'	10.61'	0.14'
7/22/93	11.65' *	0.0'	13.68'	0.16'	10.93'	0.16'
8/19/93	11.77' *	0.0'	13.47'	0.0'	11.21'	0.0'
9/3/93	11.73'	0.0'	13.75' *	0.15'	11.76'	0.41'
9/13/93	11.64'	0.0'	13.39' *	sheen	11.55'	0.36'
10/8/93	11.49'	0.07'	----- *	-----	11.51'	0.40'
10/20/93	11.55'	0.04'	12.81' *	-----	11.49'	0.40'
11/2/93	11.64'	0.0'	12.64' *	sheen	11.56'	0.49'
11/15/93	11.48'	0.0'	12.54' *	0.0'	11.16'	0.22'
12/1/93	11.64'	0.0'	12.49' *	0.0'	11.29	0.24'

* = "soak-ease" absorbent in use

FREE PRODUCT MEASUREMENTS
 at VERMONT COLLEGE
 1994 - 1995

DATE	MW1		MW3		MW4	
	DTW	THICKNESS	DTW	THICKNESS	DTW	THICKNESS
1/5/94	11.73'	0.0'	12.43' *	0.0'	11.23'	0.27'
2/17/94	12.83	0.22'	13.24 *	0.0'	11.96'	0.02'
3/7/94	12.86	0.15'	----		----	
4/6/94	11.29'	0.08'	----		10.49'	0.13'
5/6/94	10.28'	0.11'	10.98'	0.01'	9.38'	0.25'
6/16/94	10.84 *	0.03'	12.03'	0.0'	10.04	0.44'
7/7/94	11.14' *	0.06'	12.79	0.0'	10.43	0.29'
8/9/94	11.34'	0.0'	13.56'	0.01'	11.41	0.67'
9/9/94	11.48'	0.07'	13.21' *	0.0'	11.61	0.75'
10/19/94	11.70'*	0.0	12.66'	0.0'	11.41'	0.34'
11/16/94	11.73'*	0.0	12.74'	0.0'	11.92'	0.71'
12/15/95	11.42'*	0.0	12.14'	0.0'	11.14'	0.19'
2/17/95	-----*	---	12.42'	0.0'	11.63'	0.35'
3/14/95	-----*	---	12.34'	0.0'	11.54'	0.28'
4/11/95	11.42'*	0.02'	11.78'	0.0'	10.52'	0.25'
5/11/95	11.19'	0.06'	11.91'	0.0'	10.58'	0.29'
6/27/95	11.85'	0.02'	13.86'	0.02'	12.00	0.75'

* = "soak-ease" absorbent in use

to be at risk. Reports will be prepared annually unless contamination conditions warrant more frequent communications.

3) Griffin recommends that the remaining components of the remediation system be permanently dismantled. The above-ground components to be removed include a shed, recovery well, electric power service, and select monitoring wells (MW5 through MW11). Monitoring wells MW1 through MW4 will remain intact for future monitoring. The subsurface components, including the interception trench and underground piping and conduits, would also remain in place. The ground surfaces will be restored to original conditions after the removal of all system components. A cost estimate for dismantling the remaining system and site restoration is included in Appendix 5.

4) If approval is granted for the removal of the remaining system components, Griffin will discontinue the preparation of the monthly 1272 Discharge Order reports (discharge permit #3-1390) with proper notice to and permission from the Wastewater Management Division.

APPENDIX 1

Site Map

APPENDIX 3

Groundwater Quality Summary

**Groundwater Quality Summary
Vermont College
Montpelier, Vermont**

Monitoring Well 1

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	free	free	free	free	ND	ND	free
Chlorobenzene	product	product	product	product	ND	ND	product
1,2-DCB	in	in	in	in	ND	ND	in
1,3-DCB	well	well	well	well	ND	ND	well
1,4-DCB					ND	ND	
Ethylbenzene		0.38'	.39'	.07'	1.5	ND	0.02'
Toluene					ND	ND	
Xylenes					14.3	12.4	
Total BTEX					16	12.4	
MTBE					ND	ND	
BTEX + MTBE					15.8	12.4	
TPH					4	1.3	

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

Monitoring Well 2

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	9.	no	14.3	9.	8.	ND	2.7
Chlorobenzene	ND	sample	ND		ND	ND	ND
1,2-DCB	ND	taken	ND		ND	ND	ND
1,3-DCB	ND		ND		ND	ND	ND
1,4-DCB	ND		ND		ND	ND	ND
Ethylbenzene	4.1		3.0	6.1	4.0	ND	3.8
Toluene	ND		ND		ND	ND	ND
Xylenes	2.		5.	5.0	ND	ND	1.1
Total BTEX	15.		22.	20.	12.	ND	7.6
MTBE	ND		ND	ND	ND	ND	ND
BTEX + MTBE	15.		22.4	20.1	12.0	ND	7.6
TPH	ND	ND	ND	TBO	ND	2.4	2.6

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

N/A = not available due to container breakage

Monitoring Well 3

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	2.		No	free	free	ND	free
Chlorobenzene	ND		sample	product	product	ND	product
1,2-DCB	ND		available	in	in	ND	in
1,3-DCB	ND			well	well	ND	well
1,4-DCB	ND		(buried well)			ND	
Ethylbenzene	ND			.01'	.16'	ND	0.02'
Toluene	ND					ND	
Xylenes	19.					20	
Total BTEX	21.					20.	
MTBE	ND					ND	
BTEX + MTBE	21.					20	
TPH	ND	TBO				2.	

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

N/A = not available due to container breakage

Monitoring Well 4

PARAMETER	Date of Sample Collection						
	1/13/93	2/8/93	3/16/93	4/14/93	7/22/93	11/2/93	6/27/95
Benzene	free	free	free	free	free	free	free
Chlorobenzene	product	product	product	product	product	product	product
1,2-DCB	in	in	in	in	in	in	in
1,3-DCB	well	well	well	well	well	well	well
1,4-DCB							
Ethylbenzene		0.5'	.42'	.05'	0.16'	.49'	0.75'
Toluene							
Xylenes							
Total BTEX							
MTBE							
BTEX + MTBE							
TPH							

BTEX + MTBE Values Reported in ug/L (ppb)

TPH Values Reported in mg/L (ppm)

transported and analyzed by Griffin and industry protocols. The samples were analyzed by EPA Method 418.1 for Total Petroleum Hydrocarbons, and EPA Method 602 for BTEX and MTBE.

It does not appear that any significant contamination is migrating downgradient, as shown by the current and historical water quality analyses of downgradient wells. BTEX and MTBE concentrations in the downgradient wells continue to be non-detect. No significant BTEX and MTBE concentrations have been detected since sampling began in January, 1993.

Historical groundwater quality data is included in Appendix 3, and the recent Analytical Laboratory Results are in Appendix 4.

IV. Conclusions

Based on the extensive monitoring that Griffin has performed at this site since 1992, Griffin has reached the following conclusions.

- 1) Subsurface petroleum contamination in the form of free phase fuel oil (free product) is present at this site in the immediate vicinity of the replaced fuel oil UST. The amount of free product has varied slightly in three wells, but the overall amount has remained relatively stable, and has not migrated downgradient.
- 2) Low concentrations of dissolved phase contamination have been detected in MW1, MW2, and MW3, at concentrations below the Vermont Groundwater Enforcement Standards (VTGES). The monitoring wells are only sampled if no free product is detected in the well prior to sampling. This indicates that the compounds contained in the free product are not readily dissolving in the groundwater.
- 3) Free phase and dissolved phase contamination has not migrated downgradient as indicated by the lack of BTEX and low concentrations of TPH detected in the downgradient monitoring wells. Further migration of the contamination is not likely.
- 4) There is little or no risk of impact to potential receptors. The only significant receptor identified is a brook located several hundred feet downgradient of the former UST.

V. Recommendations

- 1) Griffin recommends bi-annual gauging of the four monitoring wells in the vicinity of the former UST (MW1, MW2, MW3, MW4) to monitor the free product and bail any amounts over 2". This method is simple and inexpensive, and should provide adequate monitoring of the site.
- 2) Griffin does not recommend future well sampling, as the historical data indicates that the downgradient wells are presently clean, and migration is unlikely. No sensitive receptors appear