



AUG 28 10 15 AM '96

WASTE MANAGEMENT
DIVISION

August 27, 1996

Mr. Jason Feingold
State of Vermont
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street / West Bldg.
Waterbury, VT 05671-0404

RE: Investigation of Subsurface Petroleum Contamination at Poultney BP Station, Poultney,
Vermont (VTDEC Site #96-1977)

Dear Mr. Feingold:

Please find enclosed the summary report for the site investigation conducted at the
Poultney BP Station in Poultney. Please contact me with any questions or comments that you
may have.

Sincerely,

Robert Higgins
Environmental Scientist

Enclosure

c: 6964860

Mr. Frank Trombetta, Midway Oil Corporation

**REPORT ON THE INVESTIGATION OF
SUBSURFACE PETROLEUM CONTAMINATION AT
POULTNEY BP STATION**

AUGUST 9, 1996

Site Location:

**POULTNEY BP STATION
12 - 14 MAIN STREET
POULTNEY VT
(VTDEC SITE #96-1977)**

Prepared For:

**MIDWAY OIL CORPORATION
217 NORTH MAIN STREET
RUTLAND, VERMONT 05701**

Prepared By:



P.O. Box 943 / 19 Commerce Street Williston, VT 05495 (802) 865-4288

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I. INTRODUCTION

This report summarizes the investigation of subsurface petroleum contamination that was conducted at the Poultney BP Station on Main Street in Poultney, VT. This work has been conducted by Griffin International, Inc. (Griffin), for Mr. Frank Trombetta of the Midway Oil Corporation. The Vermont Department of Environmental Conservation (VTDEC) requested that this work be completed in a letter to Mr. Trombetta from Mr. Jason Feingold of the VTDEC, dated June 3, 1996. All work at the site was conducted in accordance with the June 12, 1996 Work Plan and Cost Estimate prepared by Griffin, which was approved by the VTDEC in a letter from Mr. Feingold, to Mr. Trombetta dated June 25, 1996.

Work conducted at the site included sample collection and analysis from six previously installed groundwater monitoring wells, the development of a groundwater contour map for the site, and screening of polyencapsulated petroleum contaminated soils at the site. In addition, a sensitive receptor risk assessment and state file review were conducted to assess the risk that subsurface petroleum contamination at the site may pose to sensitive receptors in the area.

II. SITE BACKGROUND

A. Site History

On April 15 and 16, 1996, four gasoline USTs were permanently closed and removed from the ground at the Poultney BP Station. The USTs were being removed in order to be replaced with an updated system. During the UST removal inspection, petroleum contaminated soils were detected in the vicinity of the tank pit. The contamination detected appeared to have been residual contamination from a previous release. This is based on the facts that the UST system removed did not exhibit evidence of leakage, and that contamination was detected during a UST closure in 1982. The site was previously listed on the VTDEC Hazardous Sites list but was subsequently closed. The extent and degree of petroleum contamination to the subsurface could not be adequately defined at the time of the closure inspection conducted in April of 1996.

As a result of the petroleum contamination detected in the subsurface beneath the former USTs, the VTDEC requested that additional work be conducted at the site in order to determine the extent and degree of petroleum contamination. Midway Oil Corporation retained the services of Griffin to conduct this investigation.

B. Site Description

The Poultney BP Station is a combined convenience store, gas station, and restaurant. The property is located at 12-14 Main Street in Poultney, VT. The site consists of one building used as both a store and restaurant; it is situated on a mostly paved lot. Seven groundwater monitoring wells and an abandoned recovery well existed at the site prior to the UST closure. As MW 5 and the recovery well were destroyed during excavation, and only six wells remain. Well construction specifics for the preexisting monitoring wells at the site were obtained from Green

Mountain Boring and can be seen in Appendix B. Property uses in the area are primarily residential and commercial. All buildings in the vicinity are serviced by municipal water and sewer systems.

C. Site Geologic Setting

Soils in the vicinity of the UST pit during the removal inspection consisted of brown sands and gravel from grade to approximately 7 feet, 1/2 inch pea stone fill from 7 feet to 8 feet, and light gray silty clay from 8 feet to approximately 9.5 feet below grade. A thin layer of dark gray gravel was encountered at a depth of approximately 9 feet. According to the Surficial Geologic Map of Vermont (Ref 1), the site is underlain by gravel of a glaciolacustrine origin. The gravel detected during the tank pull is likely the glaciolacustrine mapped by Doll at this site. Bedrock at the site is Ordovician-aged Mt. Hamilton formation, which consists predominately of slates (Ref. 2).

III. INVESTIGATIVE PROCEDURES

A. Determination of Groundwater Flow Direction and Gradient

On July 19, 1996, depth to water measurements were taken with the use of a Keck interface probe in all six site wells. These measurements were subtracted from the top of casing elevations, which were determined relative to an arbitrary datum of 100 feet at the top of the casing for MW-6, to determine the water table elevation at each of the wells. From the monitoring well water table elevation data, the groundwater contours were interpolated onto the site map, and the groundwater direction and gradient were determined.

As displayed on the groundwater contour map included in Appendix A, the regional groundwater flow direction for July 19, 1996, is estimated to be west northwest at a gradient of approximately 0.75%. No free phase petroleum product was observed in any of the monitoring wells. All groundwater level data are recorded in Appendix C.

B. Groundwater Sample Collection and Analysis

Immediately following well gauging, samples of the groundwater were collected from all six of the site monitoring wells. All samples were analyzed per EPA Method 602 for benzene, toluene, ethyl benzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE), common constituents of petroleum product. Results of the laboratory analyses for wells sampled July 19, 1996 are summarized in Appendix D. Laboratory report forms are presented in Appendix E.

According to the results of the analyses, the only monitoring well to contain targeted dissolved petroleum compounds was MW 6. No petroleum compounds targeted by this analysis were detected in any of the other on site monitoring wells. This well is located closest to the former USTs. Due to the high level of contaminants in MW 6 the sample was run at a 1% dilution. Because of this the detection limit for each compound was increased. MTBE was

detected at a trace below the detection limit of 1000 ppb for this compound. It is possible that a concentration of MTBE greater than the 40 ppb groundwater enforcement standard exists in this sample. Benzene and xylenes were detected in concentrations which exceeded their applicable groundwater standards. This data suggests that the dissolved contaminant plume lies around the outer edges of the former UST pit.

All samples were collected according to Griffin's groundwater sampling protocol which complies with industry and state standards. Results from the analyses of the duplicate, trip blank and equipment blank samples indicate that adequate quality assurance and control (QA/QC) were maintained during sample collection and analysis.

C. Screening of Petroleum Contaminated Soil Stockpile

At the time of the UST closure, approximately 65 cubic yards of petroleum contaminated soils were stockpiled. These soils were polyencapsulated at the site on April 15 and 16, 1996. The soils were screened for volatile organic compounds (VOCs) with an HNu HW 101 photoionization device (PID) by Griffin on the day of groundwater sample collection. A total of six discrete soil samples were collected from within the stockpile. All samples were collected with the use of a hand auger and placed in clean plastic re-sealable bags. Each soil sample was screened in accordance with Griffin's Jar/ Polyethylene Bag Headspace Analysis Protocol, which complies with state and industry standards. The results of the screening are indicated in the following table.

PID Screening Results for Stockpiled Soils at Poultney BP Station		
Soil Sample	Depth (ft)	VOC Concentration (ppm)
1	3	38
2	3	121
3	3	24
4	3	46
5	1.5	2.4
6	2.5	280
Average	2.7	85.2

According to the results of the soil screening, high concentrations of VOCs continue to be present in the soil stockpile. Samples with elevated PID readings contained strong odors of petroleum.

D. Sensitive Receptor Risk Assessment

A receptor risk assessment was conducted to identify known and potential receptors of the contamination detected at the Poultney BP Station. A visual survey was conducted at the time of sample collection and during the UST removal inspection. In addition a state file review of surrounding sites was performed for this site assessment. Based on these observations, a determination of the potential risk to identified receptors was conducted based on proximity, groundwater flow direction, and contaminant concentration levels.

Water Supplies

According to file research conducted at the State of Vermont Water Supply Division in Waterbury, there appear to be two supply wells (one public, one private) located within one half mile downgradient from the site. It is not likely that either are at significant risk of petroleum contamination from the Poultney BP Station. This is based on the fact that they are bedrock wells located at a distance which is great enough to most likely be unaffected by the low levels of contamination detected on site. Furthermore, the level of dissolved petroleum contamination detected at the site appears to be relatively isolated to the area of the former USTs.

Buildings in the Vicinity

The store/restaurant is the only building located on the site. A residence is located approximately 50 feet to the east of the UST system. No complaints have been reported of petroleum odors within either building.

Neither of the two buildings in the closest proximity to the UST pit appear to be at significant risk of petroleum vapor impact from petroleum contamination in soils in the vicinity of the UST pit. This determination is based on their proximity to the area of detected subsurface contamination, and the fact that most of the adsorbed petroleum contamination in soil has been removed, reducing the likelihood of vapor impact.

E. State File Review

On July 2, 1996 a representative from Griffin conducted a file review of surrounding sites at the offices of the VTDEC in Waterbury, VT. The following findings are based on information obtained during that review. Located adjacent to the site, directly upgradient, is Stewart's Ice Cream Shop which is a gas station/convenience store. Stewart's is currently an active hazardous waste site (VTDEC site #93-1531). Based on information obtained during the state file review, it does not appear likely that the Poultney BP Station is at risk of being influenced by petroleum contamination originating at Stewart's. The most recent analytical results taken on October 19, 1995 indicate that Stewart's monitoring wells (SMW 6 and SMW 8) located in the direct vicinity of the Poultney BP Station tested non-detect for total BTEX. In addition, results indicate that while SMW 8 contains 1.39 ppb of MTBE, the concentration of MTBE in SMW 6 is less than 1 ppb.

IV. CONCLUSIONS

Based on the data during this assessment, the following conclusions are made:

- 1) Elevated levels of dissolved petroleum contamination exist in the groundwater in the vicinity of the former USTs. As the high ratio of xylenes to benzene concentration is suggestive of weathered petroleum. The source of the contamination is likely from gasoline that was released sometime ago, not from the recently removed USTs.
- 2) The contaminant plume is suspected to be concentrated in the vicinity of the former USTs. As there are no downgradient monitoring wells the downgradient extent of dissolved contamination is unknown. No significant petroleum contamination was detected in the vicinity of the pump island.
- 3) Based on a survey of known potential sensitive receptors in the vicinity of the site, there are no receptors in the area that appear to be at significant risk of petroleum contamination from the subsurface petroleum contamination detected at the site.
- 4) Based on the state file review, the Poultney BP Station appears to be unaffected by and at little risk from the contamination released from Stewarts Ice Cream Shop, located upgradient from the subject site.
- 5) Over time, the natural processes of dilution, dispersion, and biodegradation will reduce dissolved contaminant concentrations present in the subsurface at the Poultney BP Station.
- 6) According to a soil screening analysis conducted with a PID on the polyencapsulated soil stockpile, the soils contain VOC concentrations in excess of the VTDEC guidelines of 1 ppm.

V. RECOMMENDATIONS

Based on the above conclusions, the following recommendations are made concerning petroleum contamination detected in the subsurface at the Poultney BP Station located in Poultney, Vermont:

- 1) MW 6 should be sampled again in November, during a season of typically low groundwater elevation. At this time a depth to water will be measured in all on site monitoring wells in order to determine groundwater flow direction and gradient. Following this confirmation round of groundwater sampling, Griffin will make further recommendations regarding monitoring of the site.

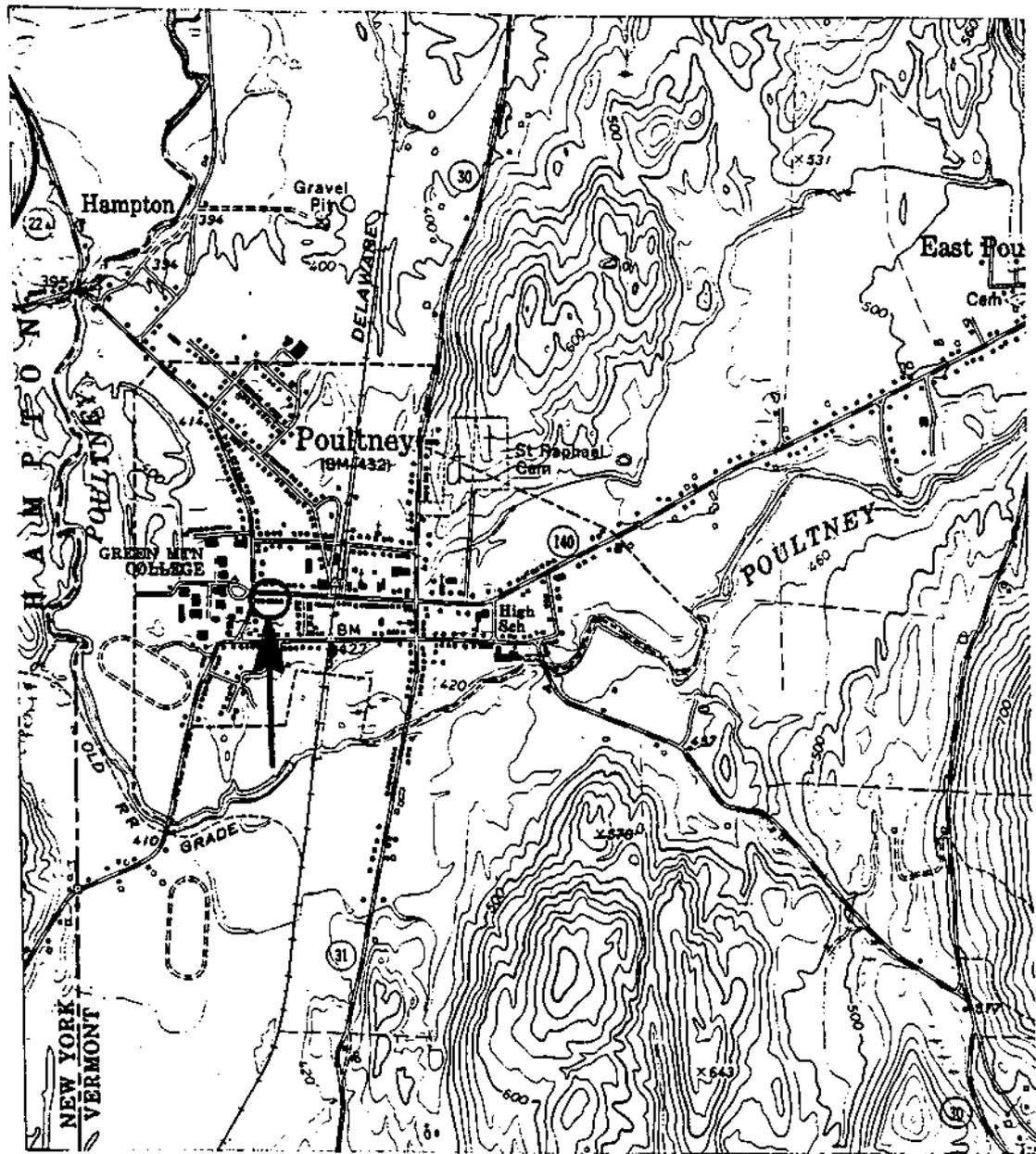
- 2) Based on the results of soil screening at the site, the soils should remain stockpiled at the property and encapsulated in a polyethylene liner. The liner should be routinely checked and replaced or repaired as necessary. The soil will be screened on an annual basis, beginning in July of 1997, in order to track and document the expected continued decrease of contamination in the stockpile. This natural reduction of petroleum contaminants within the stockpile could be enhanced by the introduction of oxygen to the soil pile by turning the soil each time the plastic is replaced. Once VOC concentrations meet VTDEC guidelines, they may be spread on site, following appropriate VTDEC approval.

References

1. Doll, Charles G., ed., 1970, Surficial Geologic Map of Vermont, State of Vermont.
2. Doll, Charles G., ed., 1961, Centennial Geologic Map of Vermont, State of Vermont.

APPENDIX A

Maps



JOB #: 6984860
 SOURCE: USGS- POULTNEY, VERMONT - N.Y. QUADRANGLE



POULTNEY BP

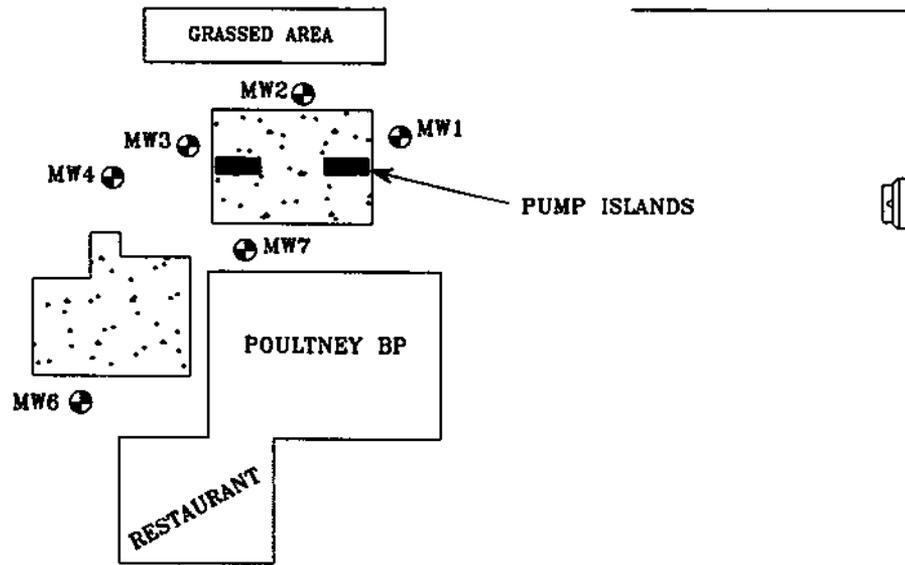
POULTNEY, VERMONT

SITE LOCATION MAP

DATE: 7/30/96	DWG.#:1	SCALE: 1:24000	DRN.:SB	APP.:RH
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MAIN STREET



LEGEND

-  MW2 MONITORING WELL
-  BUSINESS SIGN
-  FENCE

JOB #: 6964860



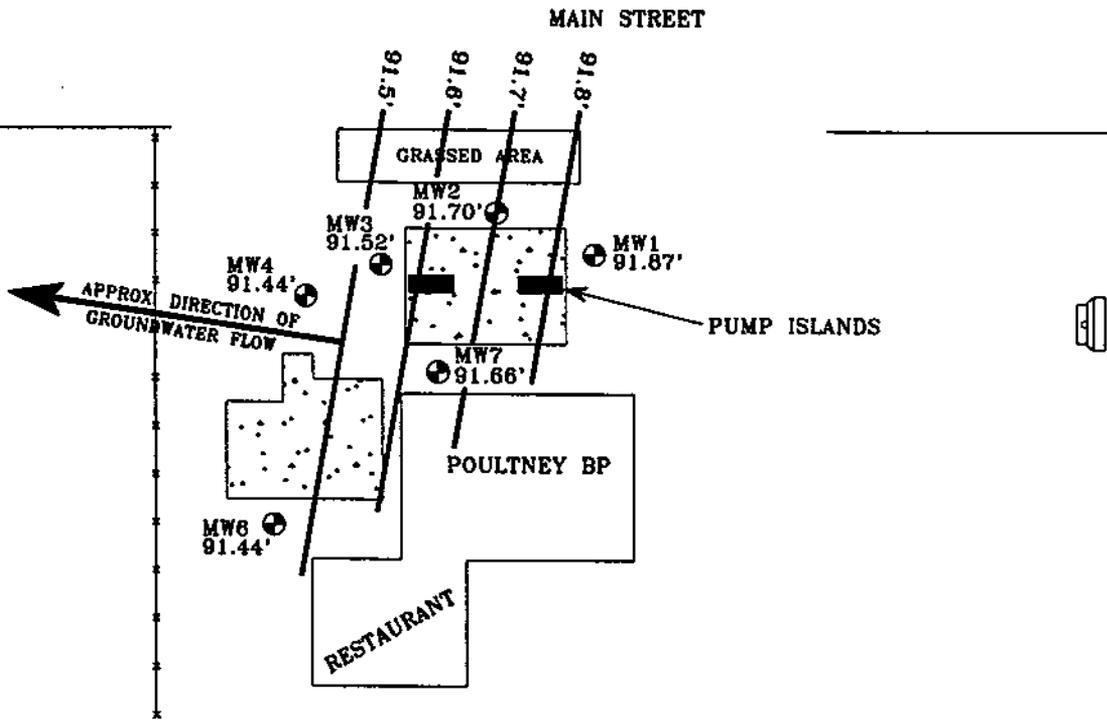
POULTNEY BP

POULTNEY, VERMONT

SITE MAP

DATE: 7/30/96	DWG.#: 2	SCALE: 1" = 40'	DRN.:SB	APP.:RH
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N



LEGEND

- MW2 91.70' MONITORING WELL AND WATER TABLE ELEVATION IN FEET
- 91.60' GROUNDWATER CONTOUR IN FEET (DASHED WHERE INFERRED)
- BUSINESS SIGN
- FENCE

JOB #: 8964860
MEASUREMENT DATE: 7/19/96

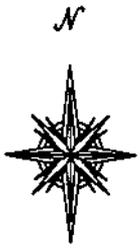


POULTNEY BP

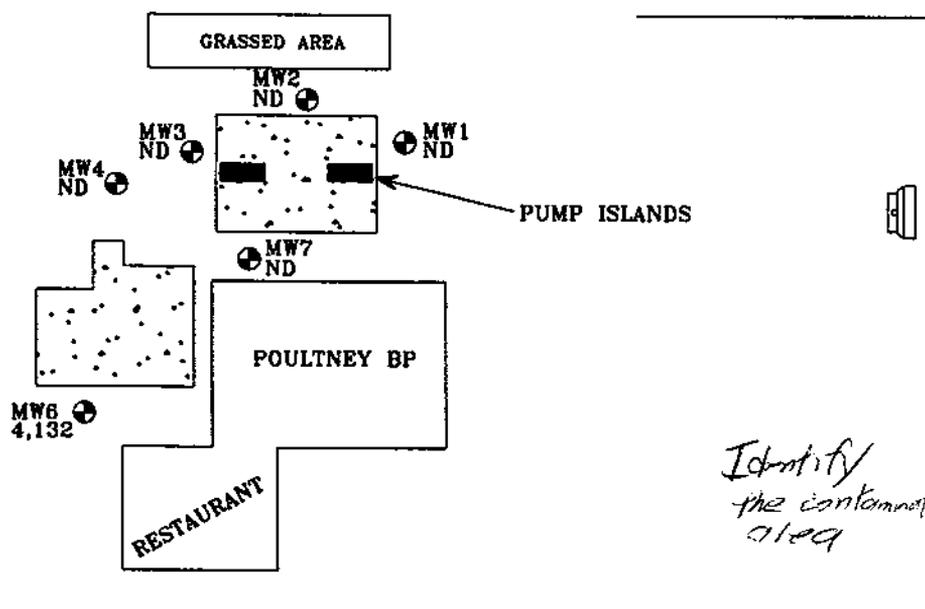
POULTNEY, VERMONT

GROUNDWATER CONTOUR MAP

DATE: 7/31/96	DWG.#: 3	SCALE: 1"=40'	DRN.:SB	APP.:RH
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MAIN STREET



Identify the contaminated area

LEGEND

- MW6 4,132 MONITORING WELL AND TOTAL BTEX AND MTBE CONCENTRATION (ppb)
- ND NONE DETECTED
- BUSINESS SIGN
- FENCE

JOB #: 6964860
SAMPLE DATE: 7/19/96



POULTNEY BP

POULTNEY, VERMONT

CONTAMINANT DISTRIBUTION MAP

DATE: 7/31/96	DWG.#: 4	SCALE: 1"=40'	DRN.:SB	APP.:RH
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APPENDIX B

Well Logs

Green Mountain Boring Co., Inc.

R. D. 2 - BARRE, VERMONT 05641

TO MIDWAY OIL Co.
 PROJECT NAME GULF/SHACK SHOP
 REPORT SENT TO MIDWAY OIL Co.
 SAMPLES SENT TO N/A

ADDRESS BRADFORD, VT
 LOCATION FOUNTAIN, VT.
 PROJ. NO.
 OUR JOB NO. 92-109

SHEET 10 OF
 DATE 9-14-92
 HOLE NO. MW-2
 LINE & STA.
 OFFSET NONE

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At 11' at 0 Hours	Type	AUGERS	SPLIT SPOON		DATE STARTED 9-14-92
At _____ at _____ Hours	Size I. D.	4.25"	1 1/2"		DATE COMPL. 9-14-92
	Hammer Wt.		140#		BORING FOREMAN R. GREENA
	Hammer Fall		30"		INSPECTOR
					SOILS ENGR.

LOCATION OF BORING: AS MARKED

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				0-6	6-12	12-18				No.	Pen.	I
									0'-4" CONCRETE			
									4'-8" MEDIA SAND + GRAVEL			
									8'-15' BROWN TILL			
									INSTALLED WELL AT 15'			
									MATERIALS USED:			
									10' O20 SCREEN			
									5' 2" RISER			
									1 TOP WING CAP			
									1 BOTTOM SLIP CAP			
									3 BAGS OF #2 SAND			
									15 LBS OF BENTONITE			
									1 CURB BOX			
									CEMENT (1/2 BAG)			
									RENTED JACKHAMMER			
									FOR THIS HOLE			

GROUND SURFACE TO 15'

USED 4.25" AUGERS THEN INSTALLED WELL

Sample Type
 D - Dry C - Cored W - Washed
 UP - Undisturbed Piston
 TP - Test Pit A - Auger V - Vane Test
 UT - Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 end 35 to 50%

140 lb. Wt. x 30" fall an 2" O. D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense

Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V.Stiff

SUMMARY
 Earth Boring / Rock Coring Samples C

HOLE NO. MW

Green Mountain Boring Co., Inc.

R. D. 2 - BARRE, VERMONT 05641

TO MIDWAY OIL CO ADDRESS BRADFORD, VT
 PROJECT NAME GULF SNACK SHOP LOCATION ROUTNEY, VT
 REPORT SENT TO MIDWAY OIL CO PROJ. NO.
 SAMPLES SENT TO H/A OUR JOB NO.

SHEET 11 of 11
 DATE 9-14-92
 HOLE NO. MW-3
 LINE & STA.
 OFFSET None

<p>GROUND WATER OBSERVATIONS</p> <p>At 11 at 0 Hours At at Hours</p>	<p>CASING AUGERS 4.75" SPLIT SPOON 1 1/2" 140# 30"</p>	<p>SURFACE ELEV. DATE STARTED 9-14-92 DATE COMPL. 9-14-92 BORING FOREMAN R. GARNETT INSPECTOR SOILS ENGR.</p>
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LOCATION OF BORING: AS MARKED

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From	To					No.	Pen	I
				0-6	6-12	12-18						
								0'-4" ASPHALT				
								4'-6" MEDIUM SAND AND GRAVEL				
								6'-15" BROWN TILL				
								INSTALLED WELL AT 15'				
								MATERIALS USED:				
								10' .020 SCREEN				
								5' 2" RIFLE				
								1 TIP WING CAP				
								1 BOTTOM SLIP CAP				
								3 BAGS OF #2 SAND				
								15 LBS OF BENTONITE				
								1 CURB BOX				
								CEMENT (1/2 BAG)				

GROUND SURFACE TO 15' USED 4.75" AUGERS: THEN INSTALLED WELL

<p>Sample Type</p> <p>D=Dry C=Cored W=Washed UP=Undisturbed Piston TP=Test Pit A=Auger V=Vane Test UT=Undisturbed Thinwall</p>	<p>Proportions Used</p> <p>trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%</p>	<p>140 lb. Wt. x 30" fall an 2" O. D. Sampler</p> <p>Cohesionless Density 0-10 Loose 10-30 Med. Dense 30-50 Dense 50+ Very Dense</p>	<p>Cohesive Consistency</p> <p>0-4 Soft 30+ Hard 4-8 M/Stiff 8-15 Stiff 15-30 V.Stiff</p>	<p>SUMMARY:</p> <p>Earth Boring Rock Coring Samples</p>
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HOLE NO. MW-3

Green Mountain Boring Co., Inc.

R. D. 2 - BARRE, VERMONT 05641

SHEET 6 OF
 DATE 9-16-92
 HOLE NO. MJ-6
 LINE & STA.
 OFFSET None

TO MIDWAY CIV CO ADDRESS PRIDEFORD, VT
 PROJECT NAME SUPPLY WATER TANK LOCATION PRIDEFORD, VT
 REPORT SENT TO MIDWAY CIV CO PROJ. NO.
 SAMPLES SENT TO N/A OUR JOB NO. 92-109

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
A1	12' at 0 Hours	Type	AUGERS	SPLIT SPOON	DATE STARTED <u>9-10-92</u>
A1	at Hours	Size I. D.	<u>4.25"</u>	<u>1 1/2"</u>	DATE COMPL. <u>9-10-92</u>
		Hammer Wt.		<u>140#</u>	BORING FOREMAN <u>J. CAPRA</u>
		Hammer Fall		<u>30"</u>	INSPECTOR <u> </u>
					SOILS ENGR. <u> </u>

LOCATION OF BORING: As Marked

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From 0-6	To 6-12	To 12-18				No.	Pen	R
								0-4" BLACK TOP				
								4-2' SAND AND GRAVEL				
								2-15' BROWN TILL				
								INSTALLED WELL AT 15'				
								MATERIALS USED:				
								10' 0.10 SCREEN				
								2" 1/2" WELDER				
								1 TOP WING CAP				
								1 BOTTOM WING CAP				
								1 CURB BOX				
								2 BAGS OF #1 SAND				
								20 LBS OF PORTLAND CEMENT				
								10' x 7" (1/2 DIA)				

GROUND SURFACE TO <u> </u>	USED <u>4.25"</u> AUGERS: THEN <u>INSTALLED WELL</u>	140 lb. Wt. x 30" fall on 2" O. D. Sampler	SUMMARY
Sample Type	Proportions Used	Cohesionless Density	Earth Boring / Rock Coring Samples
D-Dry C-Cored W-Washed	trace 0 to 10%	0-10 Loose	HOLE NO. <u> </u>
UP-Undisturbed Piston	little 10 to 20%	10-30 Med. Dense	
TP-Test Pit A-Auger V-Vane Test	some 20 to 35%	30-50 Dense	
UT-Undisturbed Thinwall	and 35 to 50%	50+ Very Dense	
			Cohesive Consistency
			0-4 Soft 30+ Hard
			4-8 M/Stiff
			8-15 Stiff
			15-30 V-Stiff

Green Mountain Boring Co., Inc.

R. D. 2 - BARRE, VERMONT 05641

TO MIDWAY OIL CO
PROJECT NAME WATER SNACK SHOP
REPORT SENT TO MIDWAY OIL CO
SAMPLES SENT TO 1-12

ADDRESS PLAZA VERMONT
LOCATION PLAZA VERMONT, VT
PROJ. NO.
OUR JOB NO. 92-109

SHEET 9 OF
DATE 9-10-92
HOLE NO. 11102-7
LINE & STA.
OFFSET NONE

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At <u>11</u> Hours	at <u>0</u> Hours	Type	AUGERS	SPLIT SPOON	DATE STARTED <u>9-10-92</u>
		Size I. D.	<u>4.75"</u>	<u>1 1/2"</u>	DATE COMPL. <u>9-10-92</u>
		Hammer Wt.		<u>140#</u>	BORING FOREMAN <u>K. CARNEA</u>
		Hammer Fall		<u>30"</u>	INSPECTOR
					SOILS ENGR.

LOCATION OF BORING: As MARKED

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From To		No.				Pen	S	
				0-6	6-12							12-18
								0'-4" ASPHALT				
								4'-3" FINE SAND + STONE				
								3'-15" BROWN TILL				
								INSTALLED WELL AT 15'				
								MATERIALS USED:				
								10' 610 SCREEN				
								5' 2" RISER				
								1 TOP LUNG CAP				
								1 BOTTOM SLIP CAP				
								1 CURB BOX				
								25 BAGS OF #1 SAND				
								20 LBS OF PORTLAND CEMENT (1/2 BAG)				

GROUND SURFACE TO 15' USED 4.75" AUGERS: THEN INSTALLED WELLS

Sample Type
 D - Dry C - Cored W - Washed
 UP - Undisturbed Piston
 TP - Test Pit A - Auger V - Vane Test
 UT - Undisturbed Thinwall

Proportions Used
 trace 0 to 10%
 little 10 to 20%
 some 20 to 35%
 and 35 to 50%

140 lb. Wt. x 30" fall on 2" O. D. Sampler
 Cohesionless Density
 0-10 Loose
 10-30 Med. Dense
 30-50 Dense
 50+ Very Dense
 Cohesive Consistency
 0-4 Soft 30+ Hard
 4-8 M/Stiff
 8-15 Stiff
 15-30 V-Stiff

SUMMARY:
 Earth Boring
 Rock Coring
 Samples 0

HOLE NO. 11102-7

APPENDIX C

Groundwater Liquid Level Data

APPENDIX D

Groundwater Quality Summary

**Groundwater Quality Summary
Poultney BP
Poultney, VT**

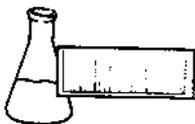
Monitoring Date: July 19, 1996
All Values Reported in ug/L (ppb)

PARAMETER							Enforcement Standard
	MW1	MW2	MW3	MW4	MW6	MW7	
Benzene	ND	ND	ND	ND	546.	ND	5.0*
Chlorobenzene	ND	ND	ND	ND	ND	ND	100*
1,2-DCB	ND	ND	ND	ND	ND	ND	600*
1,3-DCB	ND	ND	ND	ND	ND	ND	600**
1,4-DCB	ND	ND	ND	ND	ND	ND	75*
Ethylbenzene	ND	ND	ND	ND	533.	ND	680***
Toluene	ND	ND	ND	ND	963.	ND	1,000*
Xylenes	ND	ND	ND	ND	2090.	ND	400***
Total BTEX					4,132.		-
MTBE	ND	ND	ND	ND	TBO	ND	40**
BTEX+MTBE					4,132.		-

- * - EPA Maximum Contaminant Level
- ** - VT Health Advisory Level
- *** - VT Groundwater Enforcement Standard

ANALYSIS BY EPA METHOD 602

APPENDIX E
Laboratory Analysis Reports



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: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996

PROJECT CODE: GIPY1477
REF.#: 91,566 - 91,574

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

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

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

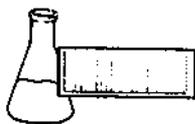
Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

RECEIVED JUL 29 1996



ENDYNE, INC.

Laboratory Services

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 23, 1996

PROJECT CODE: GIPY1477
REF.#: 91,567
STATION: MW7
TIME SAMPLED: 10:05
SAMPLER: R. Higgins

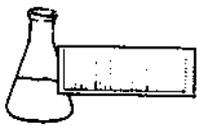
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

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: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 23, 1996

PROJECT CODE: GIPY1477
REF.#: 91,568
STATION: MW1
TIME SAMPLED: 10:22
SAMPLER: R. Higgins

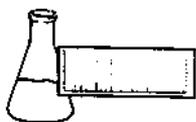
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 99%

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: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,569
STATION: MW4
TIME SAMPLED: 10:36
SAMPLER: R. Higgins

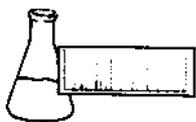
<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	5	ND ²
Chlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	ND
Toluene	5	ND
Xylenes	5	ND
MTBE	50	ND

Bromobenzene Surrogate Recovery: 112%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at a 20% dilution.
- 2 None detected



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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,570
STATION: Duplicate MW4
TIME SAMPLED: 10:36
SAMPLER: R. Higgins

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	5	ND ²
Chlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	ND
Toluene	5	ND
Xylenes	5	ND
MTBE	50	ND

Bromobenzene Surrogate Recovery: 103%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at a 20% dilution.

2 None detected



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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,571
STATION: MW3
TIME SAMPLED: 10:51
SAMPLER: R. Higgins

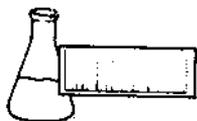
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 96%

NUMBER OF UNIDENTIFIED PEAKS FOUND: > 10

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,572
STATION: MW6
TIME SAMPLED: 11:13
SAMPLER: R. Higgins

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	100	546.
Chlorobenzene	100	ND ²
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	533.
Toluene	100	963.
Xylenes	100	2,090.
MTBE	1,000	TBQ ³

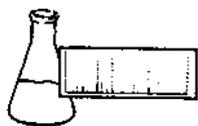
Bromobenzene Surrogate Recovery: 90%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample
- 2 None detected
- 3 Trace below quantitation limit

*Are these concentrations
of diluted samples?*



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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,574
STATION: Equipment Blank
TIME SAMPLED: 12:21
SAMPLER: R. Higgins

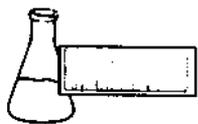
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 117%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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EPA METHOD 602 LABORATORY REPORT

MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA

CLIENT: Griffin International
PROJECT NAME: Poultney BP
REPORT DATE: July 25, 1996
DATE SAMPLED: July 19, 1996
DATE RECEIVED: July 19, 1996
DATE ANALYZED: July 24, 1996

PROJECT CODE: GIPY1477
REF.#: 91,571
STATION: MW3
TIME SAMPLED: 10:51
SAMPLER: R. Higgins

<u>Parameter</u>	<u>Sample(ug/L)</u>	<u>Spike(ug/L)</u>	<u>Dup1(ug/L)</u>	<u>Dup2(ug/L)</u>	<u>Avg % Rec</u>
Benzene	ND ¹	10	9.4	9.2	93%
Toluene	ND	10	9.6	9.3	95%
Ethylbenzene	ND	10	9.4	9.1	92%
Xylenes	ND	30	28.4	27.3	93%

NOTES:

1 None detected

6964860

CHAIN-OF-CUSTODY RECORD

17060

Project Name: Poultney SP Site Location: Poultney, VT	Reporting Address: GUFFIN HTR	Billing Address:
Endyne Project Number: GIPY 1477	Company: R. Higgins Contact Name/Phone #:	Sampler Name: R. Higgins Phone #:

Lab #	Sample Location	Matrix	G R A D	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
91566	TRAP BLANK	HR	✓		7:41	2	Blank		CO2	HCl	
91567	MW7				10:05						
91568	MW 1				10:22						
91569	MW4				10:36						
91570	DUPLICATE 4				10:36						
91571	MW 3				10:51						
91572	MW6				11:13						
91573	MW 2				12:09						
91574	EQUIP BLANK				12:21						

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>Roseann Bowen</i>	Date/Time 7/19/96	2:30 PM
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):										

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CHAIN-OF-CUSTODY RECORD

6964/160

Project Name: <i>WASTEWATER</i> Site Location: <i>Poultney, VT</i>	Reporting Address: <i>GRIFIN WTR</i>	Billing Address:
Endyne Project Number:	Company: Contact Name/Phone #: <i>R. H. Hibius</i>	Sampler Name: Phone #: <i>R. Hibius</i>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
	TRIP BLANK	<i>W</i>	✓		<i>7:41</i>	<i>2</i>	<i>4mch</i>		<i>602</i>	<i>111</i>	
	MW 7				<i>10:05</i>						
	MW 1				<i>10:22</i>						
	MW 4				<i>10:36</i>						
	<i>duplicate 4</i>				<i>10:36</i>						
	MW 3				<i>10:51</i>						
	MW 6				<i>11:13</i>						
	MW 2				<i>12:09</i>						
	EQUIP BLANK				<i>12:21</i>						

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>Roseann Bessey</i>	Date/Time <i>7/19/96 2:30 PM</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 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):										