



JUN 21 10 21 AM '99

June 18, 1999

Mr. Gerold Noyes
VT Department of Environmental Conservation
Waste Management Division
103 South Main St./ West Bldg.
Waterbury, VT 05671-0404

RE: *Report on the Site Investigation of Suspected Subsurface Petroleum Contamination and Work Plan and Cost Estimate for Bi-Weekly Product Bailing and Monthly Reporting, 3 College Street, Middlebury, Vermont, VTDEC Site #98-2496*

Dear Mr. Noyes:

Enclosed please find the above-referenced report and work plan and cost estimate for bi-weekly product bailing and monthly reporting of results for the 3 College Street site in Middlebury, Vermont.

Please call if you have any questions or comments.

Sincerely,

Timothy J. Kelly, PG
Staff Geologist

Encl.

cc: Mr. George McPhail (w/o enclosure)
GI # 129841441

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

AT

**3 COLLEGE STREET
MIDDLEBURY COLLEGE
Middlebury, Vermont**

VTDEC Site #98-2496
Griffin Proj. #129841441

June 1999

Prepared For:

Mr. George McPhail
Middlebury College
84 Service Road
Middlebury, VT 05753
(802) 443-5994

Prepared by



P.O. Box 943/ 20 Commerce St.
Williston, Vermont 05495
(802) 865-4288

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I. INTRODUCTION

This report provides a summary of the tasks completed for the site investigation of suspected subsurface petroleum contamination at the 3 College Street Site (Site), Middlebury College, in Middlebury, Vermont (see Site Location Map in Appendix A). Results of the following investigative tasks performed by Griffin International, Inc., (Griffin) are presented:

- ◇ monitoring well installation;
- ◇ depth to water and free product;
- ◇ groundwater sampling and analyses;
- ◇ sensitive receptor survey.

This work is being performed based on a request from Mr. Chuck Schwer of the Vermont Department of Environmental Conservation (VTDEC) in a letter to Mr. George McPhail of Middlebury College, dated November 17, 1998. Work was performed in accordance with the November 30, 1998, *Work Plan and Cost Estimate for Subsurface Investigation of Suspected Petroleum Contamination*, prepared by Griffin, with the exceptions noted below in Section III.

II. SITE BACKGROUND

The Site is located on College Street near the intersection of College Street and South Main Street, in the municipality of Middlebury, Vermont (see Site Location Map in Appendix A). Natural topography at the site is moderately sloping to the northwest, but the driveway between the 3 and 5 College Street buildings (See Site Sketch) has been leveled with fill to allow access to the garage between 3 and 5 College street. The Site is bordered on the east and west by residential and commercial properties; on the north by a woodland which slopes to the north, north of which are other residential/commercial properties; and on the south by College Street, across which is the Middlebury municipal building complex.

The subject property and the surrounding properties are served by the Middlebury municipal water supply service. The site is underlain by silt, silty clay, and clay containing ice-rafted boulders according to the *Surficial Geologic Map of Vermont* (Ref. 1). The bedrock underlying the site is mapped as interbedded buff to brown, heavily scored dolomite and white to blue-gray marble and limestone of the Beldens member of the Ordovician-aged Chipman formation, according to the *Centennial Geologic Map of Vermont* (Ref. 2). No bedrock was observed in the immediate vicinity of the Site.

The suspected source of petroleum contamination at the site is leakage from a hole in the former 2,000-gallon capacity fuel oil underground storage tank (UST), detected during a UST removal inspection on August 13 and 14, 1998.

III. INVESTIGATIVE PROCEDURES

To further define the extent of subsurface petroleum contamination in the area of the Site, the following investigative tasks were planned in the November 30, 1998, Work Plan: installation of four monitoring wells; site survey; determination of groundwater flow direction; groundwater sampling and analyses for petroleum-related constituents; and an evaluation of potentially sensitive receptors. The expected depth of completion of the wells to be installed at this site was 15 feet below grade. Groundwater was encountered at a depth of approximately 24 feet below grade in two of the wells, requiring more time to install them. With only one day scheduled to drill and install the wells, only three wells were completed. Other site investigation tasks completed include: determination of depth to groundwater; groundwater sampling and analyses for petroleum-related constituents; and an evaluation of sensitive receptors. The revised approach was approved by Mr. Gerold Noyes of the VTDEC in phone conversations with Mr. Timothy Kelly of Griffin on March 11 and 12, 1999.

A. Monitoring Well Installation

On March 10, 1999, three overburden monitoring wells were installed at the site (see Site Map in Appendix A). The boreholes were drilled utilizing hollow-stem auger (HSA) drilling methods. T&K Drilling of Troy, New Hampshire, installed the wells under the direct supervision of a Griffin geologist. During borehole advancement, soil samples were collected every five feet. Soil samples were screened for volatile organic compounds (VOCs) using an HNu™ Model HW-101 portable photoionization detector (PID) with a 10.2 eV lamp using the Griffin Jar/Polyethylene Bag Headspace Screening Protocol, which conforms to state and industry standards. Soil characteristics and headspace concentrations were recorded by the geologist in detailed well logs which are presented in Appendix B. Soils were described and classified according to the Unified Soil Classification System (USCS) Visual Manual method as described in ASTM D-2488-93.

Monitoring well construction records are included in Appendix B. The three on-site wells were completed with 2-inch diameter Schedule 40 PVC riser and factory-slotted screened intervals (0.010-inch slots). A silica sand pack was installed in the annular space surrounding the screened interval. The sand pack was brought to a minimum of 2 feet above the top of the screened interval. Each of the three wells was completed with a flush-mounted road box and secured with a compression cap.

The borehole for MW-1 was drilled to a depth of approximately 20 feet below grade and an additional split spoon was advanced from approximately 20 feet below grade to 22 feet below grade. Saturated soils were encountered at approximately 20 feet below grade. Based on this data, the depth to water was inferred to occur between 17 and 20 feet below grade. The soils encountered in the borehole consisted of 0.25 foot of asphalt and medium brown silty sand from 0.25 foot to 6 feet below grade. The soils from 6 feet below grade to approximately 22 feet

below grade consisted of clayey sand from 6 feet below grade to 7 feet below grade, grading to lean clay from 10 feet below grade to approximately 22 feet below grade. No VOCs were detected in the headspace of soil samples collected from this borehole. No petroleum odors or stains were observed from the soil samples collected from this borehole. MW-1 was completed with a 10-foot screened interval from 10 to 20 feet below grade.

The borehole for MW-2 was drilled to a depth of approximately 30 feet below grade and an additional split spoon was advanced from approximately 30 feet below grade to 32 feet below grade. The soils encountered in the MW-2 borehole consisted of 0.25 foot of asphalt, medium brown, silty sand from 0.25 foot below grade to approximately 5 feet below grade, clayey gravel from 5 feet below grade to approximately 6 feet below grade, and medium brown lean clay with local gravel from approximately 6 feet below grade to approximately 18 feet below grade. Soils from 18 feet below grade to approximately 32 feet below grade consisted of light to medium brown sandy silt and silty sand. Groundwater was encountered at approximately 24 feet below grade. Petroleum odors were observed in the samples collected from 15 to 17 feet (in the clay) and 25 to 27 feet below grade (in the sand). No petroleum staining was observed in the soils collected from this boring. PID readings in the soil sample headspaces ranged from 3 to 99 parts per million volume (ppmv) at depths from 15 to 32 feet below grade. MW-2 was completed with a ten-foot screened interval from approximately 20 feet to 30 feet below grade.

The borehole for MW-3 was drilled to a depth of approximately 30 feet below grade and an additional split spoon was advanced from approximately 30 feet below grade to 32 feet below grade. The soils encountered in the MW-3 borehole consisted of asphalt from grade to 0.25 foot below grade. Soils from 0.25 foot below grade to approximately 5 feet below grade consisted of silty and clayey sand. Soils from 5 feet below grade to approximately 16.5 feet below grade consisted of lean clay with local sand and gravel. Soils from approximately 16.5 feet below grade to 32 feet below grade consisted of silty sand with local gravel. Groundwater was encountered at approximately 24 feet below grade. Petroleum stains were observed in soils collected from 10 to 16.5 feet below grade. Petroleum odors were observed in the soils collected from 10 feet below grade to 17 feet below grade. PID readings in the soil sample headspaces ranged from 6 to 106 ppm at depths from 10 feet below grade to 32 feet below grade. MW-3 was completed with a 10-foot screened interval from 20 to 30 feet below grade.

B. Depth to Groundwater and Free Product

Prior to groundwater sampling on March 26, 1999, all three on-site monitoring wells were monitored for presence of free floating product and depths to water. Groundwater was encountered at approximately 17 feet below grade in MW1 and at depths between 24 feet and 25 feet below grade in MW-2 and MW-3 on March 26, 1999. Approximately 6 inches of free-phase product were observed in MW-2 on March 26, 1999. The product was dark colored and no strong aromatic odors were reported. The difference in the depths to water between the MW-1, completed in the clay unit, and MW-2 and MW-3, completed in the sand unit, indicates that the

water in MW-1 is representative of water in a different water-bearing unit than the water in MW-2 and MW-3. Because the three wells were completed in two different water-bearing units, the lateral direction of groundwater flow in either water-bearing unit cannot be accurately inferred from the depth-to-water data.

C. Groundwater Sampling and Analyses

A groundwater sample was collected from the monitoring wells MW1 and MW3, using disposable bailers, on March 26, 1999. MW2 was not sampled due to the presence of free product. Groundwater samples were analyzed by EPA Method 8021B by Endyne, Inc., laboratory of Williston, Vermont, for petroleum-related VOCs and by Modified EPA Method 8015 for total petroleum hydrocarbons (TPHs) diesel range organics (DRO). A quality control (QC) sample (a trip blank) was also collected. Analytical results are summarized in tabular form in Appendix C. The applicable groundwater standards are provided for reference in this summary table. Appendix C also contains the analytical laboratory reports. Analytical results of the trip blank sample indicate that adequate Quality Assurance/ Quality Control was maintained throughout sample collection and analyses.

No VOCs were detected in the sample collected from MW1 on March 26, 1999. No TPHs were detected in the sample collected from MW1 on March 26, 1999.

Naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were detected in the sample collected from MW3 on March 26, 1999, at concentrations greater than the applicable Vermont Groundwater Enforcement Standards (VGES). Select other VOCs were detected in the sample collected from MW3 on March 26, 1999, at concentrations well below the applicable VGES. TPHs were also detected in the sample collected from MW3 on March 26, 1999. There is currently no VGES for TPHs.

IV. EVALUATION OF POTENTIALLY SENSITIVE RECEPTORS

The following potentially sensitive receptors in the vicinity of the Site were identified:

- ♦ the existing buildings at 3 and 5 College Street,
- ♦ the Otter Creek, located approximately 400 feet north of the Site

The basements of the 3 and 5 College Street buildings were inspected and screened with a PID for the presence of organic vapors on August 13, 1998. No VOCs were detected with the PID during the inspection and screening of either building. Furthermore, the low permeability clay layer between the buildings and the sand unit in which the free product was observed is likely to prevent the upward migration of free product at the Site. Given the significant distance of the Otter Creek from the source area, the risks posed to this potential receptor are likely to be minimal. There are disturbed soils associated with the sprinkler line, buried at a depth of

approximately 6 feet below grade between the 3 and 5 College Street buildings, which may act as a conduit for preferential flow of contaminants. However, no indication of contamination was noted in the sprinkler line trench during excavation and removal of the 2,000-gallon fuel oil UST. The contamination observed during the UST removal was localized to the southern portion of the UST excavation. Therefore it is unlikely that this utility trench is a preferential pathway for contaminant migration.

V. CONCLUSIONS

Based upon the results of the above investigative tasks, Griffin presents the following conclusions:

- 1) Three monitoring wells were installed at the Site on March 10, 1999. Two of the monitoring wells were installed to approximately 30 feet below grade (MW2 and MW3). MW1 was installed to a depth of 20 feet below grade.
- 2) Groundwater was encountered at depths between 24 and 25 feet on March 26, 1999, in MW2 and MW3 and at approximately 17 feet below grade in MW1. This finding along with the lithology logged in each borehole suggest that MW1 is likely to be completed in a different water bearing unit than MW2 and MW3.
- 3) No dissolved petroleum-related compounds were detected in the samples collected from MW-1 on March 26, 1999. Select petroleum-related compounds were detected at concentrations greater than the applicable VGES in the sample collected from MW-3 on March 26, 1999. TPHs were also detected in the sample collected from MW3 on March 26, 1999; there is no VGES for TPHs. It is expected that dissolved petroleum constituent concentrations will decrease over time with the progressive action of natural mitigative processes, including biodegradation, dispersion, and dilution.
- 4) Approximately 6 inches of free phase product were detected in MW-2 on March 26, 1999.
- 5) There appear to be minimal potential risks to the identified sensitive receptors based on currently available data.

VI. RECOMMENDATIONS

Based upon the above conclusions, Griffin recommends the following additional work.

- 1) Product removal from MW2 should be performed twice per month until a negligible amount of product is detected in the on-site wells for three consecutive site visits.

2) To track migration of subsurface petroleum constituents at the site and document expected reductions in constituent concentrations, groundwater from the existing wells without petroleum free product should be sampled and analyzed on a quarterly basis for one year. Samples should be analyzed by EPA Method 8021B for presence of petroleum-related VOCs.

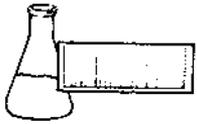
3) Recommendations for any additional work that is warranted will be made depending on the results of the four rounds of sampling and the product bailing results.

VII. REFERENCES

1. Doll, Chuck G., D.P. Stewart, and P. MacClintock, eds., 1970, *Surficial Geologic Map of Vermont*, State of Vermont.
2. Doll, Chuck G., W.M. Cady, J. B. Thompson, Jr., and M.P. Billings eds., 1961, *Centennial Geologic Map of Vermont*, State of Vermont.

APPENDIX A

Site Maps



ENDYNE, INC.

129841441

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International

ORDER ID: 1742

PROJECT NAME: 3 College St/#129841441

REF.#: 135,974 - 135,976

REPORT DATE: April 5, 1999

DATE SAMPLED: March 26, 1999

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,

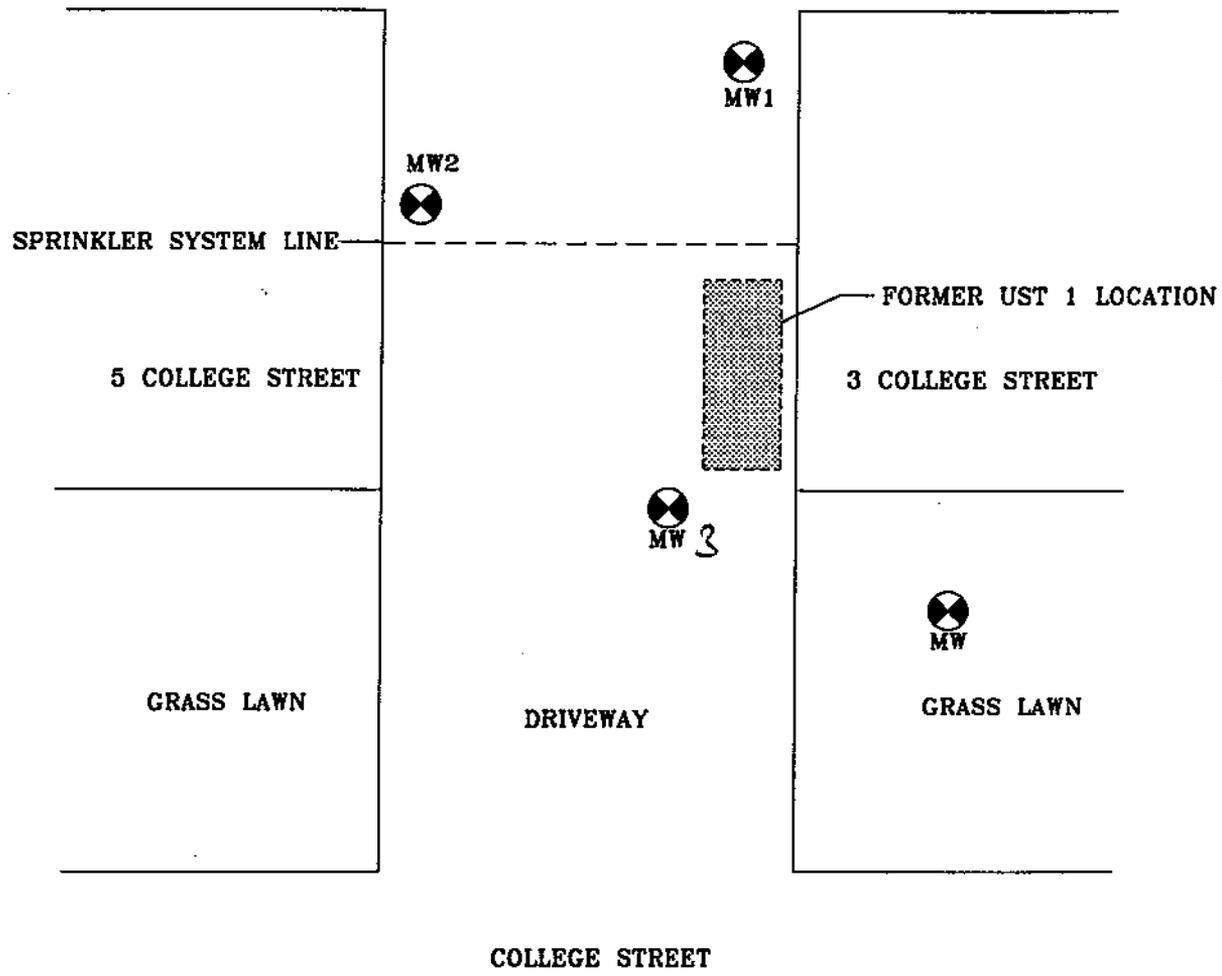
Harry B. Locker, Ph.D.
Laboratory Director

enclosures



GARAGE

PROPOSED MONITORING WELL LOCATIONS



JOB #: 129841441



MIDDLEBURY COLLEGE
3 COLLEGE ST, MIDDLEBURY, VERMONT

VTDEC SITE # 98-2498

SITE MAP

DATE: 5/26/99 DWG.#:1 NOT TO SCALE DRN.:TG APP.:TK

APPENDIX B

Monitoring Well Logs and Construction Records

PROJECT MIDDLEBURY COLLEGE
 LOCATION 3 COLLEGE ST., MIDDLEBURY, VERMONT
 DATE DRILLED 3/10/99 TOTAL DEPTH OF HOLE 22.0'
 DIAMETER 4.25"
 SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"
 CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc
 DRILLING CO. T&K DRILLING METHOD HSA
 DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW1

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS/6" SPOON RECOVERY & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX				0
0	LOCKING WELL CAP				0
1	CONCRETE				1
1-2				SILTY SAND (SM)- moist, medium brown, 2" asphalt, fill.	1-2
2-3					2-3
3-4	NATIVE BACKFILL				3-4
4-5					4-5
5-6				SILTY SAND (SM)- moist, medium brown, 2" asphalt, fill.	5-6
6-7			5'-7'- 7/5/6/9 24/15	CLAYEY SAND (SC)- moist, medium brown.	6-7
7-8	BENTONITE		5'-6' 0 ppm 6'-7' 0 ppm		7-8
8-9	WELL RISER				8-9
9-10					9-10
10-11	SAND PACK		10'-12'- 11/24/18/27 24/22 0 ppm	LEAN CLAY (CL)- moist, medium brown.	10-11
11-12					11-12
12-13					12-13
13-14					13-14
14-15	WELL SCREEN				14-15
15-16			15'-17'- 7/9/8/8 24/24 0 ppm	LEAN CLAY (CL)- moist, medium brown, silt in laminations locally, less than 5% fine gravel locally.	15-16
16-17				17.0' WATER TABLE 	16-17
17-18					17-18
18-19					18-19
19-20	BOTTOM CAP				19-20
20-21			20'-22' 9/12/14/18 24/11 0 ppm	LEAN CLAY (CL)- wet, medium brown, total depth 22' (spoon).	20-21
21-22					21-22
22-23	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 20' END OF EXPLORATION AT 22'	22-23
23-24					23-24
24-25					24-25

PROJECT MIDDLEBURY COLLEGE
 LOCATION 3 COLLEGE ST., MIDDLEBURY, VERMONT
 DATE DRILLED 3/10/99 TOTAL DEPTH OF HOLE 32.0'
 DIAMETER 4.25"
 SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"
 CASING DIA. 2" LENGTH 19.5' TYPE sch 40 pvc
 DRILLING CO. T&K DRILLING METHOD HSA
 DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW2

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS/6" SPOON RECOVERY & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX				0
0	LOCKING WELL CAP				0
2	CONCRETE			SILTY SAND (SM)- moist, 2" asphalt. medium brown	2
4	NATIVE BACKFILL		5'-6'- 13-50/1" 7/3 0 ppm	CLAYEY GRAVEL (GC)- moist, medium brown, fill, spoon refusal, auger through.	4
6					6
8					8
10	WELL RISER		10'-12'- 7/10/14/15 24/24 0 ppm	LEAN CLAY (CL)- moist, medium brown, vertical clay filled dike, roots observed, locally silty, (rapid dilatancy).	10
12					12
14					14
16			15'-17'- 5/9/25/32 24/22 99 ppm	LEAN CLAY WITH GRAVEL (CL)- moist, medium brown, petroleum odor, gravel odor @ 16.5', silty locally.	16
18	BENTONITE				18
20	SAND PACK		20'-22'- 3/52/38/25 24/13 3 ppm	SANDY SILT (ML)- moist, buff.	20
22					22
24	WELL SCREEN			24.0' WATER TABLE	24
26			25'-27'- 11/12/14/17 24/18 92 ppm	SILTY SAND (SM)- wet, medium brown, petroleum odor, silt rich layers locally.	26
28	BOTTOM CAP				28
30			30'-32'- 8/9/10/12 24/14 9.8 ppm	SILTY SAND (SM)- wet, light brown.	30
32	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 30' END OF EXPLORATION AT 32'	32
34					34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50

PROJECT MIDDLEBURY COLLEGE
 LOCATION 3 COLLEGE ST., MIDDLEBURY, VERMONT
 DATE DRILLED 3/10/99 TOTAL DEPTH OF HOLE 32.0'
 DIAMETER 4.25"
 SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"
 CASING DIA. 2" LENGTH 19.5' TYPE sch 40 pvc
 DRILLING CO. T&K DRILLING METHOD HSA
 DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW3

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS/6" SPOON RECOVERY & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX				0
0	LOCKING WELL CAP				0
2	CONCRETE			SILTY CLAYEY SAND (SM)- moist, medium grayish brown, 2" asphalt, silt and clay in sand, mixed.	2
4			5'-7'- 3/3/2/4		4
6	NATIVE BACKFILL		24/3	SANDY LEAN CLAY WITH GRAVEL (CL)- moist, medium brown.	6
8					8
10	WELL RISER		10'-12'- 6/8/11/12		10
12			24/24	LEAN CLAY (CL)- moist, medium grayish brown, (3) local 1" silt interbeds, petroleum odor.	12
14					14
16			15'-17'- 5/11/28/43		16
16			24/20	LEAN CLAY (CL)- moist, medium grayish brown, petroleum odor.	16
18	BENTONITE		15'-16.5'- 99 ppm		18
18			16.5'-17'- 106 ppm	SILTY SAND (SM)- moist, light grayish brown.	18
20	SAND PACK		20'-22'- 23/28/31/38		20
22			24/17	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM)- moist, buff, weakly stratified.	22
22			23 ppm		22
24	WELL SCREEN			24.0' WATER TABLE	24
26			25'-27'- 9/9/11/20		26
26			24/20	SILTY SAND (SM)- wet, light brown.	26
28	BOTTOM CAP		20 ppm		28
30			30'-32'- 6/9/9/10		30
30			24/20		30
30			6 ppm	SILTY SAND (SM)- wet, light brown.	30
32	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 30'	32
34				END OF EXPLORATION AT 32'	34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50

APPENDIX C

Groundwater Quality Data, March 26, 1999

Summary of Groundwater Quality Data, 3 College Street, Middlebury College
Middlebury, VT

PARAMETER	3-26-99			VGES
	MW1	MW2	MW3	
Benzene	ND(1)	Free	ND(1)	5
Ethylbenzene	ND(1)	Product	4.6	700
Toluene	ND(1)		2.0	1,000
MTBE	ND(10)	0.5'	ND(10)	40
Naphthalene	ND(1)		32.1	20
1,2,4-Trimethylbenzene	ND(1)		29.9	5
1,3,5-Trimethylbenzene	ND(1)		9.4	4
Xylenes	ND(1)		22.4	10,000
Total VOCs	ND(1)		100.4	-
TPHs (mg/L)	ND(0.4)		4.56	-

All values reported in ug/L (ppb) except as noted.

41441wq.xls\water quality

Detections are **Bold**

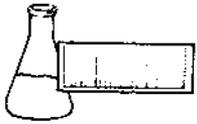
Values greater than the VGES are shaded

NA - Not Analyzed

ND(10) - Not Detected (Detection Limit)

TBQ(10) - Trace Below Quantitation Limit (Detection Limit)

VGES - Vermont Groundwater Enforcement Standard



ENDYNE, INC.

129841441

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International

ORDER ID: 1742

PROJECT NAME: 3 College St/#129841441

REF.#: 135,974 - 135,976

REPORT DATE: April 5, 1999

DATE SAMPLED: March 26, 1999

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.

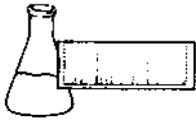
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

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



ENDYNE, INC.

Laboratory Services

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

EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: March 29, 1999

PROJECT NAME: 3 College St/#129841441

REPORT DATE: April 5, 1999

CLIENT PROJ. #: 129841441

ORDER ID: 1742

Ref. #:	135,974	135,975	135,976		
Site:	Trip Blank	MW-1	MW-3		
Date Sampled:	3/26/99	3/26/99	3/26/99		
Time Sampled:	6:33	8:41	8:22		
Sampler:	L.D.	L.D.	L.D.		
Date Analyzed:	4/1/99	4/1/99	4/3/99		
UIP Count:	0	0	>10		
Dil. Factor (%):	100	100	100		
Surr % Rec. (%):	90	81	94		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
MTBE	<10	<10	<10		
Benzene	<1	<1	<1		
Toluene	<1	<1	2.0		
Ethylbenzene	<1	<1	4.6		
Xylenes	<1	<1	22.4		
1,3,5 Trimethyl Benzene	<1	<1	9.4		
1,2,4 Trimethyl Benzene	<1	<1	29.9		
Naphthalene	<1	<1	32.1		

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

CHAIN-OF-CUSTODY RECORD

1999
2-Orig

129841441

Project Name: <u>3 College St</u> Site Location: <u>Middlebury VT</u>	Reporting Address: <u>Griffins</u>	Billing Address: <u>Griffin</u>
Endyne Project Number: <u>1742</u>	Company: <u>Griffin International</u> Contact Name/Phone #: <u>T. Griffin 1945-4288</u>	Sampler Name: <u>L. Dougarty</u> Phone #: <u>518-562-4666</u>

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				
135974	TRIP BLANK	WATER	X		3-26-99 6:33	2	40ml		8021 B 8015 D20	HCL	
135975	MW-1				8:41				8021 B		
	MW-1				8:41				8015 D20		
	MW-2				8:33				8021 B		
	MW-2				8:33				8015 D20		
	MW-2 Duplicate				8:33				8021 B		
	MW-2 Duplicate				8:33				8015 D20		
135976	MW-3				8:22				8021 B		
	MW-3				8:22				8015 D20		

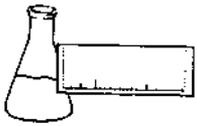
3
-29-
FK

Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>3-26-99 / PM</u>
Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>3/29/99 10:15</u>

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										



ENDYNE, INC.

129841441

Laboratory Services

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

LABORATORY REPORT

CLIENT: Griffin International

ORDER ID: 1742

PROJECT: 3 College St/#129841441

DATE RECEIVED: March 29, 1999

REPORT DATE: April 5, 1999

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

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 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, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



LABORATORY REPORT

CLIENT: Griffin International
PROJECT: 3 College St/#129841441
REPORT DATE: April 5, 1999

ORDER ID: 1742
DATE RECEIVED: March 29, 1999
SAMPLER: LD
ANALYST: 420

Ref. Number: 135974 Site: Trip Blank Date Sampled: March 26, 1999 Time: 6:33 AM

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>	<u>Analysis Date</u>
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	4/2/99

Ref. Number: 135975 Site: MW-1 Date Sampled: March 26, 1999 Time: 8:41 AM

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>	<u>Analysis Date</u>
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	4/2/99

Ref. Number: 135976 Site: MW-3 Date Sampled: March 26, 1999 Time: 8:22 AM

<u>Parameter</u>	<u>Result</u>	<u>Unit</u>	<u>Method</u>	<u>Analysis Date</u>
TPH 8015 DRO	4.56	mg/L	SW 8015B	4/2/99

CHAIN-OF-CUSTODY RECORD

2-Orig

19841441

Project Name: <u>College St</u>	Reporting Address: <u>Griffin</u>	Billing Address: <u>Griffin</u>
Site Location: <u>Middlebury VT</u>	Company: <u>Griffin International</u>	Sampler Name: <u>L. Donohue</u>
Endyne Project Number: <u>1742</u>	Contact Name/Phone #: <u>T. Kelly 1915-4258</u>	Phone #: <u>516-362-4666</u>

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				
135974	Trip Blank	Water	X		3:26:47	2	40ml		8015 D20	Ice	
135975	MW-1				8:47				8021 B		
	MW-1				8:41				8015 D20		
	MW-2				8:33				8021 B		
	MW-2				8:33				8015 D20		
	MW-2 Duplicate				8:33				8021 B		
	MW-2 Duplicate				8:33				8015 D20		
135976	MW-3				8:22				8021 B		
	MW-3				8:22				8015 D20		

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Relinquished by: Signature <u>[Signature]</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>3/29/99 10:15</u>

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
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29	TCI.P (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										