GRIFFIN INTERNATIONAL INC

JAN 13 10 23 AM '97

January 10, 1997

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

RE: Subsurface Investigation, St. Johnsbury Middle School, St. Johnsbury, VT (VTDEC #96-2032)

Dear Chuck:

Enclosed please find the January 1997 *Report on the Site Investigation of Subsurface Petroleum Contamination* for the St. Johnsbury Middle School site in St. Johnsbury, Vermont. Mr. Tom McCaffrey of the St. Johnsbury School District requested that we forward a copy to you. Please do not hesitate to call, if you have any questions or comments.

Sincerely,

Timothy J. Kelly, P.G.
Geologist

Enc.

cc: T. McCaffrey
GI#10964941

REPORT ON THE SITE INVESTIGATION OF SUBSURFACE PETROLEUM CONTAMINATION

AT

ST. JOHNSBURY MIDDLE SCHOOL
Route 2, St. Johnsbury, Vermont

VTDEC Site #96-2032
Griffin Proj. #10964941

JANUARY 1997

Prepared For:

St. Johnsbury School District
26 Western Ave.
St. Johnsbury, VT 05819

Prepared By:

GRIFFIN INTERNATIONAL, INC.
P.O. Box 943
Williston, Vermont 05495
(802) 865-4288

TABLE OF CONTENTS

I. INTRODUCTION 1

II. SITE BACKGROUND 1

A. Site Setting 1
B. Site History 1

III. INVESTIGATIVE PROCEDURES 2

A. Soil Borings 2
B. Soil Sampling and Analyses 3

IV. EVALUATION OF POTENTIALLY SENSITIVE RECEPTORS 3

V. CONCLUSIONS 4

VI. RECOMMENDATIONS 4

APPENDIX A - Site Maps
APPENDIX B - Soil Boring Logs
APPENDIX C - Soil Analytical Data

I. INTRODUCTION

This report provides a summary of the tasks completed for the additional investigation of subsurface petroleum contamination at St. Johnsbury Middle School in St. Johnsbury, Vermont (see Site Location Map in Appendix A). Results of the following investigative tasks performed by Griffin International, Inc., (Griffin) are presented: soil sampling and evaluation of sensitive receptors in the vicinity of the St. Johnsbury Middle School site. Also provided are conclusions and recommendations for the site. This work is being performed based on requests from Mr. Chuck Schwer of the Vermont Department of Environmental Conservation (VTDEC) in a letter to Tom McCaffrey of the St. Johnsbury School District, dated September 20, 1996. Work was performed in accordance with the October 8, 1996 *Preliminary Work Plan and Cost Estimate for Additional Subsurface Investigation of Petroleum Contamination* at the site prepared by Griffin and approved by the VTDEC.

II. SITE BACKGROUND

A. Site Setting

The St. Johnsbury Middle School is located on the south side of Route 2 in a residential and commercial area of St. Johnsbury, Vermont. Topography at the site consists of broad terraces with steep, 20-foot steps to the west. The property is bounded to the east by Barker Avenue, a paved, two-lane street and residential properties. To the north of the site are Route 2 and residential properties. To the west of the property are residential/commercial properties. South of the school property is a vacant lot that is the location of a former foundry. The Sleepers River flows adjacent to the vacant lot.

No supply well exists on the school property. The area is serviced by municipal water and sanitary sewer systems. Stormwater drains off the property through the municipal system. The site is underlain by lake bottom sediments including silt, silty clay, and clay according to the Surficial Geologic Map of Vermont (Ref. 1). Surficial deposits on immediately adjacent areas consist of well sorted sands. The bedrock underlying the site is the Waits River Formation. The Waits River Formation consists of gray quartz-muscovite schist in the vicinity of the middle school (Ref. 2). There were no bedrock exposures observed in the immediate vicinity of the school property.

B. Site History

A 2000-gallon, gasoline UST, of single-walled steel construction, was closed on July 8, 1996. A UST Closure report, dated July 11, 1996, was forwarded to the VTDEC UST Program. Elevated concentrations of volatile organic compounds (VOCs), ranging from 200 to 300 parts per million (ppm), were detected with an HNu™ Model PI-101 portable photoionization

detector (PID) in soils collected from depths of 0.5 to 8 feet below grade. The tank was in good condition with no holes. Groundwater was not observed in the excavation.

The extent of contamination could not be defined with the available equipment. Therefore, all excavated soil and clean fill material were backfilled into the excavation. No replacement tank was installed.

III. INVESTIGATIVE PROCEDURES

To define the extent of subsurface petroleum contamination in the area of the St. Johnsbury Middle School, the following tasks were undertaken as per the October 8, 1996, Work Plan: drilling of four soil borings, soil sampling and analyses for petroleum-related constituents, and an evaluation of sensitive receptors.

A. Soil Borings

On November 18, four soil borings were advanced in and near the former tank pit area. During borehole advancement, two-foot split spoon samples were collected from approximately every five feet. Soils were screened for headspace hydrocarbon vapor concentrations using a PID per Griffin protocols. Soil characteristics and contaminant concentrations were recorded by the geologist in detailed well logs which are presented in Appendix B.

The four soil borings were installed to depths ranging from 32.8 feet to 38.6 feet below grade. Soils encountered in the boreholes consisted generally of dark brown to gray, fine- to medium-grained sands from grade to 10 feet; gray silty and sandy clay with sand interbeds from 10 feet to 15 feet; gray silt from 15 to 20 feet; and yellowish-brown, very fine sand from 20 feet to the bottom of the borehole. A 1.4-foot layer of hardpan composed of silt with a little sand and gravel was encountered at 35 feet in SB1. Groundwater was encountered in SB1 and SB4 at approximately 36.5 feet. Each boring was advanced to auger refusal. Split spoons were driven at the depth of refusal, however in each boring there was little or no recovery from that spoon. Therefore, refusal was inferred to be the bedrock surface.

Some petroleum odors were observed in each of the soil borings. Total VOC concentrations ranged from 2.6 to 300 ppm, as measured with the PID. A petroleum odor was noted in sediments from two feet to 37 feet in SB1 which was advanced through the former tank pit. The highest total VOCs were observed in the sediments of the former tank pit itself to a depth of 12 feet. The VOC levels generally decreased with depth below 13 feet, the level of the bottom of the tank excavation. The VOC levels in SB2 increased with depth from 6.2 ppm to a maximum of 133 ppm at a depth of 25 to 27 feet. VOC levels decreased to 30 ppm from 27 feet to auger refusal at a depth of 32.8 feet. VOC levels in SB3 generally increased from 8 ppm from grade to two feet to 26 ppm from 20 feet to 22 feet. VOC levels decreased to 8 ppm at 25 feet then

increased to 21 ppm just above auger refusal at 32.8 feet. VOC levels in SB4 were greatest at a depth of 15 to 17 feet with a headspace reading of 60 ppm. The VOC concentration decreased to 23 ppm at 25 to 27 feet and increased to 56 ppm at a depth of 30 to 32 feet, four feet above groundwater. All soil cuttings were backfilled into the boreholes. Clean bank fill and concrete were used to fill the borings to grade. SB4 was advanced through the macadam of the school parking lot and was therefore completed with a concrete cap.

No free-phase product or sheen was observed on the water from the sediments retrieved from the spoons from SB1 and SB4.

B. Soil Sampling and Analyses

In addition to screening the soil samples with a PID on-site, one soil sample was collected from each boring. Soil samples were collected from the capillary fringe in borings SB1 and SB4 and from the last split-spoon sample before auger refusal in SB2 and SB3. Analytical data is summarized in a table in Appendix C. The laboratory data sheets are also included in Appendix C.

Traces of benzene and ethylbenzene and a moderate to low concentration of xylene were detected in SB1. A trace of ethylbenzene and a moderate concentration of xylene were detected in SB4. None of the targeted petroleum-related constituents were detected in either SB2 or SB3.

IV. EVALUATION OF POTENTIALLY SENSITIVE RECEPTORS

The following potentially sensitive receptors in the vicinity of the St. Johnsbury Middle School were identified:

- the St. Johnsbury Middle School building;
- the Sleepers River, tributary to the Passumpsic River, located within 600 feet to the west.

The depth to groundwater is greater than 35 feet below grade, the school building is not expected to be downgradient of the former tank pit, and the extent of soil contamination is limited. Therefore, it is expected that risk to the St. Johnsbury Middle School building is negligible. It is possible that adsorbed and vapor-phase soil contamination may be leaching to groundwater as precipitation filters through the soil column. Leaching is likely to be inhibited by the macadam cover to the east of the tank pit. Given the significant distance from the former tank pit to the Sleepers River, the current risks posed to this surface water body are likely to be minimal.

V. CONCLUSIONS

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

1) No free phase product was detected in the two soil borings where groundwater was encountered.

2) Based on the available data, the overburden aquifer at the St. Johnsbury Middle School site is of limited thickness and areal extent.

3) Petroleum contamination was detected at low to moderate levels in the soil borings. It is expected that adsorbed, vapor-phase, and potential dissolved petroleum compound concentrations will decrease over time with the progressive action of natural mitigative processes, including biodegradation, volatilization, dispersion, and dilution.

4) Risks posed to potentially sensitive receptors in the vicinity of the St. Johnsbury Middle School appear minimal, based on currently available data.

VI. RECOMMENDATIONS

Based upon the above conclusions, Griffin recommends that the St. Johnsbury Middle School site be considered for closure and be removed from the VTDEC Active Hazardous Waste Sites List. This recommendation is offered based upon achievement of the following closure criteria, as per the VTDEC Site Management Activity Completed (SMAC) Checklist:

1) The source(s), nature, and extent of the petroleum contamination at the site has been adequately defined.

   The source of petroleum contamination detected in soils and groundwater at the St. Johnsbury Middle School site was from apparent release(s) of gasoline from spills and overfills of the UST. Petroleum contamination was found to be in a limited area in and in the vicinity of the former tank pit.

2) Source(s) has been removed, remediated, or adequately contained.

   The 2,000-gallon gasoline UST has been removed from the site and permanently closed in accordance with VTDEC regulations.

3) Levels of contaminants in soil and groundwater shall be stable, falling, or non-detectable.

Results of the initial investigation of petroleum contamination at the site indicate that petroleum contamination is limited to the vicinity of the former UST pit. No sheen was observed on the groundwater found in the spoons collected in borings SB1 and SB4. Because the soil contamination is the result of periodic spills and overfills, it is likely that the potential groundwater contamination at the site is stable or decreasing due to source removal.

4) Groundwater enforcement standards are met on entire property.

Given significant physical site constraints, groundwater beneath the site could not be characterized through traditional means. In addition, there is insufficient saturated thickness of aquifer materials under the site for the overburden to be used as a water supply aquifer.

5) Soil guideline levels are met. If not, engineering or institutional controls are in place.

No petroleum contaminated soils were removed from the subject property. In-situ soils were 300 ppm or less of total VOCs as detected with a PID in the former UST pit. Soil contamination outside the former UST was 133 ppm or less of total VOCs as detected with a PID. The November 18, 1996 soil sampling analytical results indicate that petroleum contamination in soil near the capillary fringe was detected at concentrations from 321 µg/kg below the tank pit (SB1)and 2780 µg/kg in boring SB4, 50 feet north of the tank pit. VOC concentrations in the borings adjacent to the tank pit (SB2 and SB3) were below the detection limit. Over time, adsorbed contaminant concentrations in the UST pit will likely decrease due to the natural processes of biodegradation, volatilization, and diffusion.

6) No unacceptable threat to human health or the environment exists on site.

Residual subsurface petroleum contamination in groundwater and soils at the St. Johnsbury Middle School site does not pose an unreasonable risk to human health and safety or the environment for the following reasons:

- concentrations of petroleum constituents in the soils closely surrounding the former UST location are low to nondetectable.
- there is insufficient saturated thickness in the vicinity of the middle school for the overburden to be used as a water supply aquifer.
- the subject property and properties immediately surrounding the site are serviced by municipal water supply and not on-site groundwater sources.
- the St. Johnsbury Middle School facility is not expected to be downgradient of the former tank pit area and has no confined spaces, such as a basement, to trap gases from the volatilization of adsorbed petroleum contaminants.

7) Site meets RCRA requirements.

Available records indicate that the St. Johnsbury Middle School site is not a known Resource Conservation and Recovery Act (RCRA) site as defined in 40 CFR 264.

8) Site meets CERCLA requirements.

Available records indicate that the St. Johnsbury Middle School site is not a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site as defined in 40 CFR 300.

REFERENCES

1. Doll, Charles G., D.P. Stewart, and P. MacClintock, eds., 1970, Surficial Geologic Map of Vermont, State of Vermont.

2. Doll, Charles 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

SITE LOCATION MAP

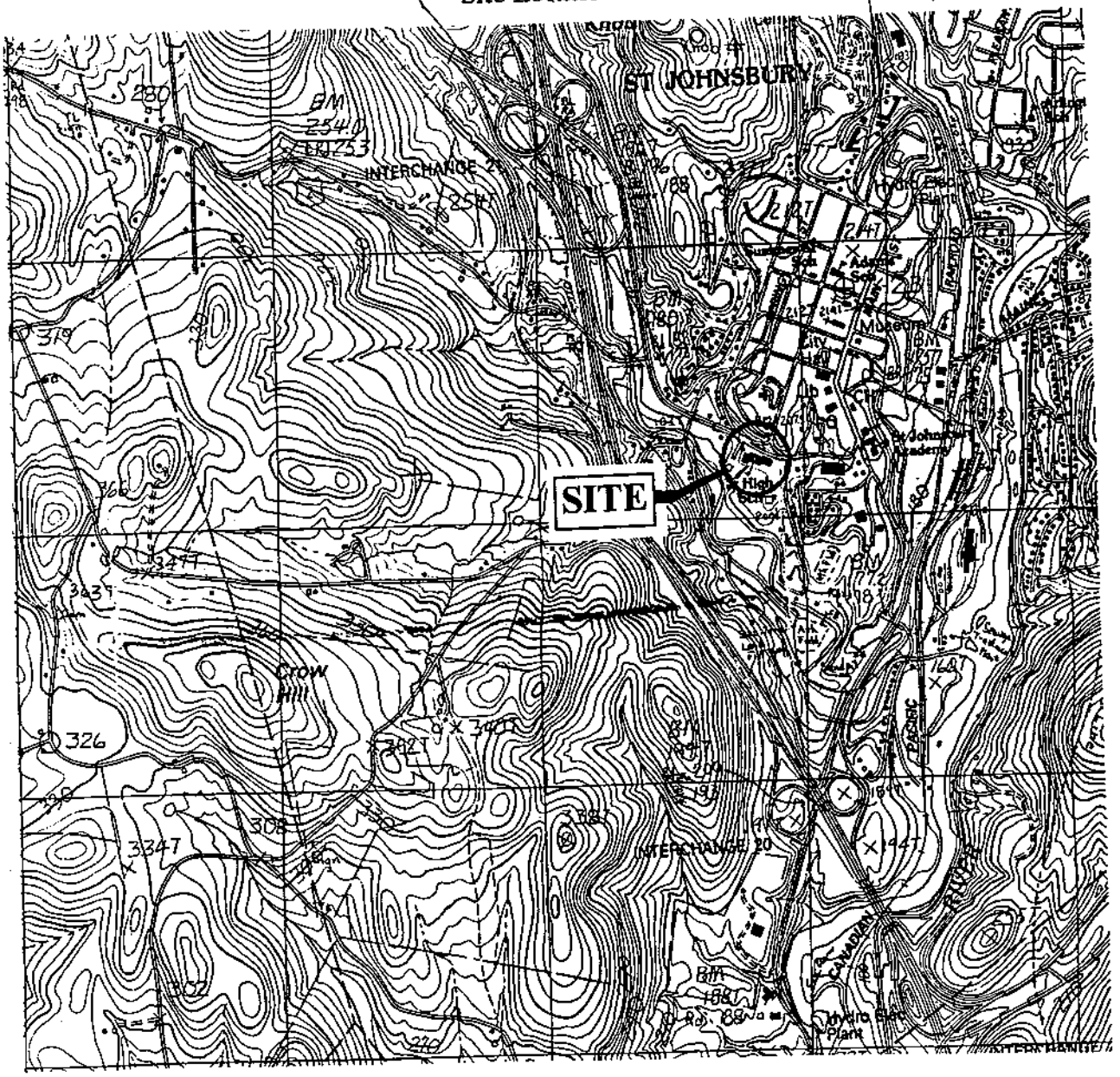
Source: USGS
St. Johnsbury Quadrangle
Vermont
7.5 Minute Series (Topographic)
1948

Scale: 1:24,000

Private well
Early 1970's 165 FT
12 gpm

St. Johnsbury Academy 1992
460 total depth
4 depth to bedrock
9 gpm 1 ½

Site Location



APPENDIX B

Soil Boring Logs

PROJECT ST. JOHNSBURY MIDDLE SCHOOL

LOCATION ST. JOHNSBURY, VERMONT

DATE DRILLED 11/18/96 TOTAL DEPTH OF HOLE 37.3'

DIAMETER 6"

SCREEN DIA. NA LENGTH NA SLOT SIZE NA

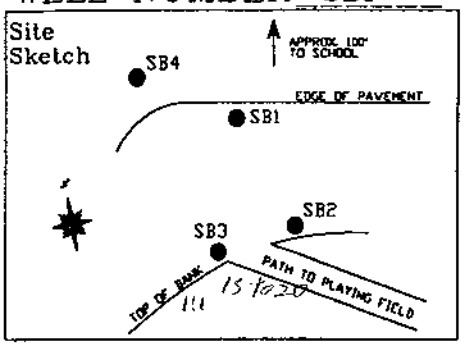
CASING DIA. NA LENGTH NA TYPE NA

DRILLING CO. TRI-STATE DRILLING METHOD HSA

DRILLER NEAL FAULKNER LOG BY T. KELLY

WELL NUMBER SB1

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0			0'-2' 32 ppm	Buff to gray, moist, fine to coarse SAND, petroleum odor.	0
2					2
4					4
6			5'-7' 300 ppm	Gray, silty, fine to coarse SAND.	6
8					8
10			10'-12' 300 ppm	Gray, moist, silty CLAY with trace sand.	10
12				Light brown, moist, fine to medium SAND.	12
14				Gray, moist, silty CLAY.	14
16			15'-17' 240 ppm	Light yellowish brown, moist, SILT with a little fine sand, strong pet. odor.	16
18		NATIVE BACKFILL			18
20			20'-22' 250 ppm	Light yellowish brown, moist, very fine SAND with some silt, rootlets, pet. odor.	20
22					22
24					24
26			25'-27' 190 ppm	Same as above, slightly grayer.	26
28					28
30			30'-32' 200 ppm	Same as above with trace fine gravel, less silty.	30
32					32
34					34
36			35'-35.4' 250 ppm	Gray, moist, SILT with a little fine sand and gravel, (till).	36
38		UNDISTURBED NATIVE SOIL	35.4'-37' 200 ppm	36.5' WATER TABLE	38
40				Gray to yellowish brown, fine SAND with some silt, with a little fine gravel.	40
42					42
44				END OF EXPLORATION AT 37.3'	44
46					46
48					48
50					50

Part 2

WELL NUMBER SB2

PROJECT ST. JOHNSBURY MIDDLE SCHOOL

LOCATION ST. JOHNSBURY, VERMONT

DATE DRILLED 11/18/96 TOTAL DEPTH OF HOLE 32.8'

DIAMETER 6"

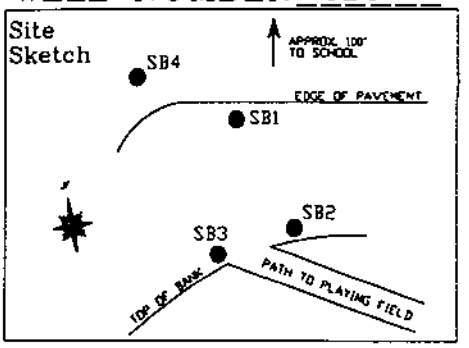
SCREEN DIA. NA LENGTH NA SLOT SIZE NA

CASING DIA. NA LENGTH NA TYPE NA

DRILLING CO. TRI-STATE DRILLING METHOD HSA

DRILLER NEAL FAULKNER LOG BY T. KELLY

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0					0
2			0'–2' 6.2 ppm	Dark brown, moist, SILT and CLAY with sand, grassroots.	2
4				Dark to medium brown, moist, SAND with some silt, little gravel, local clay layers.	4
6			5'–7' 5.6 ppm	Dark brown to gray, moist, mottled SAND with some silt, glass fragments, fill – (coal ash mixed with sand)	6
8					8
10			10'–12' 7.4 ppm	Reddish brown, moist, fine to medium subrounded SAND, locally wet, interbedded with grayish green silty CLAY, (0.2' layers), trace fine gravel, trace wood particles in dark brown silt.	10
12					12
14					14
16			15'–17' 39 ppm	Greenish brown, moist, SILT with some clay and a little sand.	16
18		NATIVE BACKFILL		Grayish green, moist, very fine SAND with silt and clay, grading to yellowish green/brown very fine sand.	18
20			20'–22' 44 ppm	Yellowish brown, moist, very fine SAND with little silt.	20
22					22
24					24
26			25'–27' 133 ppm	Same as above, petroleum odor.	26
28					28
30					30
32			30'–32' 30 ppm	Same as above with a little fine gravel, moist, some gravel very weathered.	32
34		UNDISTURBED NATIVE SOIL		Yellowish brown, moist, SILT with trace fine sand, trace fine gravel.	34
36				END OF EXPLORATION AT 32.8'	36
38					38
40					40
42					42
44					44
46					46
48					48
50					50

PROJECT ST. JOHNSBURY MIDDLE SCHOOL

LOCATION ST. JOHNSBURY, VERMONT

DATE DRILLED 11/18/96 TOTAL DEPTH OF HOLE 32.8'

DIAMETER 6"

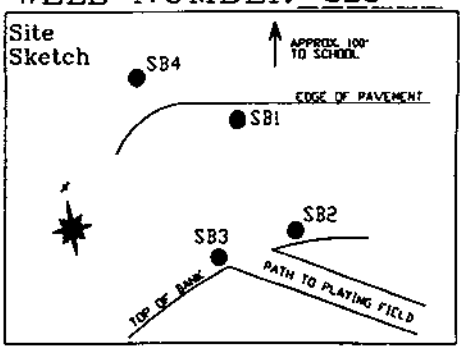
SCREEN DIA. NA LENGTH NA SLOT SIZE NA

CASING DIA. NA LENGTH NA TYPE NA

DRILLING CO. TRI-STATE DRILLING METHOD HSA

DRILLER NEAL FAULKNER LOG BY T. KELLY

WELL NUMBER SB3



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0			0'-2' 8 ppm	Grayish green, grading to dark brown, moist SAND and GRAVEL, with a little silt, gravel/sand includes gravel for pathway, coal ash.	0
2					2
4					4
6			5'-7' 2.6 ppm	Same as above, without coal ash.	6
8					8
10			10'-12' 12.2 ppm	Same as above from 10'-11.7', then grayish green, very fine SAND with silt and clay, trace angular gravel.	10
12					12
14					14
16			15'-17' 8.8 ppm	Same as above, but dark brown. Grayish green, moist, SILT with CLAY, local black staining, rootlets.	16
18		NATIVE BACKFILL			18
20			20'-22' 26 ppm	Yellowish brown, moist, very fine SAND with trace silt, subrounded, odor.	20
22					22
24					24
26			25'-27' 8 ppm	Same as above, greenish gray at 25.7'-26.1', also wet at same interval, locally laminated.	26
28					28
30			30'-32' 21 ppm	Olive, wet, SILT locally wet, with some local bedrock gravel (schist).	30
32				Gray, highly weathered schist at 30.9', Sand from 31.4'-31.6', moist, faint petroleum odor. Grayish brown, SILT and SAND at 32'-32.8'.	32
34		UNDISTURBED NATIVE SOIL	32'-32.8' 16.4 ppm		34
36				END OF EXPLORATION AT 32.8'	36
38					38
40					40
42					42
44					44
46					46
48					48
50					50

PROJECT ST. JOHNSBURY MIDDLE SCHOOL

LOCATION ST. JOHNSBURY, VERMONT

DATE DRILLED 11/18/96 TOTAL DEPTH OF HOLE 38.6'

DIAMETER 6"

SCREEN DIA. NA LENGTH NA SLOT SIZE NA

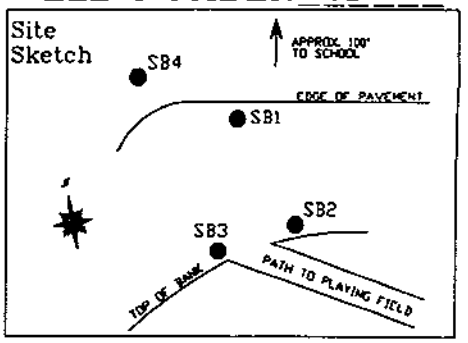
CASING DIA. NA LENGTH NA TYPE NA

DRILLING CO. TRI-STATE DRILLING METHOD HSA

DRILLER NEAL FAULKNER LOG BY T. KELLY

WELL NUMBER SB4

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0					0
2			0.25'–2' 12.4 ppm	Medium brown, moist, SAND with gravel and some silt, subrounded.	2
4					4
6			5'–7' 14.2 ppm	Same as above, more silt, trace gravel.	6
8				Grayish green, moist SILT with a little clay.	8
10			10'–12' 7.2 ppm	Grayish green, moist, silty CLAY with local reddish brown sand lenses.	10
12					12
14					14
16			15'–17' 60 ppm	Same as above.	16
18		NATIVE BACKFILL		Grayish green, moist, SILT, wood and dark brown sand at silt/clay interface, petroleum odor.	18
20			20'–22' 27 ppm	Same as above, laminated.	20
22				Yellowish brown, moist, very fine SAND with some silt.	22
24					24
26			25'–27' 23 ppm	Same as above, with 0.2' interlayer of dark, greenish brown SILT, petroleum odor.	26
28					28
30			30'–32' 56 ppm	Same as above.	30
32					32
34					34
36				Same as above, coarser.	36
38				36.5' WATER TABLE ▼	38
40		UNDISTURBED NATIVE SOIL		Greenish brown, wet, SILT with a little SAND.	40
42				END OF EXPLORATION AT 38.6'	42
44					44
46					46
48					48
50					50

APPENDIX C

Soil Analytical Data

Soil Analytical Data

St. Johnsbury Middle School Site Assessment
St. Johnsbury, VT

units are µg/kg

PARAMETER	Sample No. / Date	SS-1 11-18-96	SS-2 11-18-96	SS-3 11-18-96	SS-4 11-18-96	
Benzene		TBQ(70)	ND(70)	ND(60)	ND(700)	
Chlorobenzene		ND(70)	ND(70)	ND(60)	ND(700)	
1,2-DCB		ND(70)	ND(70)	ND(60)	ND(700)	
1,3-DCB		ND(70)	ND(70)	ND(60)	ND(700)	
1,4-DCB		ND(70)	ND(70)	ND(60)	ND(700)	
Ethylbenzene		TBQ(70)	ND(70)	ND(60)	TBQ(700)	
Toluene		ND(70)	ND(70)	ND(60)	ND(700)	
Xylenes		321.0	ND(70)	ND(60)	2780.0	
Total BTEX		321.0	ND(70)	ND(60)	2780.0	
MTBE		ND(700)	ND(700)	ND(600)	ND(7000)	
BTEX + MTBE		321.0	ND(70)	ND(60)	2780.0	

$$\frac{70\ ug}{kg} \times \frac{1.5 \times 10^{-3}\ kg}{cm^3}$$

$$\frac{321\ ug}{kg} \quad \frac{1.5 \times 10^{-3}\ kg}{cm^3} = \frac{0.105\ ug}{ml} \times \frac{10^3\ ml}{l} = \frac{263\ ug}{l}$$

10964941 10964941

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: St. Johnsbury Middle School
REPORT DATE: December 3, 1996
DATE SAMPLED: November 18, 1996

PROJECT CODE: GISJ1053
REF.#: 96,880 - 96,883

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

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 8020--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: St. Johnsbury Middle School
CLIENT PROJ. #: 10964941

DATE RECEIVED: November 20, 1996
REPORT DATE: December 3, 1996
PROJECT CODE: GISJ1053

Ref. #:	96,880	96,881	96,882	96,883	
Site:	SS-1	SS-2	SS-3	SS-4	
Date Sampled:	11/18/96	11/18/96	11/18/96	11/18/96	
Time Sampled:	10:30	12:45	15:15	17:00	
Sampler:	T. Kelley	T. Kelley	T. Kelley	T. Kelley	
Date Analyzed:	12/2/96	12/2/96	12/2/96	12/2/96	
UIP Count:	>10	0	0	>10	
Solids (%):	86	88	87	87	
Surr % Rec. (%):	104	111	113	110	
Parameter	ug/kg, wet wt.	ug/kg, wet wt.	ug/kg, wet wt.	ug/kg, wet wt.	
Benzene	TBQ <70	<70	<60	<700	
Chlorobenzene	<70	<70	<60	<700	
1,2-Dichlorobenzene	<70	<70	<60	<700	
1,3-Dichlorobenzene	<70	<70	<60	<700	
1,4-Dichlorobenzene	<70	<70	<60	<700	
Ethylbenzene	TBQ <70	<70	<60	TBQ <700	
Toluene	<70	<70	<60	<700	
Xylenes	321.	<70	<60	2,780.	
MTBE	<700	<700	<600	<7000	

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

Endyne, Inc.

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

18988

CHAIN-OF-CUSTODY RECORD

1096 4941

Project Name: St Johnsbury Middle School Site Location: St Johnsbury, VT	Reporting Address: Griffin	Billing Address: Griffin
Endyne Project Number: G155 1053	Company: Griffin Contact Name/Phone #: Tim Kelly 865 4288	Sampler Name: Tim Kelly Phone #: Same

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 11-13-96	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
96,880	SS-1	Soil	/		1030	1	250ml		EPA 8020	4°C	
96,881	SS-2	↓	↓		1245	↓	↓		↓	↓	
96,882	SS-3				1515						
96,883	SS-4				1700						

Relinquished by: Signature Timothy J Kelly	Received by: Signature M Buskey	Date/Time 11/20/96 9:50
Relinquished by: Signature M Buskey	Received by: Signature	Date/Time 11/20/96 10:00AM

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.

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

18988

CHAIN-OF-CUSTODY RECORD

1096 4/9/11

Project Name: St Johnsbury Middle School Site Location: St Johnsbury, VT	Reporting Address: Griffin	Billing Address: Griffin
Endyne Project Number:	Company: Griffin Contact Name/Phone #: Tim Kelly, 865 4388	Sampler Name: Tim Kelly Phone #: Same

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 11-19-96	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
	SS-1	Soil	/		1030	1	250ml		EPA 8020	4°c	
	SS-2	↓	↓		1245	↓	↓		↓	↓	
	SS-3				1515						
	SS-4				1700						

Relinquished by: Signature Timothy J Kelly	Received by: Signature M Buskey	Date/Time 11/20/96 9:50
Relinquished by: Signature M Buskey	Received by: Signature [illegible]	Date/Time 11/20/96 10:00AM

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):										