

APR 13 1993



Lynda Wedderspoon
VT DEC
Hazardous Materials Management Division
103 South Main St.
Waterbury, VT 05671-0404

Dear Lynda,

Enclosed is Griffin's report on the subsurface petroleum contamination investigation at the Norton Country Store in Norton, Vermont. This report has been prepared per the approved Work Plan dated December, 15, 1992. Griffin has conducted a thorough investigation and has presented conclusions and recommendations for your review and approval. Mr. Maurice Roy, the owner of the store, has received and approved of this report. Please let us know if you have any questions or comments.

Sincerely,

A handwritten signature in cursive script, appearing to read "Peter Hack".

Peter Hack
Engineer



April 8, 1993

Mr. Maurice Roy
Norton Country Store
P.O. Box 3
Norton, VT 05907

Re: Petroleum Contamination at Norton Country Store, Route 114, Norton, VT
VTDEC Site #92-1299

Dear Mr. Roy,

Enclosed is Griffin's report on the subsurface petroleum contamination at your store. This report is prepared as defined in the Work Plan dated December 15, 1992, and as approved by the VT DEC. Griffin has thoroughly investigated the extent of contamination at the site and has presented our conclusions and recommendations in this report.

Please review the report and reply to Griffin with your comments or questions. After your approval, Griffin can forward a copy to the VT DEC for their review and approval. Thank you for using Griffin for your environmental needs.

Sincerely,

A handwritten signature in cursive script that reads "Peter Hack".

Peter Hack
Engineer

SITE ASSESSMENT REPORT
for the

NORTON COUNTRY STORE
Route 114, Norton, VT
VT DEC Site #92-1299

April 8, 1993

PREPARED BY:

Griffin International, Inc.
2B Dorset Lane
Williston, VT 05495

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INTRODUCTION

On September 15, 1992, Griffin International inspected the removal of two underground storage tanks (USTs) at the Norton Country Store on Route 114 in Norton, Vermont. The tanks had previously contained diesel fuel and were not replaced. During the removal process, elevated levels of contamination were detected in the soils excavated from around the tanks. After review of Griffin's Tank Pull Inspection, the Vermont Department of Environmental Conservation (VT DEC) requested a limited site assessment to determine the degree and extent of petroleum contamination at this site. The owners of the Norton Store retained the services of Griffin International to perform this assessment and submit it, on their behalf, to the VT DEC.

SITE DESCRIPTION

The Norton Country Store is located on the west side of Route 114 approximately 1/2 mile south of the village center. (see site location map, appendix A) The property is situated immediately off of route 114 and is predominantly a level gravel parking area, with the store being the only structure.

To the west, the ground contours sharply down about 12 feet to a railroad bed and then rises about 10 feet on the opposite side of the tracks. From this point the natural ground slopes gradually (10%) through fields to the Coaticook River 600 feet away. Across route 114 to the east, the land steadily slopes up at about 15%. The land is somewhat level to the north and south .

Geologic maps indicate that overburden deposits in this area consist of recent alluvium and gravel with underlying limestone bedrock.

There are some residential buildings on the East side of Route 114, more than 150 feet from the site. No residences or businesses are located immediately to the south of the site. Route 114 has several residences and commercial structures lining both sides of the road north of the site. The closest, 100 feet north, is a town storage garage, which has no water or sewer services. Past the garage are several houses, some of which are unoccupied. On the northeast side of the road are other residences and the Post Office.

The houses and buildings in the area are served by several shared wells. These wells are located at least 250 feet away to the northeast, behind the houses across the road. The Norton Store water is supplied by a shared well located 400 feet east and up gradient of the site.

INVESTIGATIVE PROCEDURES

To further determine the degree and extent of subsurface contamination, Griffin proposed to install three monitoring wells strategically located to define the contamination limits in

the upgradient, cross gradient and downgradient groundwater flow directions from the former tank pit.

On March 11, 1993 the installation of three monitoring wells was attempted by Tri-State Drilling and Boring Inc. of West Burke, VT. No groundwater was encountered in all three boreholes and it was determined that installing wells would not greatly benefit the investigation. The drilling was supervised by a Griffin engineer. The locations of the three borings are shown on the site map in Appendix A, and the boring logs are in Appendix B. The borings were drilled using a 4-1/4" I.D. hollow stem auger drill rig. Soil samples were collected with a split-spoon sampler at 5 foot depth increments. These samples were screened for volatile organic compounds(VOCs) with an HNU photo-ionization detector(PID).

Soil boring #1 (SB-1) was located about 20 feet southeast of the former USTs, in the presumed upgradient direction. The gravel parking lot base had a strong petroleum odor and soils collected from a depth of 5' indicated VOC concentrations of 15 parts per million (ppm). The soils collected at 10 feet consisted of silty sand and contained VOC concentrations of 0.8 ppm. A soil sample collected at 15 feet contained 0.2 ppm of VOC concentrations. As the boring advanced past 15 feet, the soils were moist gray silts and clays with fine sand lenses at 30' and 40'. No detectable VOC concentrations were present past 15'. Bedrock was encountered at 46 feet below the surface. Because no significant water was found in this hole, the auger was removed and the hole was left open for several hours to see if water would accumulate in the borehole. A Teflon bailer was dropped into the borehole several times during the day and no water was retrieved. The borehole was backfilled with native materials.

Soil boring #2 (SB-2) was placed 30 feet west of the former USTs at the edge of the bank overlooking the railroad tracks. This location was selected in the presumed downgradient groundwater flow direction. The soil classifications mirrored those of SB-1. The top few feet of sand and gravel changes to moist gray silt and clay with no significant evidence of groundwater. This boring was augered to a depth of 41 feet. Soils samples collected at 5 foot intervals contained no elevated VOC concentrations, when screened with a PID. The hole was backfilled with native materials.

Due to the boring data indicating little or no lateral migration of contaminants, the third boring was located directly inside the limits of the tank pit to define the vertical movement of contamination. Auger cuttings from the surface gravel were screened with a PID and VOC concentrations of 70 ppm were detected. Soil samples were retrieved at 5', 10', 15' and 20 feet as the auger advanced to a final depth of 21'. Samples from 5' and 10' consisted of silt and sand and had VOC concentrations of up to 40 ppm. At 15 feet, native silty clay soils were present and contained a VOC concentration of 5 ppm. The silt and clay sample retrieved at 20 feet contained a VOC concentration of 1.4 ppm. The sample from a depth of 20 feet was collected and analyzed per EPA method 8240 by Endyne Inc. laboratory. No BTEX or MTBE compounds (common petroleum

components) were detected in that sample.(analytical laboratory results are in Appendix C) The borehole was backfilled with native materials.

RECEPTOR SURVEY

Griffin conducted a visual survey of the site and the surrounding area, and interviewed local residents to help identify potential receptors of subsurface petroleum contaminants. Potential receptors identified include the Norton Country Store, nearby structures, local supply wells, the railroad right of way to the west and the Coaticook River. At the time of this investigation, the area was covered with snow and therefore not practical for further visual inspections, soil sampling or PID screening.

RISK ASSESSMENT

The Potential receptors listed above all have low potentials for contamination from this site. The contamination does not appear to have migrated a significant distance laterally or vertically from the source due to the dense clay soils and lack of significant groundwater flow. The buildings and local supply wells are not considered serious potential receptors because they are located up hill and at a considerable distance from the site.

The Coaticook River is not considered a potential receptor because of its distance from the site.

CONCLUSIONS

Based on our initial investigations, soil borings, sample analyses and site inspection, Griffin has reached the following conclusions:

- 1) There was a release of diesel fuel to the subsurface in the vicinity of the former USTs, which were removed in September, 1992. The amount and duration of release is unknown, but was most likely due to leaks in the former piping and /or fuel overfills. The USTs were observed to be in good condition.
- 2) The release resulted in contamination of soils in the vicinity of the former tanks.
- 3) No free phase product or groundwater was detected during the tank pull or subsurface investigations.
- 4) Absorbed phase contamination was present in the sand and gravel parking lot base at levels of up to 15 ppm outside the tank area and up to 70 ppm directly over the former tanks. These concentrations decline as the depth increases. The higher concentrations were found in the tank pit but decreased significantly at depths below the bottom of the tanks.

5) Contamination appears to be contained to the tank pit and the immediate surrounding parking surface. This is most likely due to the resistance of contamination migration through the dense silt and clay soils that envelope the tank pit, and due to the absence of groundwater in these soils.

6) At present, the contamination poses no serious threats to the environment or to the health and safety of local residents.

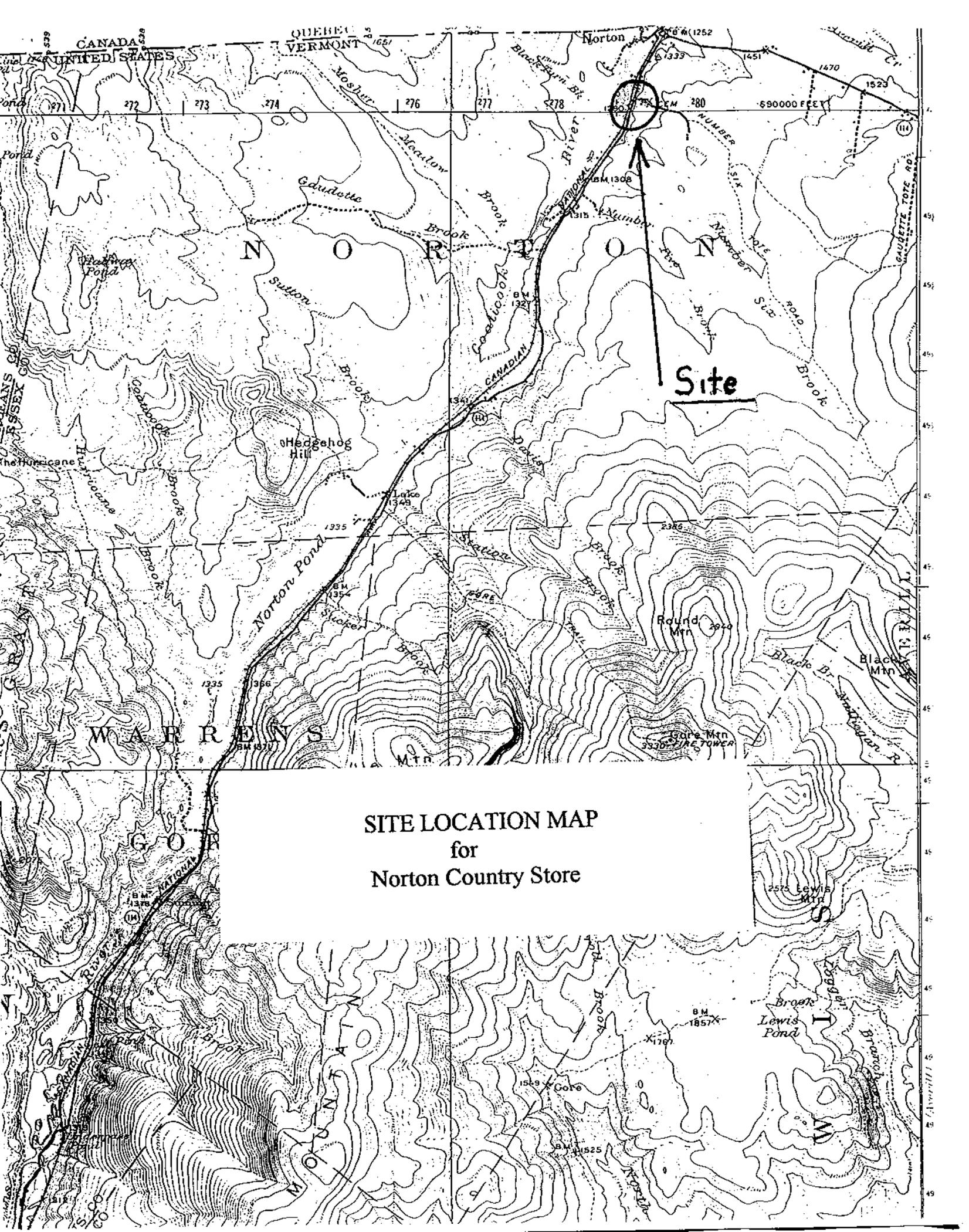
7) The natural process of volatilization and biodegradation will eventually result in a reduction of contamination concentrations to below detectable limits.

RECOMMENDATIONS

Based on the limited degree and extent of subsurface petroleum contamination and the low risk that the contamination poses to potential receptors, we recommend that no additional investigations be conducted at this site.

APPENDIX A

Site Location Map
Site Map



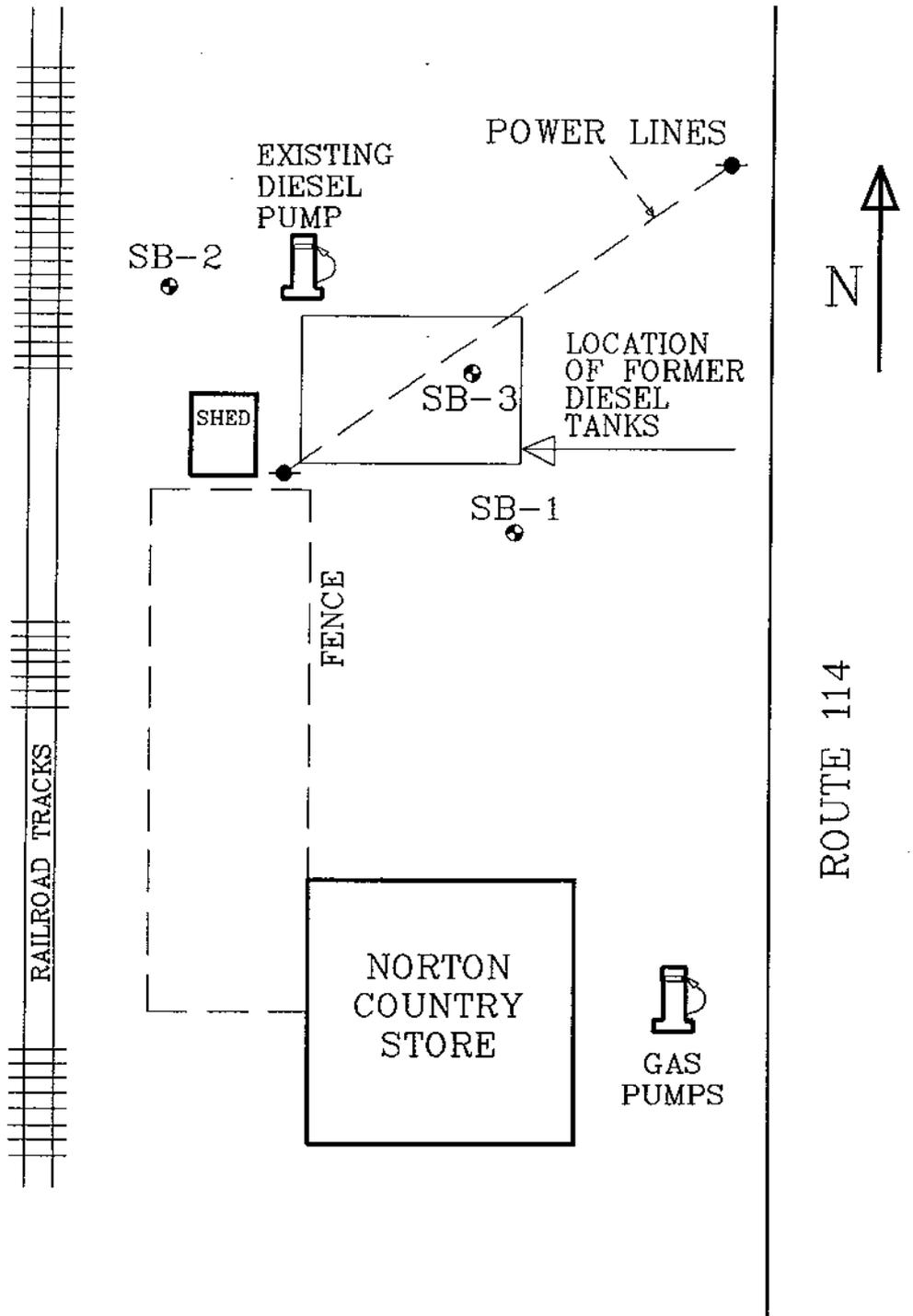
690000 FEET

Site

SITE LOCATION MAP
for
Norton Country Store

NORTON COUNTRY STORE

SITE MAP



APPROX. SCALE: 1"=30'

SB-1 = SOIL BORING

APPENDIX B

Soil Boring Logs

PROJECT NORTON COUNTRY STORE

LOCATION NORTON VT

DATE DRILLED 3-11-93 TOTAL DEPTH OF HOLE 46'

DIAMETER 4-1/4"

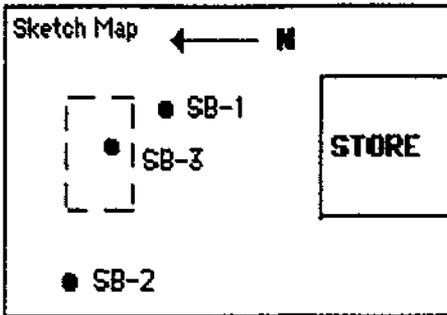
SCREEN DIA. N/A LENGTH N/A SLOT SIZE N/A

CASING DIA. N/A LENGTH N/A TYPE N/A

DRILLING CO. TRISTATE DRILLING METHOD HOLLOW STEM AUGER

DRILLER ED WESTOVER SEAN HOGAN LOG BY PETER HACK

WELL NUMBER SB-1



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 5" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		NATIVE BACKFILL		
5		STRONG PETROLEUM ODOR	12,12,15,5 PID=15PPM	4'-6': DRY GRAY SILTY SAND TO DRY BLACK SAND, TRACE GRAVEL
10		NO ODOR	4,7,10,7 PID=0.8PPM	9'-11': DAMP SILTY SAND
15			3,5,7,12 PID=0.2PPM	14'-16': MOIST GRAY SILTY CLAY
20			5,8,12,14 PID= 0.0PPM	19'-21': MOIST GRAY SILT/CLAY
25			6,5,7,9 PID=0.0PPM	24'-26': MOIST GRAY SILT/CLAY
30			3,3,6,8 PID=0.0PPM	29'-31': MOIST GRAY SILTY CLAY, WITH FINE SAND LENSE
35			6,6,9,10 PID=0.0PPM	34'-36': MOIST GRAY CLAY W/ SOFT WET LAYERS.
40			6,12,15,25 PID=0.0PPM	39'-41': MOIST GRAY CLAY W/ FINE SAND LENSES
45			33,37,42	44'-46': BEDROCK AT 46'

PROJECT NORTON COUNTRY STORE

LOCATION NORTON VT

DATE DRILLED 3-11-93 TOTAL DEPTH OF HOLE 41'

DIAMETER 4-1/4"

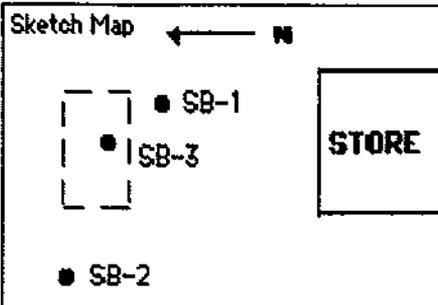
SCREEN DIA. N/A LENGTH N/A SLOT SIZE N/A

CASING DIA. N/A LENGTH N/A TYPE N/A

DRILLING CO. TRI STATE DRILLING METHOD HOLLOW STEM AUGER

DRILLER WESTOVER, SEAN HOGAN LOG BY PETER HACK

WELL NUMBER SB-2



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	
0	[Hatched Area]	NATIVE BACKFILL	6,7,14,9 PID=0.0PPM	4'-6': DRY, BROWN, SAND AND GRAVEL TRACE SILT AT 6'	
5				9'-11': MOIST, GRAY, SILTY SAND, SOME GRAVEL	
10				3,4,3,3 PID=0.0PPM	14'-16': MOIST, GRAY, SILTY SAND, SOME STONES
15				4,5,9,8 PID=0.0PPM	19'-21': DAMP, GRAY, SILTY CLAY, SAND LAYER AT 20.5'
20				6,10,8,13 PID=0.0PPM	24'-26': MOIST, GRAY, SILTY CLAY
25				7,11,13,12 PID=0.0PPM	29'-31': MOIST, GRAY CLAY, SAND LENSE AT 30.5'
30				6,11,13,12 PID=0.0PPM	34'-36': MOIST, GRAY CLAY, W/ SOFT 3" LAYERS.
35				7,9,9,9 PID=0.0PPM	39'-41': DAMP, GRAY, DENSE, CLAY
40				9,10,19,25 PID=0.0PPM	BOTTOM OF EXPLORATION @ 41'
45					

PROJECT NORTON COUNTRY STORE

LOCATION NORTON VT

DATE DRILLED 3-11-93 TOTAL DEPTH OF HOLE 21'

DIAMETER 4-1/4"

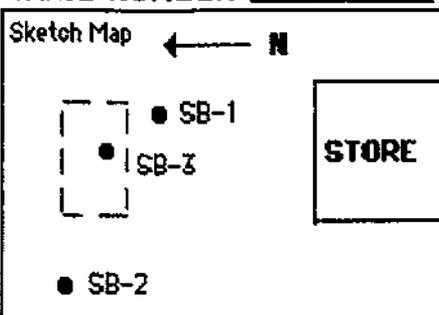
SCREEN DIA. N/A LENGTH N/A SLOT SIZE N/A

CASING DIA. N/A LENGTH N/A TYPE N/A

DRILLING CO. TRI STATE DRILLING METHOD HOLLOW STEM AUGER

DRILLER WESTOVER, SEAN HOGAN LOG BY PETER HACK

WELL NUMBER SB-3



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON AND PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		STRONG PETRO-LEUM ODOR	PID=70PPM IN CUTTINGS	0'-2' DRY, BLACK, GRAVEL
5		SOME ODOR	28,13,12,7 PID=40PPM	4'-6' MOIST, GRAY, SILT/SAND
10		NATIVE BACKFILL	6,6,8,10 PID=40PPM	9'-11' DRY, GRAY, SILTY SAND
15			5,8,10,14 PID=5PPM	14'-16' MOIST, GRAY SILTY CLAY
20			9,8,9,9 PID=1.4PPM	19'-21' MOIST, GRAY, SILTY CLAY
25				BOTTOM OF EXPLORATION @ 21'
30				
35				
40				
45				

APPENDIX C

Analytical Laboratory Results

RECEIVED MAR 26 1993

**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: Norton General Store
DATE REPORTED: March 25, 1993
DATE SAMPLED: March 11, 1993

PROJECT CODE: GINO1351
REF. #: 43,266

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

Chain of custody did not indicate sample preservation.

Although EPA 8020 analysis was requested, due to scheduling constraints the samples were analyzed by equivalent EPA Method 8240.

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.

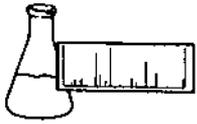
Blank contamination was not observed at levels affecting the analytical results.

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.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

RECEIVED MAR 26 1993

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 8020 -- COMPOUNDS BY EPA METHOD 8240

CLIENT: Griffin International
PROJECT NAME: Norton General Store
REPORT DATE: March 25, 1993
SAMPLER: P. Hack
DATE SAMPLED: March 11, 1993
DATE RECEIVED: March 12, 1993

PROJECT CODE: GINO1351
ANALYSIS DATE: March 23, 1993
STATION: MW 3 @ 20'
REF.#: 43,266
TIME SAMPLED: 5:30

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ²
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	ND
Toluene	10	ND
Xylene	30	ND
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4: 91%
Toluene-d8: 97%
4-Bromofluorobenzene: 95%

PERCENT SOLIDS: 76%

NOTES:

1 None detected

CHAIN-OF-CUSTODY RECORD

000000

Project Name: <i>Norton General Store</i> Site Location: <i>Norton VT</i>	Reporting Address: <i>2B Dorset Lane</i> <i>Williston</i>	Billing Address: <i>Drifflin</i> <i>Sumt</i>
Endyne Project Number: <i>GINO1551</i>	Contact Name: <i>P. Hact</i> Company/Phone #: <i>Griffin 879 778</i>	Sampler Name: Company/Phone #: <i>Sumt</i>

Lab #	Sample Description	Matrix	Date/Time	Container		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
				No.	Type/Size				
<i>43 26c</i>	<i>MW 3 @ 20'</i>	<i>Soil</i>	<i>3/11</i> <i>5:30</i>	<i>1</i>			<i>28</i>	<i>NA</i>	

Relinquished by: Signature <i>P. Hact</i>	Received by: Signature <i>Laura M. Chamberlain</i>	Date/Time <i>3/12/95</i> <i>2:30</i>
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 606 Pest/PCB	29	EPA 8080
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	EPTOX
31	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
32	Other (Specify):										