

MAR 16 1995



March 13, 1995

Mr. Richard Spiese  
Agency of Natural Resources  
DEC, Hazardous Materials Management Division  
103 South Main Street / West Building  
Waterbury, Vermont 05671-0404

RE: Report on the Investigation of Subsurface Petroleum Contamination at  
Warner-Turner Supply Company, 70 South Main Street, Barre, VT  
(VTDEC Site #95-1753)

Dear Mr. Spiese:

Enclosed, please find the report summarizing the results of the investigation at the above referenced site. Griffin recommends that the site be designated for Site Activities Management Complete.

Your early attention to this matter is appreciated. If you have any questions regarding this matter, please call.

Sincerely,

A handwritten signature in cursive script that reads "Laurie T. Reed".

Laurie T. Reed  
Project Geologist

Attachments

- c. Leonard Warner, Warner-Turner Supply Company  
Colin W. Robinson, Nancy Elizabeth Grandine

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**LIMITED INVESTIGATION OF SUBSURFACE  
PETROLEUM CONTAMINATION**

**AT**

**WARNER-TURNER SUPPLY COMPANY  
70 SOUTH MAIN STREET  
BARRE, VERMONT**

**MARCH 1994**

**PREPARED FOR:**

**Warner-Turner Supply Company, Inc.  
PO Box 486  
Barre, Vermont 05641**



**PO Box 943  
19 Commerce Street  
Williston, VT 05495  
(802) 865-4288**

**Griffin Project #2954644**

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## **I. INTRODUCTION**

This report describes the investigation of residual subsurface petroleum contamination at Warner-Turner Supply Company located at 70 South Main Street in Barre, Vermont. The investigation was conducted by Griffin International Inc. (Griffin) for Warner-Turner Supply Company, Inc. of Barre, Vermont.

This investigation was requested by the State of Vermont Department of Environmental Conservation (VTDEC) in a letter (dated February 14, 1995) to Leonard Warner, Warner-Turner Supply Company from Richard Spiese, VTDEC. This investigation has been conducted in accordance with the Work Plan and Cost Estimate submitted to Leonard Warner on February 22, 1995 and approved by Mr. Warner and the VTDEC.

## **II. BACKGROUND**

On January 11, 1995, Griffin performed an underground storage tank (UST) closure inspection at the subject property. One 1,000 gallon capacity UST, associated piping, and gasoline pump were removed for abandonment. The UST was observed to be in good condition. Griffin collected soil samples from the UST excavation, from below piping, and from below the gasoline pump which was located adjacent to the area of the UST. Soil samples were screened for the presence of volatile organic compounds (VOCs) with a photo ionization detector (PID). No significant VOCs were detected in the UST excavation. Elevated VOC concentrations were detected in the soil samples collected from below the piping at a depth of two feet below grade and in soil samples collected from below the pump at depths of three and six feet below grade. Griffin has attributed elevated VOC concentrations to the presence of a small amount of residual product present when the piping was disrupted during the excavation of the UST and to small releases that may have occurred during regular maintenance of the pump. Assessment of the extent of contamination was impractical at the time due to the thickness of frost present in the ground.

## **III. SITE DESCRIPTION**

The site is located on the east side of South Main Street in a mixed residential and commercial area of Barre, Vermont (see location map in Appendix A). The site lies on glaciofluvial sands and gravel in the relatively flat north-south trending valley floor of Stevens Brook. Stevens Brook is located across South Main Street approximately 300 feet west of the site. Topography rises steeply directly east of the site. Topography also rises steeply approximately 350 west of the site, across the valley floor. The site and surrounding establishments are supplied by the municipal water system. The water system is supplied by a reservoir located approximately five miles east of the subject property.

#### **IV. INVESTIGATIVE PROCEDURES**

In order to better define the degree and extent of subsurface petroleum contamination at the site, one soil boring was drilled on February 28, 1995 by Green Mountain Boring Co. of Barre, VT under the direct supervision of a Griffin Geologist. The boring was drilled in the area directly under the former gasoline pump. A monitoring well was installed in the boring but was not sampled. The location of the well is indicated on the Site Map in Appendix A. Soil samples collected from the borehole of the monitoring well were screened for VOCs with a PID. The soil sample collected from directly below the water table was preserved for laboratory analysis.

##### **B. Soil Boring and Screening**

Undisturbed soil samples were collected at five foot intervals from the boring of MW1 using a split spoon sampling device. Samples were screened for VOCs using an HNU Model PI-101 PID and logged by the supervising geologist. Prior to screening, the PID was calibrated with isobutylene with reference to benzene.

No soil samples were recovered in the boring from grade to five feet below grade. This was likely due to the coarse nature of the fill material. During the tank closure on January 11, 1994, the technician described medium to large cobbles present in the excavation made in this area. During drilling, soil from the boring from grade to five feet below grade was pushed into interstitial spaces of the coarse fill. Subsurface materials encountered in the boring of MW1 from 5.0 to 17.0 feet below grade were generally medium to coarse grained, poorly sorted, angular sands with small to medium rounded pebbles. From 20.0 to 22.0 feet below grade, soil was wet, silty, fine to medium grained, angular to sub-angular sand grading down to mostly medium to coarse grained, angular sand with rounded pebbles.

The water table was encountered at approximately 17 feet below grade. VOC concentrations were 18.0, 13.0, 10.0, and 1.5 ppm from samples collected from 5 to 7, 10 to 12, 15 to 17, and 20 to 22 feet below grade, respectively. VOC concentrations decreased with depth. Detailed lithologic descriptions and VOC concentrations are listed on the well log in Appendix B.

##### **B. Soil Sampling and Analysis**

The soil sample collected from directly below the water table from 20 to 22 feet below grade was preserved for laboratory analysis. The sample was analyzed for petroleum compounds including benzene, toluene, ethyl benzene, xylenes, and methyl tertiary butyl ether (MTBE) via EPA method 8020. Analysis of the soil sample collected from MW1 indicated no detectable contaminants. Laboratory report forms are presented in Appendix C.

##### **C. Monitoring Well Installation**

A monitoring well (MW1) was installed in the borehole to allow for future groundwater sample collection, if warranted. No groundwater sampling was conducted for this investigation.

The well was installed using a truck mounted hollow stem auger. The well is constructed of two inch diameter, 0.010" slot, PVC well screen and attached solid PVC riser. The annulus between the borehole wall and the screened section of the well is filled with sand pack to filter fine sediments in groundwater from entering the well. Approximately one foot above the screened section of the well, the annulus between the borehole wall and the riser is filled with a bentonite clay seal to prevent surface water from entering the borehole. The well is protected at the surface by a well cap, a flush mounted steel well head protective casing, and a bolt down cover. The well head protective casing was not set in cement, because the area has not been graded and paved since the UST and pump removal. Well construction details are listed on the well log in Appendix B.

## **V. RECEPTOR SURVEY AND RISK ASSESSMENT**

Griffin conducted a visual survey of the site to identify local potential receptors of any subsurface petroleum contaminants. The most likely receptor in the vicinity of this site appears to be Stevens Brook which is located approximately 300 feet west of the site.

Municipal water serves the relative area including the subject property and adjacent establishments. No water supply wells were identified in the vicinity of the site.

The risk of significant impact to any possible receptors from residual petroleum contamination at the site is unlikely due to the very low source strength of residual petroleum contaminants in the vicinity of the former UST and pump.

## **VI. CONCLUSIONS**

On the basis of this investigation, Griffin has concluded the following:

1) There have been minimal releases of gasoline from the former pump and related piping. Elevated VOC concentrations (>200 ppm), detected during the removal of the former UST and pump, were likely due to releases of residual product which was contained in piping and released during the removal of the UST. Releases also likely occurred during pump maintenance. A soil boring was advanced directly below the area of the former pump where elevated VOC concentrations had been previously detected. VOC concentrations detected in the boring ranged from 18 ppm to 1.5 ppm and consistently decreased with depth. No VOCs were detected above VTDEC Contaminated Soil Guidelines. A soil sample was collected from directly below the water table. Analysis of the soil sample indicates no detectable petroleum compounds present.

2) The sources of continued soil contamination (the UST and gasoline pump) have been removed.

3) The water table at this site is approximately 17 feet below grade. Groundwater in the vicinity of the site likely flows west-northwest towards Stevens Brook, based on observed topography and surface hydrography.

4) Overburden at this site consists generally of medium to coarse grained sand with pebbles.

5) The site and surrounding area are served by municipal water. No supply wells were identified in the area. The source strength of residual petroleum contamination in the area under the former gasoline pump is very low. Therefore, impact to potential sensitive receptors from the residual petroleum contamination in the vicinity of the former UST and gasoline pump at Turner-Warner Supply is not likely.

## **VII. RECOMMENDATIONS**

On the basis of the above conclusions, Griffin recommends the following:

- 1) No further investigation is warranted at this time.
- 2) Turner-Warner Supply Company should be made eligible for Sites Management Activity Completed status by the VTDEC.

**APPENDIX A**

LOCATION MAP

SITE MAP



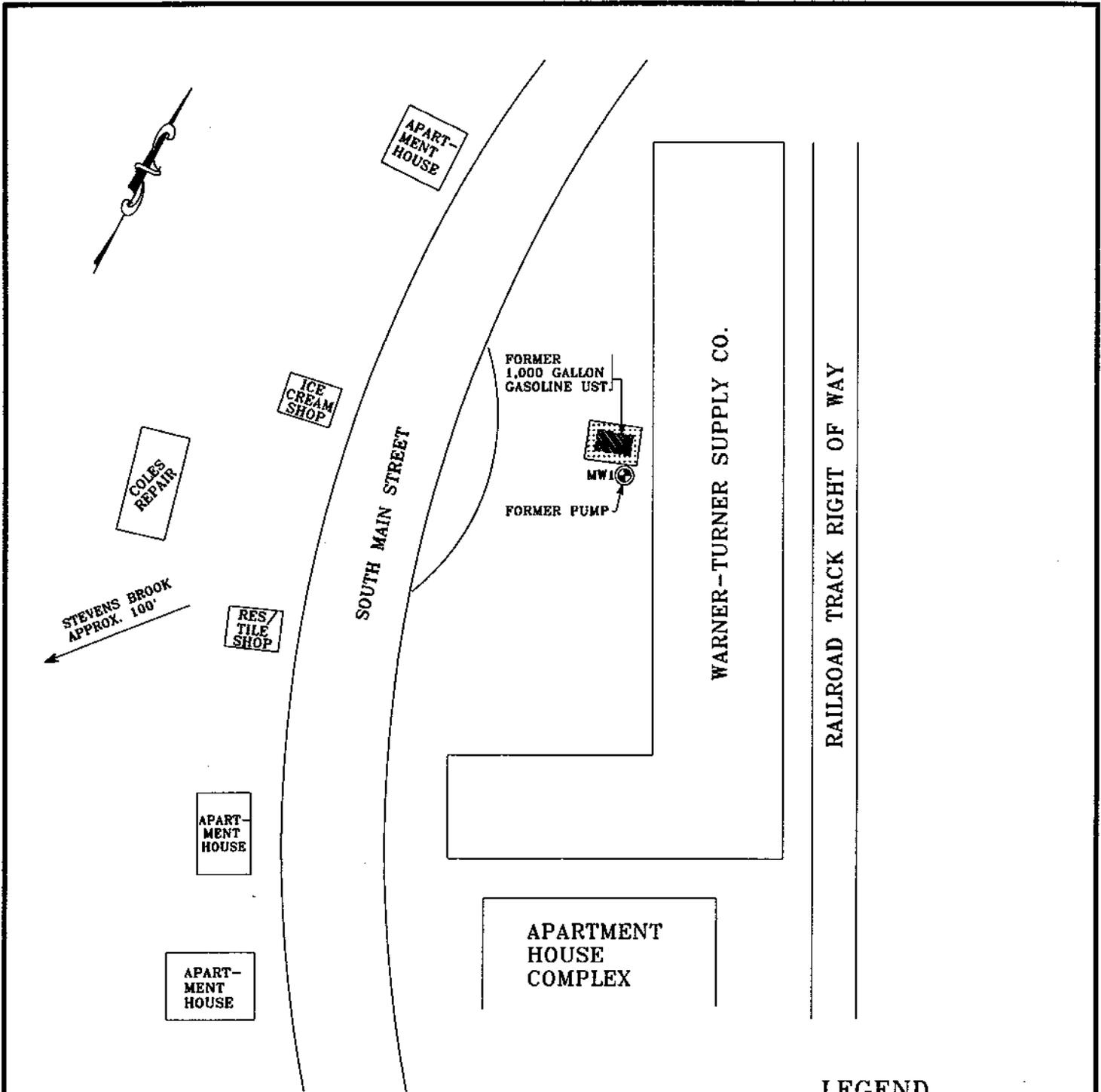
JOB #: 2954630  
 SOURCE: USGS- BARRE EAST AND BARRE WEST, VERMONT QUADRANGLE



**WARNER-TURNER SUPPLY CO.**  
**BARRE, VERMONT**

**SITE LOCATION MAP**

DATE: 3/10/95	DWG.#:1	SCALE: 1:24000	DRN.:SB	APP.:LR
---------------	---------	----------------	---------	---------



**LEGEND**

 MW1 MONITORING WELL

JOB #: 2954630



**WARNER-TURNER SUPPLY CO.**

**BARRE,**

**VERMONT**

**SITE SKETCH**

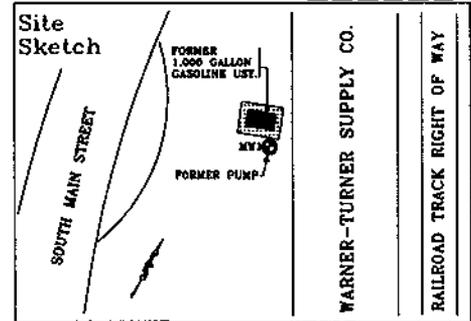
DATE: 3/1/95 DWG.#:2 SCALE:APPROX. 1"=50' DRN.:SB APP.:LR

**APPENDIX B**

DRILLING LOGS

PROJECT WARNER-TURNER SUPPLY CO.  
 LOCATION 70 SOUTH MAIN ST. BARRE, VERMONT  
 DATE DRILLED 2/28/95 TOTAL DEPTH OF HOLE 22'  
 DIAMETER                       
 SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.010"  
 CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc  
 DRILLING CO. GMB DRILLING METHOD HSA  
 DRILLER RON LOG BY L. REED

WELL NUMBER MW1



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	ROAD BOX				0
0	WELL CAP				0
1					1
2	NATIVE BACKFILL				2
3					3
4	WELL RISER				4
5					5
6			6" Sample Recovery 5'-7'- 9/6/19/26 18.0 ppm	Brown dry fine to coarse grained, poorly sorted, angular sand with rounded pebbles.	6
7	BENTONITE				7
8					8
9					9
10			6" Sample Recovery 10'-12'- 30/44/17/23 13 ppm	Dark brown, dry, fine to medium-coarse grained, poorly sorted, angular sand with rounded small to medium pebbles.	10
11	SAND PACK				11
12					12
13					13
14					14
15	WELL SCREEN		6" Sample Recovery 15'-17'- 45/19/24/22 10 ppm	Dark brown damp, poorly sorted silt to medium-coarse sand with small to medium rounded pebbles.	15
16					16
17				17.0' WATER TABLE	17
18					18
19	BOTTOM CAP				19
20			24" Sample Recovery 20'-22'- 13/32/17/25 1.5 ppm	Brown, wet, silty, fine to medium grained, angular to subangular sand at 20' grading to brown, wet, angular to subangular sand with small to large rounded pebbles at 22'	20
21					21
22	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 20' END OF EXPLORATION AT 22'	22
23					23
24					24
25					25

**APPENDIX C**

LABORATORY RESULTS



**ENDYNE, INC.**

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International  
PROJECT NAME: Warner-Turner (2954630)  
DATE REPORTED: March 9, 1995  
DATE SAMPLED: February 28, 1995

PROJECT CODE: GIWT1603  
REF. #: 71,356

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

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.

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

Reviewed by,

Harry B. Locker, Ph.D.  
Laboratory Director

enclosures



Laboratory Services

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

LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS -- PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Warner-Turner (2954630)  
REPORT DATE: March 9, 1995  
SAMPLER: L. Reed  
DATE SAMPLED: February 28, 1995  
DATE RECEIVED: March 1, 1995

PROJECT CODE: GIWT1603  
ANALYSIS DATE: March 8, 1995  
STATION: MW-1 (20-22')  
REF.#: 71,356  
TIME SAMPLED: 11:00

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	20	ND <sup>1</sup>
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	ND
Toluene	20	ND
Total Xylenes	20	ND
MTBE	200	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

BROMOBENZENE SURROGATE RECOVERY: 97.0%

NOTES:

1 None detected

**CHAIN-OF-CUSTODY RECORD**

13508

Project Name: <b>WARNER - Turner (2954630)</b> Site Location:	Reporting Address: <b>Po Box 946, Williston, VT</b>	Billing Address: <b>Same</b>
Endyne Project Number: <b>GIWT1603</b>	Company: <b>Griffin Int.</b> Contact Name/Phone #: <b>L. Reed 8654288</b>	Sampler Name: <b>L. Reed</b> Phone #: <b>8654288</b>

Lab #	Sample Location	Matrix	GRA B	COM P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
71,356	MW1 (20-22')	Soil	X		2/20/95/11:00	2	250 ml		8020	-	

Relinquished by: Signature <i>JJW</i>	Received by: Signature <i>Beth Ward</i>	Date/Time <b>3/1/95 10:10</b>
Relinquished by: Signature <i>Beth Ward</i>	Received by: Signature <i>Louis M Chambers</i>	Date/Time <b>3-1-95 10:25</b>

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

RECEIVED MAR 10 1995