

NOV 27 1990



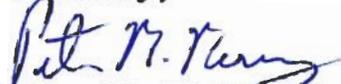
November 26, 1990

Mr. Richard Spiese
State of Vermont
Department of Environmental Conservation
Petroleum Sites Management Section
103 South Main St.
Waterbury, VT 05676

Dear Rich,

Enclosed is a copy of the report on the investigation of subsurface
petroleum contamination at the Middlesex Country Store. Please
call me at your convenience with any questions which you may
have regarding the report.

Sincerely,


Peter M. Murray
Project Hydrogeologist

REPORT ON THE INVESTIGATION
OF SUBSURFACE PETROLEUM CONTAMINATION
MIDDLESEX COUNTRY STORE
MIDDLESEX, VERMONT

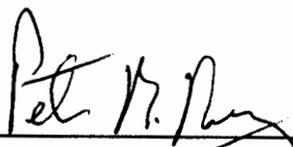
November 7, 1990

Prepared for:

Middlesex Country Store
Middlesex, Vermont

Prepared by:

Griffin International, Inc.
Williston, Vermont



Peter M. Murray
Project Hydrogeologist

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1.0 INTRODUCTION

This report details the investigation of subsurface petroleum contamination in the vicinity of the Middlesex Country Store, in Middlesex, Vermont. The store is currently owned by Mr. Sherwood Hamilton. The investigation has been conducted by Griffin International, Inc., for Mr. Hamilton. The State of Vermont Department of Environmental Conservation (D.E.C.) requested that Mr. Hamilton hire a qualified consultant to conduct this investigation after they had determined that the underground gasoline storage system at the Middlesex Country Store may be the source of continued petroleum hydrocarbon contamination in several domestic water wells in the vicinity of the store.

2.0 SITE BACKGROUND

2.1 Site History

In April, 1982, a resident across the street from the Middlesex Country Store reported petroleum taste and odor in his drinking water which was supplied from a drilled well on his property. In response, two underground gasoline storage tanks at the Middlesex Country Store were tested for leaks. The tests indicated that the tanks were not leaking at that time.

In early 1983, another resident across the street reported gasoline taste and odor in her water, which is also supplied from a drilled well. At that point, the Vermont Departments of Health, Labor and Industry and, Water Resources began an investigation of the area to determine the extent of the contamination and its source(s). The investigation identified eleven possible sources of the contamination, however, the actual source was not identified. Additionally, eleven drinking wells in the village were tested for volatile organic compounds. The test results indicated that eight drinking wells were contaminated to varying degrees. Several of these wells are located near a former Citgo Station, which is currently the Middlesex Gulf Station, located on the northwest end of the village. (The Middlesex Country Store is located on the southeast end of the village.)

Contamination levels in all affected wells appeared to steadily decrease until 1989, at which time, the two impacted wells across the street from the Middlesex Country Store began to accumulate higher levels of contamination. Both of those wells had activated charcoal filters, installed in line, to prevent hydrocarbon exposure

to the residents. Additionally, in 1989, water from the drinking wells in Middlesex Village, was analyzed for MTBE, as well as BTEX. The analytical results indicate that wells in the northwest end of the village contained BTEX but no MTBE. Wells in the southeast end of the village contained both BTEX and MTBE.

In November, 1988, Sherman V. Allen, Inc., the then owner of the tanks at Middlesex Country Store, had both tanks tested for tightness. The tests indicated that both tanks were tight. The underground piping, from the tanks to the pumps, was not tested, however. Sherman V. Allen then sold the tanks to the Middlesex Country Store. Also, in 1989, underground gasoline storage tanks were replaced at the Middlesex Gulf Station. Data concerning this replacement is limited.

In September, 1990, the backfill surrounding the two tanks at the Middlesex Country Store was excavated and inspected for petroleum contamination. None was detected. The tanks were backfilled and the store continued to sell gasoline.

The D.E.C. determined that, due to the presence of MTBE* in the drinking wells at the eastern edge of the village and, due to the proximity of the tanks to the wells, the underground fuel storage system at the Middlesex Country Store may have been actively contributing to the contamination of the wells across the street. They requested that Mr. Hamilton hire a qualified consultant to conduct an investigation to determine that possibility. The D.E.C. also requested that Mr. Hamilton not store gasoline in the tanks until the investigation, which could also include retesting the tanks, was completed.

Griffin International was contracted to perform the investigation on October 3rd, 1990. At that point, Mr. Hamilton decided to wait for the results of the investigation before refilling the tanks. Currently, both tanks are empty and, therefore, could not be actively contributing to the subsurface contamination.

* MTBE is a relatively new additive to gasoline which is used as an octane booster. Since the contamination in the wells in the western end of the village do not contain MTBE, the D.E.C. has determined that the contamination in those wells is likely from a source which existed before MTBE was used in gasoline. Additionally, since the Middlesex Country Store is the only location in the southeastern end of the village at which gasoline with MTBE added has been stored, the D.E.C. determined that it is likely the source of the contamination in the wells across the street.

The investigation, which has included the installation of several groundwater monitoring wells and one soil boring, the collection and analysis of groundwater samples for BTEX and MTBE and, the determination of groundwater flow direction and gradient, was begun on October 10th, 1990.

2.2 Site Description

The Middlesex Country Store is situated near the southeastern end of the village of Middlesex. The village lies on the alluvial plain, northeast of the Winooski River and consists of a variety of land uses, including commercial, residential, industrial and transportation. Several of the commercial establishments in the village have sold petroleum products over the years. Currently, only two establishments store petroleum products for retail sales. One, the Middlesex Gulf Station, is located at the northwest end of the village, along U.S. Route 2. The other establishment, which currently sells gasoline, is the Middlesex Country Store, which is located at the southeast end of the village, along U.S. Route 2. In the past, both retail and wholesale petroleum dealers have occupied properties in the village. Old photographs, which were apparently taken during the 1930's, show gasoline pumps in front of a house which is across Route 2 from the Middlesex Country Store. Additionally, gasoline was stored in several underground tanks, until 1975, at Sticky Fingers, a now defunct ice cream stand/gas station, which is just north and east of the Middlesex Country Store, on the north side of Route 2. The gasoline which was stored at both of these locations would not have contained MTBE because it was not used as an additive in gasoline until roughly 1980.

According to the Surficial and Bedrock Geologic maps of Vermont, the subsurface beneath the village consists of alluvial deposits overlying metamorphosed quartzite and quartz-plagioclase granulite bedrock. The overburden beneath the Middlesex Country Store does not likely exceed thicknesses greater than thirty feet. Bedrock outcrops do appear in the steep valley wall, which rises abruptly to the north, behind the houses which are across Route 2 from the store. Bedrock outcrops also appear in the Winooski River channel, which flows along the southeastern edge of the village from the southeast to the northwest. The river flows along the northeast side of the valley, until it reaches the southeast end of the village, where it takes a sharp turn to the southwest side of the valley, providing the alluvial plain on the northwest side of the river, on which the village is situated. The Middlesex Country Store is situated approximately 300 feet from this bend in the

river. A hydroelectric dam across the Winooski is situated approximately 1,110 feet west of the store. This dam has increased the river level behind it by approximately 30 feet. It is possible that some water from the pool behind the dam, which extends beyond the store, is flowing around the dam, via the alluvial overburden and/or the bedrock.

3.0 INVESTIGATIVE PROCEDURES

The subsurface investigation has consisted of three phases; monitoring well/soil boring installation, groundwater flow direction and gradient determination and, collection and analysis of groundwater from on-site monitoring wells. The following is a description of these procedures and a summary of the findings.

3.1 Soil Boring/Monitoring Well Installation

Originally, Griffin had planned on installing a total of four monitoring wells in the vicinity of the two underground storage tanks and associated piping at the Middlesex Country Store. The wells were to be installed to assess the possibility that the fuel storage system is the source of the contamination in the supply wells across Route 2 from the store. The boreholes were drilled using a hollow stem auger drill rig, under the supervision of the Griffin hydrogeologist. Soil samples were collected from the augers and from split spoons. The samples were screened for petroleum hydrocarbon vapors, using a portable photoionization device, and soil characteristics were logged by the hydrogeologist. Soil characteristics, petroleum hydrocarbon concentrations and well construction details are contained in the well logs in Appendix B.

Drilling for the first borehole, SB-A, was begun on October 10th, 1990 (see Site Map for borehole locations). This hole was drilled to determine if any petroleum contamination exists in the vicinity of the underground piping, between the tanks and the pumps. The borehole was extended to a depth of 23.5 feet, at which point, the augers and split spoon encountered what appeared to be bedrock refusal. Soils collected from the augers and spoons consisted of mostly sand and silt and gravel. The soils contained high concentrations of petroleum hydrocarbon vapors, ranging from 85 ppm to 280 ppm. Since the water table was not reached before encountering refusal, no monitoring well was installed in this borehole.

Upon completion of SB-A, the second borehole, MW-1, was drilled

on a line between the tanks and the affected supply wells across the street. This well was installed to determine if possible contamination, originating from the tanks, was flowing to the wells, via the overburden. The borehole was extended to a depth of 27 feet. Soils retrieved from this borehole consisted of sand, silt and gravel. Very fine, wet sand was encountered at approximately 22 feet. A slight petroleum odor, measured at 13 ppm with the PID, was detected in the soils near the water table. A well was installed in this borehole. The well is constructed of ten feet of screen and fourteen feet of casing. Attempts to install the bottom of the screen at 27 feet were prevented by running sands. The bottom of the screen is currently two feet below the water table.

MW-2 was installed on October 12th, in a location which was assumed to be immediately downgradient of the two, underground storage tanks. The borehole for this well was drilled to a depth of 24.5'. Soils encountered in this borehole consisted of sand, silt and gravel. No petroleum vapors were detected in these soils. The well was constructed of 10 feet of screen and 14 feet of casing. The bottom of the screen is currently 5 feet below the water table.

MW-3 was also drilled in a location which was assumed to be downgradient of the tanks. The borehole for this well was advanced to a depth of 25.5 feet. Soils encountered in this hole consisted of sand and silt. No petroleum vapors were detected in these soils. The well is constructed of 10 feet of screen and 15 feet of casing. The bottom of the screen is currently 7.5 feet below the water table.

3.2 Groundwater Gradient and Flow Direction Determination

On October 19th, Griffin measured water table elevations in the three monitoring wells and in the Winooski River, relative to a benchmark (T.O.C. - MW-1) which was assigned an arbitrary elevation of 100 feet. The Groundwater Contour Map, in Appendix A, shows water table contours in the vicinity of the tanks. On that date, the map indicates that the water table was dipping to the north at a 1.4% gradient, in the vicinity of the tanks. The water level in the river was approximately two feet below the water table in this vicinity, however (see water level data in Appendix C). These sets of data appear to be conflicting because, while it appears that the groundwater in the vicinity of the tanks is flowing north, toward the homes across the street, the lower water level in the river suggests that it is a gaining stream and,

that the groundwater would be flowing toward it, to the south.

The river level on October 19th did appear to be higher than normal, due to the unusual amount of precipitation which the region has received during Autumn, 1990. This indicates that groundwater in the vicinity of the Middlesex Country Store likely does flow toward the river.

Water levels in the three monitoring wells were measured again on October 21st. The river level was not measured on that date. The data in Appendix C indicates that the water table was dipping to the north on that date at the same gradient as on October 19th.

3.3 Groundwater Sampling and Analysis

Groundwater samples were collected from the three on-site monitoring wells on October 19th for analysis for BTEX and MTBE using EPA Method 602. Laboratory results, in Appendix D, indicate that the groundwater in MW-2 and MW-3, which are both upgradient of the tanks and piping, contained no contamination on the sampling date. The results do indicate, however, that MW-1, which is directly upgradient of the tanks and piping, contained 79.3 ppb of MTBE on the sampling date. MW-3 did not contain BTEX on that date, however. If we had been able to install a well in SB-A, it is likely that the groundwater in it would have contained significant contamination concentrations, including high concentrations of MTBE.

4.0 CONCLUSIONS

1. The subsurface in the vicinity of the Middlesex Country Store consists of alluvial deposits of sand, silt and gravel, which are likely highly transmissive, overlying metasedimentary bedrock. The overburden likely does not exceed thicknesses greater than thirty feet.
2. The water table aquifer is contained within the overburden in the vicinity of the tanks, however, it appears to be unsaturated at the top of bedrock directly beneath the pump island and piping. This is likely due to a relatively high point in the bedrock which protrudes above the surrounding water table in this vicinity.

3. Groundwater in the water table aquifer is flowing to the north in the vicinity of the tanks. This flow direction is likely not the same across the entire site, however, due to the fact that the river level was two feet lower than the water table beneath the tanks on the date that water levels were measured. This indicates that the river is a gaining stream and that groundwater in the vicinity of the store generally flows to the south, toward the river and away from the contaminated supply wells across Route 2.
4. It is possible that water from the river is flowing around the dam on the Winooski River through the overburden and/or bedrock. This may explain why the water table in the vicinity of the Middlesex Country Store was found to be dipping to the north on October 19th.
5. There was a release or releases of gasoline to the subsurface in the vicinity of the store and the homes across the street. The amount and duration of the release(s) have not been determined.
6. The two underground gasoline storage tanks at the Middlesex Country Store are likely not the source of the contamination, due to the fact that they tested tight in 1989 and excavation around the tanks in 1990 revealed no soil contamination.
7. The underground piping, between the tanks and the pump island, may have been leaking. This conclusion is based on the fact that the borehole nearest to the piping contained significant petroleum vapors. Additionally, the piping has never been tested for tightness, as have the tanks.
8. The subsurface petroleum contamination exists in both the dissolved and adsorbed phases. No free floating product has been detected on the site.
9. The presence of dissolved contamination in the supply wells across Route 2 from the store indicates that the bedrock is contaminated. It has not yet been determined if the contamination is migrating to the vicinity of these supply wells through the overburden or through the bedrock. It is possible that adsorbed contamination in the vicinity of the underground piping at the Middlesex Country Store is entering the bedrock at the high point described in Conclusion 2.

10. The presence of MTBE in both MW-1 and in the wells across the street from the Middlesex Country Store indicate that the contamination could possibly be, at least in part, the result of a leak in the underground piping. The lack of MTBE and the presence of BTEX in supply wells at the northwest end of the village indicate that the source of contamination in those wells may be different than the source of contamination in wells at the southwest end of the village. It is possible, however, that the Middlesex Gulf Station is a contributor or the sole source of contamination in the supply wells near the Middlesex Country Store.
11. In addition to the possibilities of leaking piping and expected overfills at the pumps, inadvertent overfills of the underground storage tanks may also have been a source of the recent increase of contamination concentrations in the supply wells.
12. Since the tanks and piping at the Middlesex Country Store no longer contain product, they can no longer be considered to be a continuing source of contamination.

5.0 RECOMMENDATIONS

1. To fully define the extent of the contamination in the vicinity of the piping and pump island, we recommend that several additional soil borings/monitoring wells be installed in their vicinity.
2. To determine groundwater flow directions and the extent of contamination across the entire area of concern, we recommend the installation of several additional monitoring wells and a river gauge in the vicinity of the Middlesex Country Store and in the vicinity of the homes across Route 2. (A river gauge on the dam may be adequate for the needs of this investigation.) We also recommend that the locations and elevations of all supply wells and natural features in the immediate vicinity be surveyed and located on a detailed site map. Once the additional monitoring wells have been installed and the survey conducted, we recommend the analysis of water from each monitoring well and affected supply wells in the immediate vicinity and preparation of a contamination distribution map and a new groundwater flow map for the area.

3. To determine the route of entry of contaminants into the supply wells, we recommend that the section of each affected well below the bottom of casing be isolated from the section above it. Water from both sections should then be analysed for BTEX and MTBE. If water above the bottom of the casing is contaminated, we would assume that the contamination is entering the well through leaking casings or bedrock seals. If the water beneath the casing is contaminated, we can assume that the contamination is migrating to the wells through the bedrock.
4. To determine if the contamination in the supply wells is the result of releases of gasoline to the subsurface in the vicinity of the store, we recommend the introduction of a tracer into the subsurface near the pump island and continued sampling of the affected supply wells for that tracer.
5. We recommend that both the tanks and the piping at the store not be used until their integrity is verified.

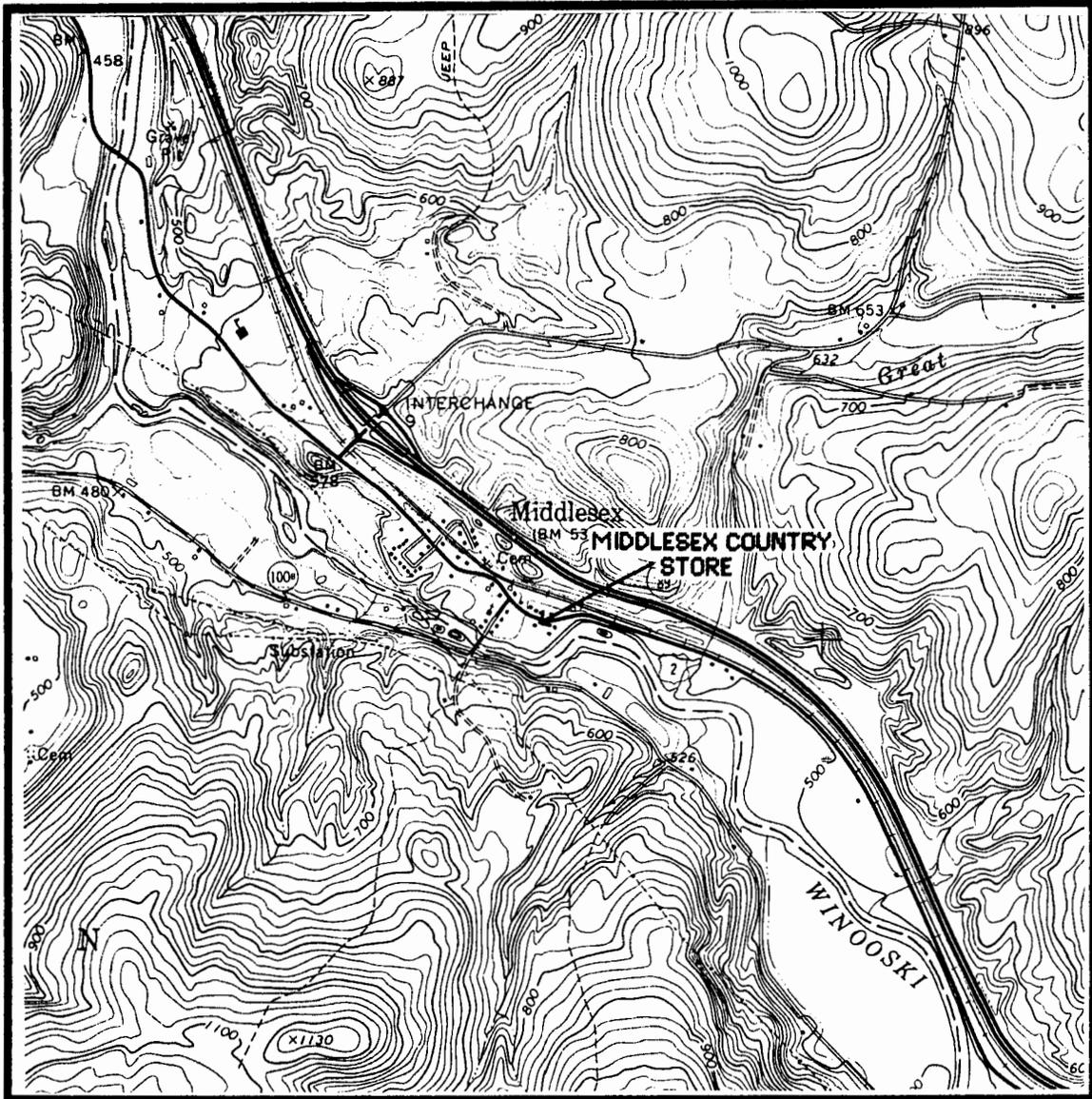
APPENDIX A

Site Maps

SITE LOCATION MAP

PROJECT : MIDDLESEX COUNTRY STORE

LOCATION : MIDDLESEX, VERMONT



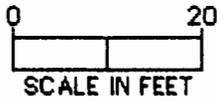
SOURCE : U.S.G.S. 7.5 x 15 MIN. MIDDLESEX, VERMONT QUADRANGLE, 1968 SCALE 1 : 25,000

SITE MAP

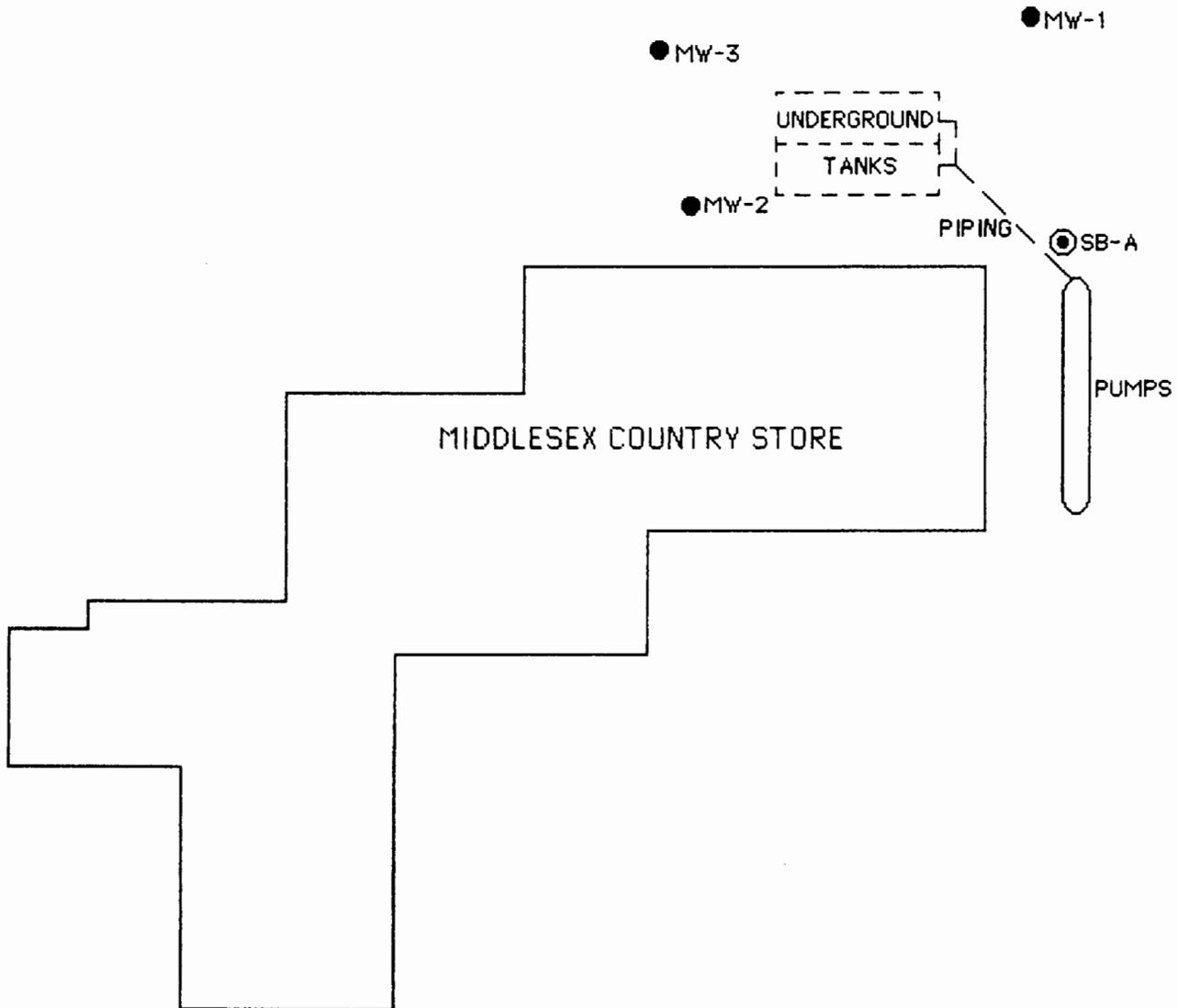
PROJECT : MIDDLESEX COUNTRY STORE
LOCATION : MIDDLESEX, VERMONT

● MONITORING WELL

⊙ SOIL BORING



U.S. ROUTE 2



GROUNDWATER CONTOUR MAP

PROJECT: MIDDLESEX COUNTRY STORE
LOCATION: MIDDLESEX, VERMONT
MONITORING DATE: 10/19/90

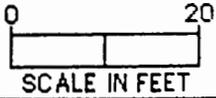
● MONITORING WELL

⊙ SOIL BORING

WELL IDENTIFICATION:

MW-1 - WELL I.D.

77.13 - WATER TABLE ELEVATION IN FEET



U.S. ROUTE 2

78.00'

77.50'

77.00'

MW-3
77.67

MW-1
77.13

UNDERGROUND
TANKS

MW-2
77.72

PIPING

SB-A

**GROUNDWATER
FLOW DIRECTION**

PUMPS

MIDDLESEX COUNTRY STORE

77.00'

77.50'

78.00'

APPENDIX B

Well Logs

PROJECT MIDDLESEX COUNTRY STORE

LOCATION MIDDLESEX, VERMONT

DATE DRILLED 10/10/90 TOTAL DEPTH OF HOLE 23.5'

DIAMETER 6"

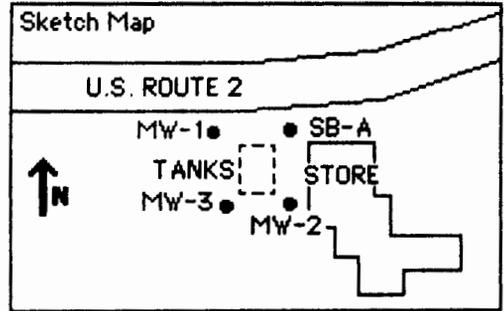
SCREEN DIA. _____ LENGTH _____ SLOT SIZE _____

CASING DIA. _____ LENGTH _____ TYPE _____

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER DON LOG BY PETER MURRAY

WELL NUMBER SB-A



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0	CONCRETE			
1	BENTONITE			
2				HEAVY PETROLEUM ODOR AT 2' - 220 PPM Fine, dry SAND, some silt and gravel
3				
4				
5			10,15,7,6	
6				HEAVY PETROLEUM ODOR - 210 PPM Dry, light brown, fine SAND and SILT, some gravel
7	NATIVE BACKFILL			
8				
9				
10			18,21,14,10	
11				HEAVY PETROLEUM ODOR - 145 PPM Dry, fine to coarse SAND and fine to coarse, well rounded GRAVEL
12				
13				
14				
15			19,22,14,15	
16				HEAVY PETROLEUM ODOR - 280 PPM Coarse, subrounded GRAVEL, some coarse sand
17				
18				
19				
20			25,33,72 -	
21				PETROLEUM ODOR - 85 PPM Dry, red, coarse SAND and coarse GRAVEL
22				
23				BASE OF EXPLORATION AT 23.5'
24				
25				BEDROCK
26				

PROJECT MIDDLESEX COUNTRY STORE

LOCATION MIDDLESEX, VERMONT

DATE DRILLED 10/10/90 TOTAL DEPTH OF HOLE 27'

DIAMETER 6"

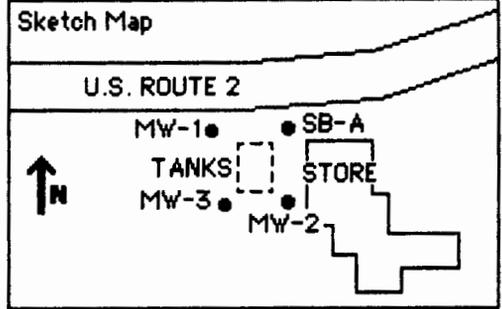
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"

CASING DIA. 2" LENGTH 14' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER DON LOG BY PETER MURRAY

WELL NUMBER MW-1



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX CONCRETE CAP		
1		BENTONITE		Light brown, fine SAND, some silt NO PETROLEUM ODOR - 0.1 PPM
2		WELL CASING		
3				
4			4,4,4,4	
5				Dry, very fine SAND and SILT NO PETROLEUM ODOR - 0.2 PPM
6				
7				
8		NATIVE BACKFILL		
9				
10			1,8,11,17	
11				Medium to coarse SAND, some gravel, little silt NO PETROLEUM ODOR - 0.1 PPM
12				
13				
14			96,26,17,15	
15				Medium to coarse SAND, GRAVEL and COBBLES, little silt VERY SLIGHT PETROLEUM ODOR - 1 PPM
16				
17		WELL SCREEN		
18				
19		GRAVEL PACK		Fine, moist SAND, little silt SLIGHT PETROLEUM ODOR - 13 PPM
20			8,10,10,12	
21				
22				
23				WATER TABLE
24				Wet, very fine SAND, some silt NO PETROLEUM ODOR
25		BOTTOM PLUG		
26		NATIVE BACKFILL	2,6,8,11	
				BASE OF EXPLORATION AT 27'

Griffin International

PROJECT MIDDLESEX COUNTRY STORE

LOCATION MIDDLESEX, VERMONT

DATE DRILLED 10/12/90 TOTAL DEPTH OF HOLE 24.5'

DIAMETER 6"

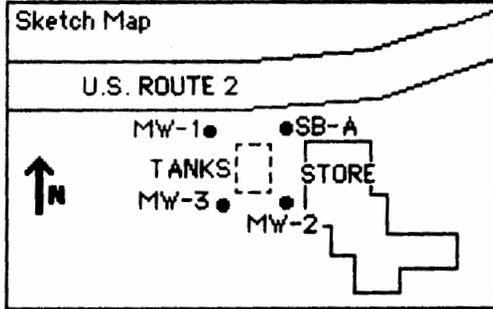
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"

CASING DIA. 2" LENGTH 14' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER DON LOG BY PETER MURRAY

WELL NUMBER MW-2



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0	ROAD BOX CONCRETE CAP			
1	BENTONITE			Wet, brown, fine SAND and SILT, little clay
2	WELL CASING			NO PETROLEUM ODORS
3				
4			5,4,4,5	
5				
6				
7	NATIVE BACKFILL			
8				Moist, fine SAND and SILT NO PETROLEUM ODORS
9				
10			18,10,6,11	Moist, fine SAND and SILT, some gravel
11				
12				Moist, medium to coarse SAND, some well rounded gravel NO PETROLEUM ODOR
13				
14				
15			34,26,30,15	Moist, medium to coarse SAND and GRAVEL
16	WELL SCREEN			
17				
18	GRAVEL PACK			Moist, light brown, fine SAND, some silt NO PETROLEUM ODORS
19				
20			6,7,10,7	WATER TABLE ▼
21				Wet, fine SAND, little silt NO PETROLEUM ODORS
22				
23				
24				
25	BOTTOM PLUG			BASE OF EXPLORATION AT 24.5'
26				

PROJECT MIDDLESEX COUNTRY STORE

LOCATION MIDDLESEX, VERMONT

DATE DRILLED 10/12/90 TOTAL DEPTH OF HOLE 25.5'

DIAMETER 6"

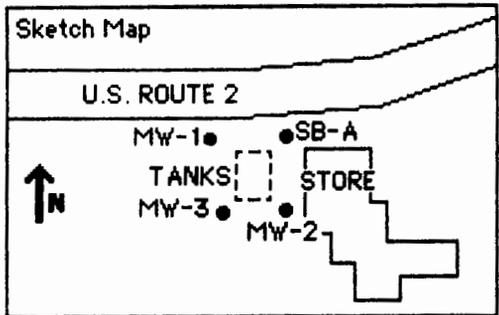
SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"

CASING DIA. 2" LENGTH 15' TYPE PVC

DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER

DRILLER DON LOG BY PETER MURRAY

WELL NUMBER MW-3



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX CONCRETE CAP		
1		BENTONITE		Dark brown TOPSOIL; wet, fine SAND and SILT, little clay
2		WELL CASING		
3				
4		NATIVE BACKFILL		
5				
6				Dry, light brown SAND and SILT
7				NO PETROLEUM ODORS
8				
9				
10			10,18,23,19	Dry, medium to coarse SAND and GRAVEL
11				NO PETROLEUM ODORS
12				
13				
14				
15			14,14,10,10	Moist, fine SAND, some silt
16				
17				
18		WELL SCREEN		WATER TABLE ▼
19		GRAVEL PACK		NO PETROLEUM ODORS
20			3,2,4,6	Wet, fine SAND, some silt
21				NO PETROLEUM ODORS
22				
23				
24				
25		BOTTOM PLUG		BASE OF EXPLORATION AT 25.5'
26				

APPENDIX C

Liquid Level Data

APPENDIX D

Laboratory Results



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Middlesex Country Store
REPORT DATE: October 30, 1990 ANALYSIS DATE: October 29, 1990
SAMPLER: Peter Schuyler STATION: MW-2
DATE SAMPLED: October 19, 1990 REF.#: 15,642
DATE RECEIVED: October 19, 1990 TIME SAMPLED: 12:45

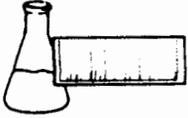
<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by Suzanne M. Herschke



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Middlesex Country Store
REPORT DATE: October 30, 1990 ANALYSIS DATE: October 29, 1990
SAMPLER: Peter Schuyler STATION: MW-3
DATE SAMPLED: October 19, 1990 REF.#: 15,643
DATE RECEIVED: October 19, 1990 TIME SAMPLED: 1:00

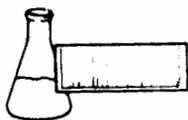
<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by Stephanie M. Jendel



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Middlesex Country Store
REPORT DATE: October 30, 1990 ANALYSIS DATE: October 29, 1990
SAMPLER: Peter Schuyler STATION: MW-1
DATE SAMPLED: October 19, 1990 REF.#: 15,644
DATE RECEIVED: October 19, 1990 TIME SAMPLED: 1:15

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	79.3

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

- 1 None detected

Reviewed by Suzanne M. Frenkel



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Middlesex Country Store
REPORT DATE: October 30, 1990 ANALYSIS DATE: October 29, 1990
SAMPLER: Peter Schuyler STATION: Site Blank
DATE SAMPLED: October 19, 1990 REF.#: 15,645
DATE RECEIVED: October 19, 1990 TIME SAMPLED: 1:30 p.m.

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

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by Suzanne M. Fierstake