

October 25, 1995

Mr. Elden Dube  
Bank of Woodstock  
PO Box 30  
Woodstock, VT 05091

Re: Soil Investigation, 188 Deweys Mills Road, Quechee, Vermont  
JCO#: 1-2351-3 (042)

SITE # 95-1878

Dear Elden:

The Johnson Company, Inc. has completed its Initial Site Investigation of the release of #2 fuel oil in the basement of the home at 188 Deweys Mills Road in Quechee, Vermont. The purpose of the investigation was to define the degree and extent of the soil and groundwater contamination caused by the release of oil to soils under the house.

The attached report describes the procedures used for this investigation, provides the data and results obtained, and presents The Johnson Company's conclusions and recommendations for the site based on those results. In summary, we recommend that no further investigation for the site be conducted, that a new concrete floor and vapor barrier be installed in the furnace room, and that a formal request for site closure be made to the Vermont Sites Management Section.

Please call if you have questions regarding any aspect of the investigation or this report.

Sincerely,

THE JOHNSON COMPANY, INC.

By: Bradley A. Wheeler

Bradley A. Wheeler, CPSS  
Senior Scientist

cc: Linda Provencher, Vermont Sites Management Section

Reviewed By: ARL  
i:\projects\1-2351-3\invest.rpt October 18, 1995 14:08 BAW

# INITIAL SITE INVESTIGATION 188 DEWEYS MILLS ROAD QUECHEE, VERMONT

## 1.0 INTRODUCTION

Between September 8 and September 12, approximately 520 gallons of #2 fuel oil apparently leaked through a crack in a small diameter copper distribution line in the basement of the house at 188 Deweys Mills Road, Quechee, Vermont (the Site). (See Figure 1, Site Location Map.) The oil appears to have subsequently seeped through a wall/floor interface seam and into the soils beneath the house. The purpose of this Initial Site Investigation (SI) was to determine the degree and extent of the contamination beneath the house, in particular to determine if any of the oil had migrated to the groundwater or bedrock.

The SI included the following steps:

1. Completion of four hand borings, each to a depth of 40 inches, into the soils directly beneath the room into which the oil was released. The soils were screened for organic vapors using a photoionization detector (PID) plastic bag headspace analysis.
2. Completion of four vertical borings with a drill rig to depths ranging from approximately 18 feet below the ground surface (bgs) to approximately 53.5 feet bgs. These borings were located around the outside of the house; north, south and west of the point of release, all from 25 to 50 feet from that point. Soil samples were also collected from each of these borings and were screened for organic vapors using a PID plastic bag headspace analysis.
3. Attempting to advance a hand driven split spoon sampler from the interior of the house in order to determine the vertical extent of the contamination. The soil conditions allowed an advancement of only 6.3 feet. The bottom of the soil contamination was not encountered.
4. Completion of two angle borings from outside the house to two depths (approximately 40 feet bgs and 24 feet bgs) directly below the point of release. Soil samples were collected from each of these borings and were screened for organic vapors using a PID plastic bag headspace analysis.
5. Collection of a water sample from the new water supply well that has recently been drilled on the property. The sample was analyzed for aromatic hydrocarbons using EPA Method 8020.

The following is a presentation of the methods used in carrying out the steps listed above, the results obtained from these tasks, and the conclusions and recommendations of The Johnson Company that are derived from those results.

## 2.0 SITE INVESTIGATION

### 2.1 HAND SOIL BORINGS

On September 12, 1995, The Johnson Company was notified of a suspected release of fuel oil in the basement of the house at the Site. On that date we completed four soil borings in the furnace room using a hand held soil auger. It was determined that the concrete floor in the furnace room is only 1/2 to 1 inch thick, so it was broken using a steel pipe to allow access to the soils beneath the room.

Based on the initial inspection of the furnace room, most of the oil that was released apparently seeped into the ground at the base of the chimney adjacent to the spot on the copper tubing that was found to be cracked. (See Figure 2, Furnace Room Sketch.) Consequently, four soil borings, with PID headspace screenings, were conducted in this room to attempt to determine the horizontal and vertical extent of soil contamination. Each boring was completed to a depth of 40 inches below the basement floor. The locations of each boring are shown on Figure 2. The results of the headspace screening of the soil samples obtained from these borings are provided in Table 1.

TABLE 1  
PID HEADSPACE SCREENING RESULTS  
FURNACE ROOM SOIL BORINGS  
(all units parts per million)

SAMPLE ID	DEPTH (inches)	PID READING	SOIL TEXTURE
SS1-1	20-30	537	medium sand
SS1-2	30-40	344	gravelly sand
SS2-1	0-10	258	medium sand
SS2-2	10-20	258	medium sand
SS2-3	20-30	293	medium sand
SS2-4	30-40	281	medium sand
SS3-1	6-10	14	medium sand
SS3-2	10-20	20	medium sand
SS3-3	20-30	19.5	medium sand
SS3-4	30-40	17	medium sand
SS4-1	0-10	13	medium sand
SS4-2	10-20	18.5	medium sand
SS4-3	20-30	15.7	medium sand
SS4-4	30-40	17.1	medium sand

The initial screening of soils beneath the furnace room confirmed that oil had entered the soils beneath the house. It also indicated that oil vapors in the soils were highest near the suspected release point. The limited depth of the samples did not allow us to find the lowest extent of contaminated soils. The soils that were examined did not show any evidence of a seasonal high water table, or of relatively less permeable (restrictive) soil horizons.

Based on this information, we conducted vertical soil borings outside the house using a drill rig to further characterize the site conditions.

## 2.2 VERTICAL SOIL BORINGS

Starting on September 18, 1995, The Johnson Company completed four soil borings outside of and adjacent to the house using a drill rig and the Envirocore Sampling Tool. The locations of these borings are shown on Figure 3, Site Sketch.

Continuous soil samples were collected with a 24-inch split spoon sampler as each of these borings was advanced. The samples were screened for volatile organic compounds using a PID plastic bag headspace analysis. No evidence of organic vapors was detected in any of the soil samples from these borings. All sampling and drilling equipment was thoroughly cleaned before the first boring and between samples and borings.

The soils encountered in these borings were generally fine sand, with thin layers of silt loam common throughout the profile, and with common layers of coarse sand and gravel present as well. Boring logs for each of these borings are included in Appendix 1.

Soil Boring SB-1 was located directly south of the furnace room, approximately 20 feet from the house. This boring was advanced to a depth of 34 feet below the ground surface (bgs), at which depth the sides of the borehole collapsed, making further sampling at this location impossible. No evidence of groundwater was observed in this boring.

Soil Boring SB-2 was located north and slightly west of the furnace room, approximately 12 feet from the house. Based on the surficial topography and the position of the Ottawaquechee River, it was predicted that the direction of groundwater flow through this area would be slightly west of north. Due to collapse of the borehole, this boring was terminated at 18 feet bgs. No evidence of groundwater was observed in this boring.

Soil Boring SB-3 was located approximately 17 feet east of SB-2, 13 feet from the house. This boring remained open throughout its length, which was 53.5 feet bgs, at which point bedrock was encountered. No evidence of groundwater was observed in this boring.

Soil Boring SB-4 was located west of the furnace room, approximately 16 feet from the house. This boring was also completed to bedrock, which was at a depth of 51.5 feet bgs. Water was seen at the bottom of this boring, approximately 1 foot above bedrock. Based on the lack of water in SB-3, it appears that the water in SB-4 was in an isolated pocket or trough in the bedrock, and not actually representative of an apparent high groundwater table.

These borings provided information regarding the horizontal extent of the contamination in the soils beneath and adjacent to the house. Basically, it was shown that the vapors from the released oil have not migrated horizontally to a significant degree, if at all, beyond the footprint of the house itself.

In addition, these borings provided us with information regarding the movement of groundwater through this area. It appears that the groundwater is moving in the bedrock through this area, and that the soils above the bedrock primarily remain dry throughout the year. The groundwater does not appear to provide a mode of transport for the oil released at this site.

The vertical borings provided data that helps to define the aerial extent of the site contamination. The data obtained from these borings also improves our understanding of the site conditions regarding soil stratigraphy and the nature of the groundwater moving through this area. Since no evidence of organic vapors was seen in any of these borings, the borings did not directly help us to determine the vertical extent of the contamination. In order to investigate the vertical extent of the soil contamination under the house, two angle borings were completed from beside the house to different depths below the approximate release point.

### 2.3 ANGLE SOIL BORINGS

On October 6, 1995, New Hampshire Boring, Inc. conducted the angle boring work. The angle borings were completed using a trailer mounted Geoprobe drill rig. The Johnson Company was present to direct the boring contractor, to record the soil stratigraphy, and to collect and screen soil samples.

Two angle borings were completed west of the furnace room. The first boring entered the ground approximately 10 feet from the house and the second boring entered the ground approximately 8 feet from the house. The borings were advanced to below the approximate point of release. The first boring (SB-5) was angled to reach the approximate point of release beneath the house at a depth of approximately 39.5 feet bgs. (See Figure 4.) Since no evidence of oil was noted in the first boring, the second boring (SB-6) was completed to reach the approximate point of release at a depth of approximately 24 feet bgs. (See Figure 4.)

Continuous soil samples were collected starting at a point that coincided with the edge of the house. The samples were screened in the field using a PID plastic bag headspace analysis. All sampling and drilling equipment was thoroughly cleaned before the borings and between samples and borings.

The soil stratigraphy encountered in these angle borings was similar to that described above for the vertical borings in Section 2.2.

PID headspace analysis results for these angle borings are provided in Table 2.

**TABLE 2**  
**PID HEADSPACE SCREENING RESULTS**  
**ANGLE BORINGS - SB-5 AND SB-6**  
(all units parts per million)

SAMPLE ID	DEPTH (feet)	PID READING	SOIL TEXTURE
SB5-1	24-25.5	0.0	fine sand
SB5-2	25.5-27	0.0	fine sand, silt lenses
SB5-3	27-28.5	0.0	fine sand, silt lenses
SB5-4	28.5-30	0.0	fine sand
SB5-5	30-31.5	0.0	fine sand
SB5-6	31.5-33	0.0	fine sand
SB5-7	33-34.5	0.0	fine sand
SB5-8	34.5-36	0.0	fine sand, 1" very coarse sand layer
SB5-9	36-37.5	0.0	fine sand, 1" very coarse sand layer and silt lense
SB5-10	37.5-39	0.1-0.3	fine sand
SB6-1	15-16.5	40	gravelly med. sand
SB6-2	16.5-18	324	very fine sandy loam
SB6-3	18-19.5	346	fine sandy loam
SB6-4	19.5-21	43	gravelly fine sand
SB6-5	21-22.5	26	loamy fine sand
SB6-6	22.5-24	8	fine sand, silt lense

The data obtained during the soil PID headspace analysis for these angle borings demonstrates that the soil contamination at this site is primarily confined to soils directly under the house within a depth of approximately 15 to 20 feet below the bottom of the basement floor.

#### 2.4 WATER SAMPLE ANALYSIS

On October 6, 1995, a sample of water from the newly drilled well was collected for laboratory analysis for aromatic hydrocarbons using EPA Method 8020. Prior to collection of the sample, the cold water tap closest to the well was allowed to run for approximately 3.5 hours. The

sample was collected in a 40 ml vial. The sample was preserved with hydrochloric acid. It was delivered by hand to Scitest Laboratory in Randolph, Vermont immediately after it was collected.

None of the analytes for the 8020 method were reported by the laboratory as being present in the sample above the practical quantitation limit of this analysis. The practical quantitation limit for the analysis was 1.0 part per billion. A copy of the laboratory report is included in Appendix 2.

This well, shown on Figure 3, Site Sketch, was drilled on August 18, 1995. Bedrock is reported in the well driller's log at 48 feet bgs. The well casing was driven 12 feet into the bedrock; the total casing length is 63 feet. The total depth of the well is 340 feet. Water was first recorded in the well driller's log at 320 feet. A copy of the well driller's log is included in Appendix 3.

## 2.5 SENSITIVE RECEPTORS

The limited extent of the soil contamination that has occurred as a result of this release of #2 fuel oil, and the separation of the contaminated zone from bedrock and groundwater, ensures that the only sensitive receptor that is at risk from this release is the interior air of the house itself. PID screening of the air in the furnace room in the basement resulted in readings ranging typically from 5 to 15 parts per million (ppm). Although a slight odor of fuel oil is present in the first floor of the house, the vapors are not concentrated enough to be detected by the PID.

As shown by the results of the water sample analysis, the on-site water supply well has not been impacted by this release, and due to the factors mentioned in the paragraph above, it is apparent that this well is not threatened by the contamination in the soils beneath the house.

## 3.0 DISCUSSION

Based on the data obtained from the angle borings, it is evident that the oil that was released in the basement of the house has not migrated vertically beyond approximately 30 feet below the basement floor; and based on the interpolated sketch of the zone of contamination that was derived from the data from these borings (See Figure 4), it appears that the zone of contamination is primarily confined to the upper 15 to 20 feet of soil beneath the furnace room. It appears that the oil is now residual in the fine sandy, unsaturated soils beneath the house. There is an apparent separation of 25 feet of unsaturated fine sand with common silt loam lenses between the bottom of the contaminated zone and the bedrock. The groundwater table was not evident above the bedrock.

Horizontal migration of vapors from this release also appears to be limited to an area not significantly larger than the furnace room. This is evidenced by the vertical borings located around the house, by the relatively low concentrations of vapors detected in hand borings SS-3 and SS-4, and the lack of detectable vapors in angle boring SB-5.

Several factors indicate that the mobility of this contamination is limited. These include the location of the contaminated zone (which is under the house), the depth to bedrock beneath the house, the apparent lack of a groundwater table in the soils beneath the house, and the thickness of the uncontaminated and unsaturated soils below the bottom of the contaminated zone of soil.

With the house covering the contaminated soils, there will be no infiltration of rain water or snow melt to aid in the transport of the contamination. There are several 4-inch diameter PVC drain

pipes that carry roof runoff away from the edges of the house. At least four were noted during the initial inspection of the site. These will further reduce the potential for water infiltration into the contaminated soils beneath the house.

The 25 foot separation between the contaminated zone of soils and the bedrock causes us to believe that the potential for relatively unrestricted movement of contaminants in bedrock fractures is very low. Similarly, transport of contamination on or in groundwater is very unlikely because there is no groundwater present within 25 feet of the bottom of the contaminated soil.

The primary mode of dissemination of this contamination is by vapor transport through the soils and into the open air, mainly in the basement of the house. Vapor levels in the basement do not appear to present a risk to the health of people occupying the house. The American Conference of Governmental Industrial Hygienists (ACGIH) 1994-1995 Threshold Limit Value (TLV) for gasoline (#2 fuel oil and diesel fuel have not been assigned this type of safety exposure limit) is 300 ppm. The TLV is defined as the average concentration for a normal 8-hour workday and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. This type of standard, while not directly applicable to the interior of a home, provides a relative basis for comparison with the levels of vapors present in the house. As noted earlier in this report, a range of 5 to 15 ppm has been recorded in the furnace room, where the concentration of vapors in the house is highest. From this comparison, we can see that the vapors in the house do not present a serious immediate health risk to people in the house.

#### 4.0 RECOMMENDATIONS

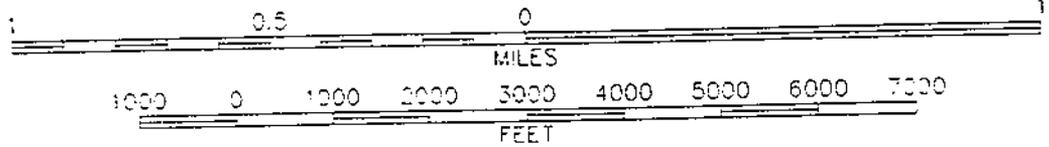
The recommendations of The Johnson Company regarding this site are as follows:

1. We recommend that the concrete floor in the furnace room be removed and replaced with a thicker, reinforced concrete floor that will not crack and will not be pervious to vapors that would otherwise enter the basement from the soils beneath the house. It is also recommended that a vapor barrier of at least 6 mil polyethylene sheeting be placed between the contaminated soils and the concrete for the new floor. This may require the removal of approximately one foot of the existing soils, installation of the plastic sheeting (with at least a one-foot overlap on all seams), and the placement of 8 inches of well compacted clean fill onto which the new reinforced concrete floor can be poured. This recommendation is made so that the entrance of oil vapors into the house can be eliminated.

Good ventilation in the basement should be provided when this work is carried out, and air monitoring should be conducted for the protection of the workers performing the job. Since this is now a Listed Active Hazardous Waste Site, workers who may come into contact with contaminated soils or air must be trained in accordance with 29 CFR 1910.120. Any contaminated soils that are removed from under the house must be handled and disposed of in accordance with Vermont Department of Environmental Conservation regulations. A temporary on-site soil stockpile encapsulated in polyethylene sheeting is one option for treatment of the soils. Off-site disposal using asphalt batching or thermal desorption may also be possible for soils that are removed from beneath the house.

2. We recommend that no further investigation of the site be carried out at this time. We believe that the site has been adequately characterized in order to understand the nature of the site contamination and the relative threat that the contamination poses to sensitive receptors.
3. Since the source of the site contamination has been controlled by replacing the split copper tubing that allowed the oil to be released, the zone of contamination is very limited and restricted to an area of unsaturated soils under the house, and since the potential for additional migration of the contamination is very low, we recommend that a formal Site Closure request be made in writing to Lynda Provencher, Site Manager for the Vermont Department of Environmental Conservation Sites Management Section.

## FIGURES



CONTOUR INTERVAL 20 FEET



MAP LOCATION

BASE MAP: USGS 7.5 Minute Topographic Quadrangle Quec-EE, VT, 1959, PHOTOREVISED 1980

FIGURE 1: Site Location Map  
188 Deweys Mills Road  
Quechee, Vermont

**THE JOHNSON COMPANY, INC.**  
Environmental Sciences and Engineering  
100 STATE STREET MONTPELIER, VT 05602

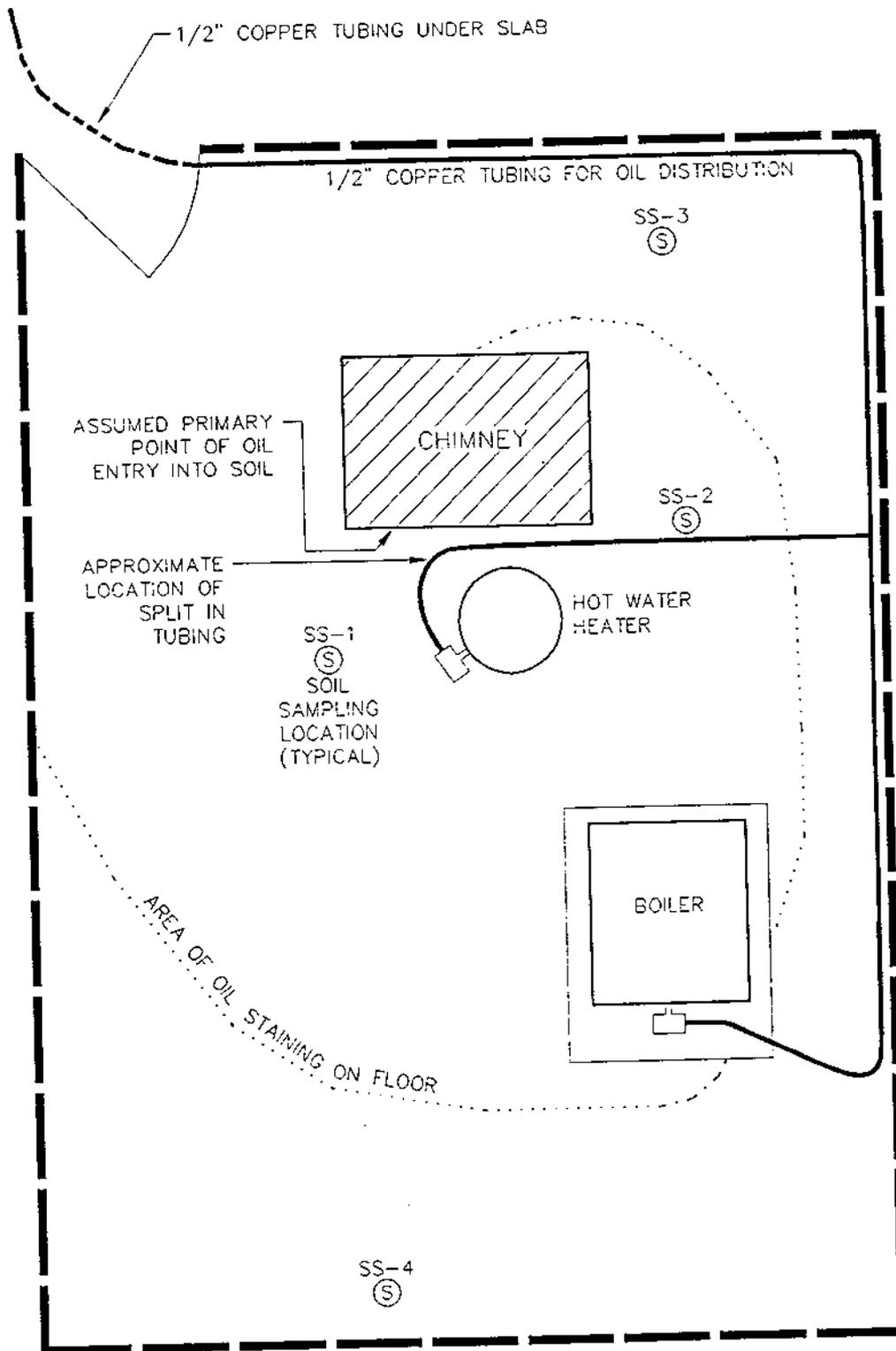


FIGURE 2: FURNACE ROOM SKETCH  
138 DEWEYS MILLS ROAD  
QUECHÉE, VERMONT

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MONTPELIER, VT 05602

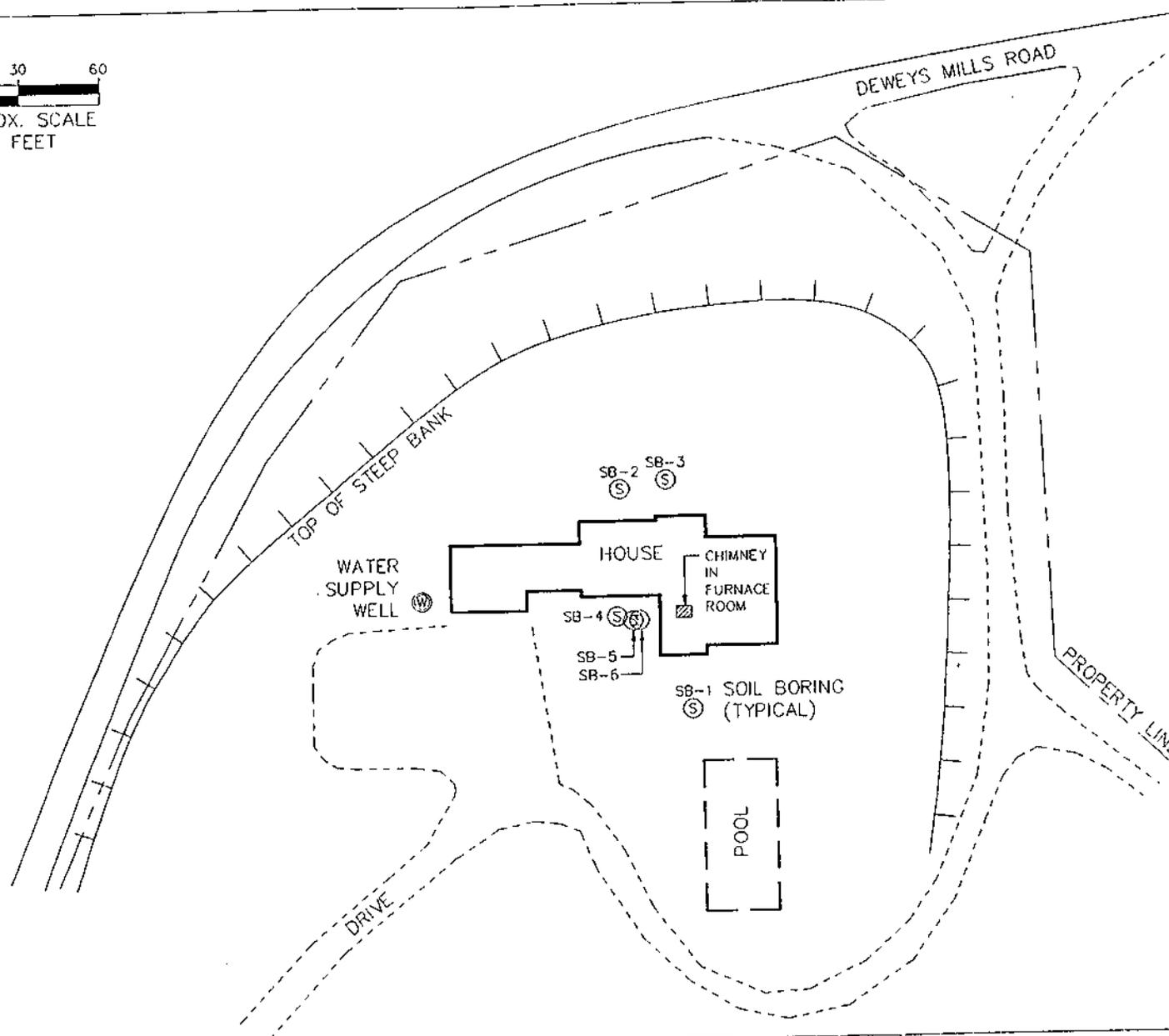
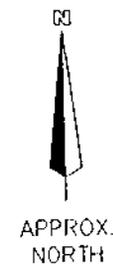
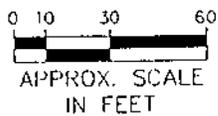


FIGURE 3 - SITE SKETCH  
188 DEWEYS MILLS ROAD  
QUECHEE, VERMONT

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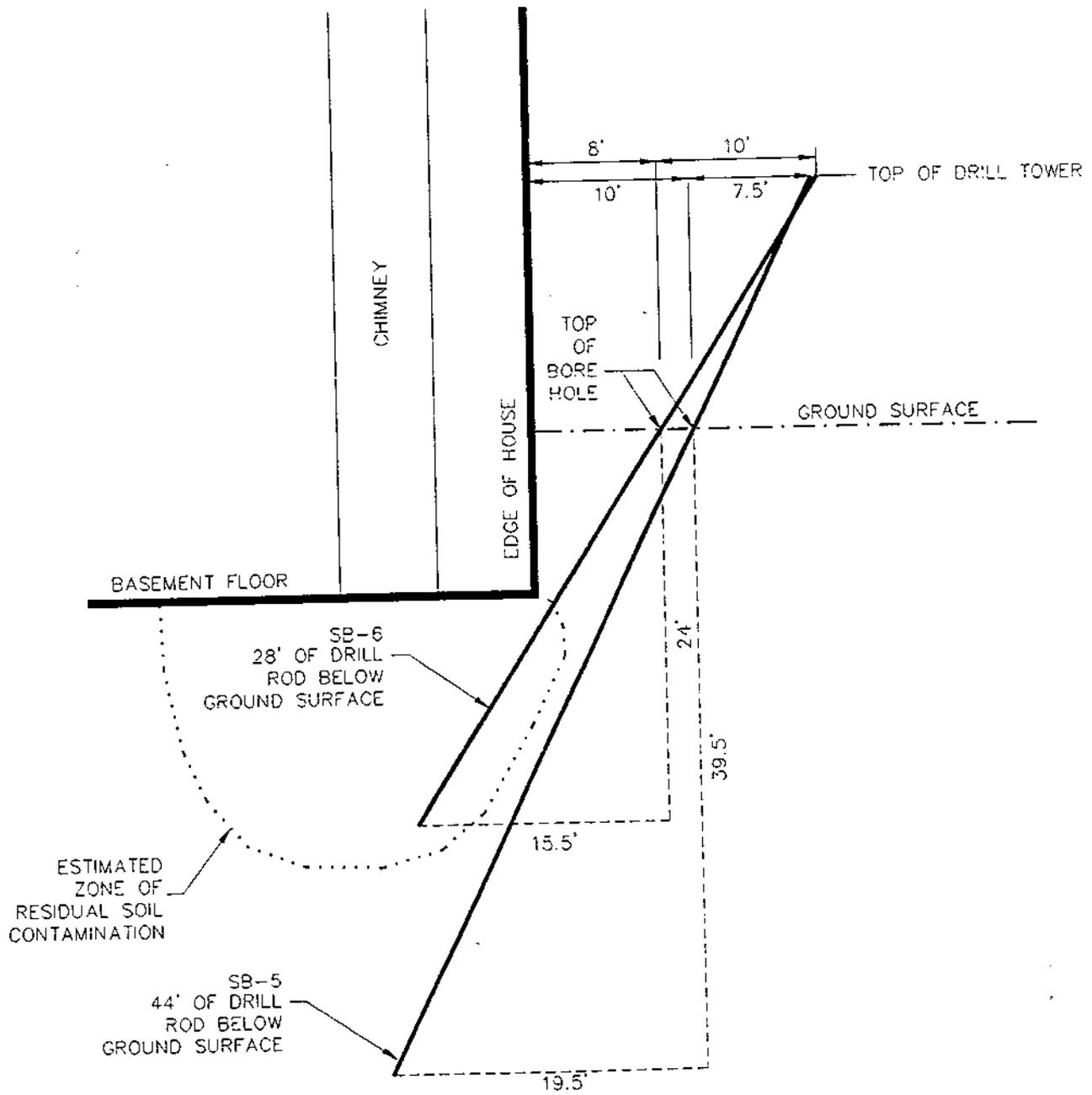


FIGURE 4: SOIL BORINGS 5 & 6  
188 DEWEYS MILLS ROAD  
QUECHEE, VERMONT

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*Environmental Sciences and Engineering*  
100 STATE STREET  
MONTPELIER, VT 05602

## APPENDIX 1

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

DRILLING LOG  
 WELL # SB-1

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1-2351-3  
 Logged By: RAS  
 Date Drilled: 9/18/95  
 Driller: PTD  
 Drill Method: cont. Split-spoon

Casing Type: none  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 34.0 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 1 of 2

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					0-0.5 brown fine sandy silt top soil.
1				0.0	0.5 - 2.0 light brown fine gravelly c-f sand fill
2				0.0	2.0 -2.2 fill.
3				0.0	2.2-4. light brown fine sandy silt
4				0.0	4.0 - 6.0 light brown silt little fine sand, trace roots
5				0.0	6.0 - 7.0 light brown silt, little fine sand
6				0.0	7.0 - 8.0 grey fine sand, little silt
7				0.0	8.0 - 10.0 grey fine sand, little silt trace c-m sand
8				0.0	10.0 - 12.0 c-f gravelly c-f sand
9				0.0	12.0 -13.5 same as above
10				0.0	13.5 - 14 grey fine sand trace c-m sand
11				0.0	14 -15.5 light brown m-f sand trace c sand, with one 2" layer of wet silty fine sand.
12				0.0	15.5-16.0 grey c-f sandy c-f gravel
13				0.0	16-17 same as above
14				0.0	17-18 light brown fine sand trace silt, c-m sand. two 1/8" grey moist silt layers with iron oxide staining
15				0.0	18-20 grey to brown fine sand little siltgrading into brown laminated silty fine sand to fine sandy silt
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
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31					
32					
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34					
35					
36					
37					
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39					
40					

(continued on Sheet 2)

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

**DRILLING LOG**  
**WELL # SB-1**

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1--2351-3  
 Logged By: RAS  
 Date Drilled: 9/18/95  
 Driller: PTD  
 Drill Method: cont. Split-spoon

Casing Type: none  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 34.0 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 2 of 2

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					(continued from Sheet 1) <hr/> 20-22 light brown to grey fine sand little silt, with occasional silty layers (1/8" - 1 1/2") <hr/> 22-24 same as above. poor recovery 1 piece of coarse gravel lodged in the tip of sampler. <hr/> 24-26 grey laminated fine sand trace silt <hr/> 26-28 same as above <hr/>
4					
3					
2					
1					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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38					
39					
40					

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

**DRILLING LOG**  
**WELL # SB-2**

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1-2351-3  
 Logged By: RAS  
 Date Drilled: 9/20/95  
 Driller: PTD  
 Drill Method: Cont. Split-spoon

Casing Type: none  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 18.0 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 1 of 1

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
5					
4					
3					
2					
1					
0					
1				0.0	0-2 brown loamy fine sandy silt top soil fill
2				0.0	2-4 brown fine sandy silt
3				0.0	4-6 brown fine sandy silt
4				0.0	6-8 interbedded layers of coarse to fine sandy coarse to fine gravel and coarse to fine sand
5				0.0	8-10 same as above
6				0.0	10-12 same as above
7				0.0	12-14 same as above
8				0.0	14-16 same as above
9				0.0	16-17 same as above
10				0.0	17-18 brown laminated fine sandy silt. several laminae contain trace amounts of clay.
11				0.0	borehole collapsed at 18.0 ft
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
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40					

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

DRILLING LOG  
 WELL # SB-3

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1-2351-3  
 Logged By: RAS  
 Date Drilled: 9/20/95  
 Driller: PTD  
 Drill Method: Cont. SS/ENVIROCORE

Casing Type: PVC  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 53.5 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 1 of 2

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
6					0-2 brown silty m-f sand trace roots
4					topsoil fill
2					
0				0.0	
2				0.0	2-4 orange brown fine sandy silt, trace roots
4				0.0	loess
6				0.0	
8				0.0	
10				0.0	4-6 brown silty fine sand trace c-m sand
12				0.0	
14				0.0	
16				0.0	6-8 grey brown stratified c-f sand
18				0.0	
20				0.0	8-10 grey brown m-f sand trace coarse sand, c-f gravel
22					
24				0.0	10-11 same as above
26					
28				0.0	11-12 c-f sandy c-f gravel
30					
32				0.0	12-14 same as above
34					
36				0.0	14 -15.5 same as above
38					
40				0.0	15.5 - 16 grey brown m-f sand trace c sand, fine gravel
42					
44				0.0	16-17 c-f sandy c-f gravel
46					
48				0.0	17-18 light brown laminated silty fine sand, with few silt laminae
50					
52				0.0	18-20 same as above
54					
56					
58					
60					20-24 grey finely laminated fine sandy silt. few silt laminae contain trace of clay
62					
64					
66					24-29 same as above
68					
72					29-34 grey brown fine sand little silt with occasional silt laminae
74					
76					
78					34-39 same as above, with 6" layer of c-f sand
80					
82					
84					
86					(continued on Sheet 2)

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

**DRILLING LOG**  
**WELL # SB-3**

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1-2351-3  
 Logged By: RAS  
 Date Drilled: 9/20/95  
 Driller: PTD  
 Drill Method: Cont. SS/ENVIROCORE

Casing Type: PVC  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 53.5 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 2 of 2

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
6					(continued from Sheet 1) <hr/> 39-44 grey brown silty fine sand to fine sand little silt. one 2" zone of grey clayey silt with fine sand partings. silt layers approx 1/4" thick. <hr/> 44-46? grey silty fine sand with clayey silt laminae. 46-49 grey silty c-f sand, little c-f gravel. glacial till (ablation) <hr/> 49-53.5 grey silty c-f sand, little c-f gravel. glacial till (ablation). refusal on possible bedrock at 53.5. <hr/>
4					
2					
0					
2					
4					
6					
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					
60					
62					
64					
66					
68					
72					
74					
76					
78					
80					
82					
84					
86					

The Johnson Company, Inc.  
 Environmental Sciences and Engineering  
 100 State Street  
 Montpelier, Vermont 05602

**DRILLING LOG**  
**WELL # SB-4**

Project: 188 Deweys Mills Road  
 Location: Quechee, VT  
 Job # 1-2351-3  
 Logged By: RAS  
 Date Drilled: 9/21/95  
 Driller: PTD  
 Drill Method: Envirocore

Casing Type: PVC  
 Casing Diameter:  
 Casing Length:  
 Screen Type: Factory  
 Screen Diameter:  
 Screen Length:  
 Slot Size: 010

Total Pipe: 0.0 ft.  
 Stick Up: 0.0 ft.  
 Total Hole Depth: 51.5 ft.  
 Well Guard Length: 0.0 ft.  
 Initial Water Level: None  
 Surface Elevation: -  
 T.O.C. Elevation: -

Sheet 1 of 1

█ = Sampled Interval

Depth (feet)	Well Construction	Notes	Geology	PID Reading	Description
6					
4					
2					
0					
2				0.0	0-2 brown silty m-f sand trace coarse sand, roots
4					Top soil fill
6				0.0	2.0-5.0 brown m-f sand little silt with occasional silt laminae
8					
10				0.0	
12				0.0	5-10 same as above
14					
16				0.0	10-13 grey brown c-f sandy c-f gravel little silt
18					
20				0.0	13-14.5 same as above
22					
24				0.0	14.5-19.5 same as above --poor recovery
26					
28				0.0	19.5-24.5 grey to brown interbedded fine sand little silt and silt little fine sand
30					
32				0.0	24.5-29.5 grey fine sand little silt with occasional dk grey clayey silt laminae
34					
36				0.0	29.5-30.0 grey fine sandy silt
38					
40				0.0	30.0-32? grey c-f sand trace fine gravel, silt
42					
44				0.0	32.0-34.5 grey fine sandy silt
46					
48					
50				0.0	34.5-39.5 grey laminated silty fine sand and fine sandy silt. trace clay
52					
54					
56					
58					
60					
62					
64					
66					
68					
72					
74					
76					
78					
80					
82					
84					
86					49.5-51.5 dk grey/brown silty fine sand to fine sandy silt. wet. bottom 1/4" saturated.

## APPENDIX 2

ANALYTICAL REPORT



SCITEST LABORATORY SERVICES

P.O. Box 339  
Randolph, Vermont 05060-0339  
(802) 728-6313

Bank of Woodstock  
1 Bond Street  
Woodstock, VT 05091

Elsen Dube

Project Name: Bank of Woodstock  
Customer Nos.: 089621

Work Order No.: 9S10-00492

Date Received: 10/06/95  
Date Reported: 10/18/95

Sample Desc.: Bank of Woodstock-188 Dewey's Mills Road, Quechee	Method	Results	Units	Analyst	Analysis Date
Sample Date: 10/06/95					
Test Performed					
Total Coliform	MMO-MUG-PA	PRESENT	PA	KRK	10/06/95
Aromatic Volatile Organics	EPA 8020			JPM	10/11/95
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	10/11/95
Benzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
Toluene	EPA 8020	BPQL	ug/L	JPM	10/11/95
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	10/11/95
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	10/11/95
Surrogate:					
**1-Bromo-4-Fluorobenzene		100	% Recovery	JPM	10/11/95

Total Coliform Bacteria is present.  
E Coli Bacteria is absent.

BACTERIAL CONTAMINATION PRESENT. We DO NOT recommend consumption of water without appropriate disinfection, such as boiling water.

BPQL = Below Practical Quatitation Level: 1 ug/L

Authorized by:

Post-It\* Fax Note 7671

Date	10/23/95	# of pages	1
To	Brad Wheeler	From	Jim Morris
Co./Dept.	The Johnson Co	Co.	Scitest
Phone #		Phone #	
Fax #	729-2211	Fax #	

## APPENDIX 3

WELL NO. / TAG NO.

213157

If for Driller's Use

This report must be completed and submitted to the Department of Environmental Conservation Water Supply Division, 103 South Main Street, The Old Pantry, Waterbury, VT 05671-0403 no later than 60 days after completion of the well.

State of Vermont
Dept. of Environmental Conservation
103 S. Main St., The Old Pantry
Waterbury, VT 05671-0403

WELL COMPLETION REPORT

Location map attached to WCR

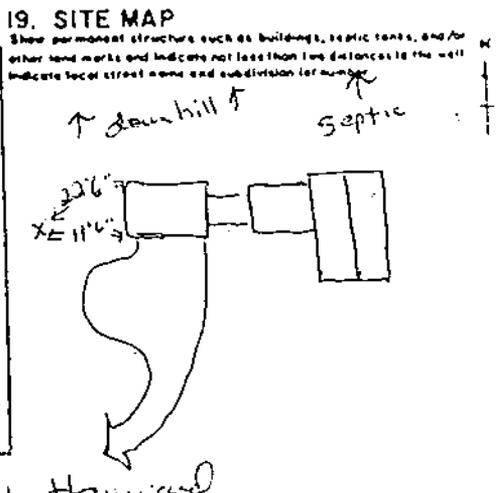
DEPARTMENT USE ONLY
E.C. U.S.G.S.
Field Location Map File
Latitude
Longitude
Scale: 62,500 25,000 24,000
Data in Town Files 5 1095

JOHNSON CO. INC.
MONTPELIER, VT

Former Dewey Marsick

- 1 FORMER WELL OWNER Name: Stroppalino
2 WELL PURCHASER Name: Bank of Woodstock #1 Bond St. Woodstock, VT
3 LOCATION OF WELL TOWN: Quechee SUBDIVISION: Dewey Mills Rd. LOT #: 173
4 DATE WELL WAS COMPLETED: 8-18-95
5 PROPOSED USE OF WELL: Domestic
6 REASON FOR DRILLING WELL: Replace Existing Supply
7 DRILLING EQUIPMENT: Rotary with A-P
8 TYPE OF WELL: Open End Casing
9 TOTAL DEPTH OF WELL: 340 feet below land surface
10 CASING FINISH: Above ground, Unfinished
11 CASING DETAILS: Total length 63 ft Length below L.S. 61 ft Dia. 6 in. Material Steel WT 19 lb./ft
12 METHOD OF SEALING CASING TO BEDROCK: Drive Shoe
13 SCREEN DETAILS: Material Length ft Diameter in
14 YIELD TEST: Compressed Air, for 1 1/2 Hours at 30 Gallons per minute
15 STATIC WATER LEVEL: 40 feet below land surface, Date or time measured 8-19-95
16 WATER ANALYSIS: Has the water been analyzed? Yes No

18 WELL LOG
Table with columns: Depth from Land Surface (Feet), Water Bearing, Formation Description.
Rows: 0-20 sand, 20-48 blue clay, 48-64 solid black shale ledge, 64-66 white quartz fracture, 66-110 black shale, 110-112 white quartz, 112-320 black shale, 320-326 brown shale with 30gpm, 326-340 black shale



- 20. TESTED YIELD: 340 feet, 30 Gallons per minute
WELL DRILLED BY: Spear + Hayward
DOING BUSINESS AS: Attaugusches Well Drilling
REPORT FILED BY:
DATE OF REPORT: 8/22/95 WELL DRILLERS LIC. NO: 213