

**SITE INVESTIGATION REPORT**

**REDWOOD PLAZA TEXACO  
MILTON, VERMONT**

**SMS SITE #95-1935**

**AUGUST 1996**

*Prepared for:*

Carl Ruprecht, UST Manager  
S.B. Collins, Inc.  
54 Lower Welden Street  
St. Albans, Vermont 05478  
(802) 527-0116

*Prepared by:*

Hoffer & Associates  
Consulting Hydrogeologists  
RR # 4, Box 2286  
Montpelier, Vermont 05602  
(802) 229-1113

## TABLE OF CONTENTS

1.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.....	1
1.1 Summary and Conclusions .....	1
1.2 Recommendations.....	1
2.0 INTRODUCTION AND BACKGROUND INFORMATION.....	2
2.1 Introduction.....	2
2.2 Background Information.....	2
2.3 Site Location and Environmental Setting.....	3
2.4 Potential Receptors.....	4
3.0 FIELD INVESTIGATION PROCEDURES.....	5
3.1 Monitoring Well Installations.....	5
3.2 Water Level Monitoring.....	6
3.3 Groundwater Sampling and Analysis.....	6
3.4 Indoor Air Quality Screening.....	7
3.5 Soil Pile Screening.....	7
3.6 PID Measurements.....	7
4.0 RESULTS.....	8
4.1 Monitoring Well Installations.....	8
4.1.1 Stratigraphy.....	8
4.1.2 Soil Contamination.....	8
4.2 Groundwater Elevations.....	8
4.3 Groundwater Sampling Results.....	8
4.4 Indoor Air Quality Survey Results.....	9
4.5 Soil Pile Screening Results.....	9
5.0 DISCUSSION OF RESULTS.....	10
5.1 Hydrogeologic Setting.....	10
5.2 Extent of Contamination.....	10
5.3 Potential Receptors.....	11
REFERENCES.....	12

## LIST OF TABLES

TABLE 1	Groundwater elevation measurements
TABLE 2	Groundwater sampling results for April 23, 1996

## LIST OF FIGURES

FIGURE 1	Site location map
FIGURE 2	Site vicinity map
FIGURE 3	Site map
FIGURE 4	Water-table map, April 23, 1996
FIGURE 5	Water-table map, June 6, 1996

## LIST OF APPENDICES

APPENDIX A	Basic Well Data for Water Wells in the Vicinity
APPENDIX B	Soil Boring/Monitoring Well Logs
APPENDIX C	Laboratory Report Sheets, Chain-of-Custody Form

## 1.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

### 1.1 Summary and Conclusions

In response to soil contamination found beneath petroleum pump dispensers in September of 1995, a site investigation was performed at the Redwood Plaza Texaco in Milton. Four groundwater monitoring wells were installed and sampled for BTEX and MTBE. Depth to groundwater at the site is about 12 feet, within fine to medium sands which become finer-grained and contain more silt below 10 feet. Groundwater flow direction is northwestward from the pump dispensers. MTBE and BTEX constituents were found in MW-2, with benzene and xylenes concentrations slightly exceeding regulatory thresholds. The only other evidence of groundwater impact in the other three wells was trace (4 - 7 ug/L) concentrations of toluene, which may have resulted from cross-contamination or could have been introduced during drilling.

An indoor air quality survey of the Redwood Plaza Texaco and surrounding structures found no evidence of petroleum vapor migration from the site. Based on the limited amount of groundwater contamination detected during this site investigation, there does not appear to be a threat to surface water or water supplies. The nearest surface water is located about 1000 feet northwest of the site. Well logs for domestic water wells in the vicinity indicate a thick sequence of low-permeability sediments overlying the aquifers tapped by these wells. As a result, the potential for site contamination to reach water supplies is regarded as low.

In conclusion, this site investigation identified only minor petroleum contamination at the site which does not appear to threaten potential receptors.

### 1.2 Recommendations

In order to further evaluate groundwater conditions at the site, it is recommended that the four monitoring wells be sampled on a semi-annual basis for MTBE and BTEX until all parameters are below regulatory thresholds.

### 2.3 Site Location and Environmental Setting

The Redwood Plaza Texaco is located along a commercially-developed section of US Route 7 south of the Town of Milton (see Figure 1). As illustrated on Figure 2, the site is bordered by a Century 21 real estate office and Rick's Pizza to the west and vacant lots to the south and east. Properties across Route 7 from the site include a McDonald's, a vacant lot, and Minor's Funeral Home. The Milton Bowling Center is located southeast of the site, beyond a vacant lot.

The site is situated in the Champlain Lowland physiographic province. This province is characterized by generally lower elevation and more level topography than the Green Mountain province to the east. Locally, the topography is very flat, and the elevation at the site is about 340 feet above mean sea level. The site is located between the Lamoille River drainage basin to the north, and the Malletts Bay drainage basin to the south. The Lamoille River is located approximately one mile to the northwest, and continues from Milton to Lake Champlain to the west of the site. There are a number of small tributaries to the Lamoille River in the vicinity of the site. The closest of these is an unnamed tributary that starts about 1,000 feet from the site in the flat, undeveloped area northwest of the site. In addition, Malletts Creek is located about 3,000 feet to the east, and the headwaters to a tributary of Malletts Creek is located about 1,500 feet to the southeast. The nearby surface water features are highlighted on Figure 1.

The surficial geology in the area have been mapped as lacustrine and marine sands and gravels (Stewart, 1974). Bedrock in the area has been mapped as the Skeels Corners Slate and the Mill River Conglomerate members of the Sweetsburg Formation (Doll, 1961). Nearby water well logs indicate (see Appendix A) the depth to bedrock in the vicinity ranges from 40 to 295 feet, indicating the presence of an thick cover of unconsolidated material. Detailed well logs in the vicinity indicate that at least four unconsolidated units are present; a surficial layer of sand to depths ranging from 10 to 160 feet, a layer of blue clay to depths ranging from 60 to 230 feet, underlain by water-bearing sands and gravels, and glacial till mantling bedrock.

## 2.4 Potential Receptors

Potential sensitive receptors in the area include water supply wells, surface waters, and building with basements. As mentioned above, the nearest surface feature is about 1000 feet (west and northwest) of the site. No wetlands were identified within a 1,000-foot radius of the site during the site investigation.

The Vermont Water Supply Division's well database was reviewed to identify water wells near the site. Wells within a 2000 foot radius of the site are shown on Figure 1. The Redwood Plaza Texaco and surrounding businesses are served by Town of Milton municipal water system. Appendix A contains a tabulation of general data (yield, total depth, bedrock depth, casing depth, static level) for the wells identified within a 2000 foot radius. Of the nineteen wells identified, 15 are completed within bedrock, and 4 are completed in water-bearing sands and gravels. The well closest to the site is utilized by Minor's Funeral Home. This well is located just across Route 7 from the site (see Figure 2). The well log for this well includes the following description:

*WR #606, Milton, Shirley Minor*  
*Total Drilled Depth = 218 feet, Casing = 218 feet*

<u>Depth (feet)</u>	<u>Description</u>
0 - 90	fine brown sand
90 - 150	fine silt
150 - 212	heavy gray clay
212 - 218	gravel

The other businesses and residences in the immediate vicinity of the site are served by municipal water.

### 3.0 FIELD INVESTIGATION PROCEDURES

#### 3.1 Monitoring Well Installations

Four monitoring wells were installed by Adams Engineering on April 18, 1996. The locations of these wells are indicated on Figure 3. Soil borings were advanced using Adams' Engineering "mini-rig" drilling technique. A 2<sup>5/8</sup>-inch diameter sample barrel was used to advance the soil borings and collect soil samples. This drilling method allows for the collection of five foot soil samples within the sampler, which are then removed for characterization and PID analysis. The soil samples were classified for texture (USDA/SCS), color, and moisture content. Soil samples were also screened for the presence of contamination using a PID.

After having reached the target depth of five feet below the water table, 1.5-inch diameter wells were constructed within the boreholes. Wells were constructed with 10 foot sections of 10-slot (0.010 inch) factory-slotted PVC screen and PVC riser. The screens were positioned so that approximately five feet of screen remained above the water-table to enable the detection of possible free-phase petroleum and to allow for water-table fluctuations. A sandpack of #1 pool filter sand was placed in the annular space between the screen and the borehole. The sandpack extends to at least one foot above the top of the screen in each wells. A bentonite slurry was placed on top of the sandpack to a foot or so below grade. The remainder of the annular space was backfilled using cuttings generated during drilling. The wells were finished with steel manways, mounted flush with the ground surface. The wells were developed after completion using a peristaltic pump and dedicated polyethylene tubing. Development continued until the discharge was clear. Geologic logs and well construction details are provided in Appendix B.

Horizontal and vertical control of the wells were provided by Adams Engineering at the conclusion of the well construction event. Elevations were measured relative to an arbitrary on-site datum of 100.00 feet. Elevations were obtained at the top of the PVC riser pipe and at grade for all wells.

### 3.2 Water Level Monitoring

Water levels were measured in the four wells on two occasions; during a sampling round on April 23, and again on June 6. The water levels were obtained using a Roctest model CPR water level indicator. Water levels were recorded relative to the top of the PVC riser pipes.

### 3.3 Groundwater Sampling and Analysis

The four wells were sampled on April 23, 1996. Depths to water were obtained prior to sampling, and were used to calculate the volume of standing water in the well prior to purging and sampling. Prior to collecting samples, the wells were purged of three well volumes. Well MW-3 went dry prior to removing three volumes, and was sampled as it recovered. Purging and sampling was conducted with dedicated 1.5-inch diameter PVC bailers in all of the wells except MW-3. MW-3 had become bent after installation and had to be sampled using 3/8-inch polyethylene tubing.

Groundwater samples were collected by decanting water directly from the bailers into 40-mL vials supplied by the laboratory. Two sample vials were filled for each sample. Each sample vial contained hydrochloric acid for sample preservation. The sample vials were placed into a cooler with ice immediately after collection for storage and transport to the laboratory. Quality assurance/quality control (QA/QC) samples included a trip blank supplied by the laboratory, a field blank, and a field duplicate. The trip blank consisted of two 40-mL glass vials filled and sealed by the laboratory, which were transported with and handled in the same fashion as the samples. The field blank was collected at the conclusion of the sampling event by pouring deionized water into two sampling vials. The field duplicate was collected according to the same protocols as the samples, and was given a fictitious sample name and time on the chain-of-custody. The field duplicate was collected at MW-3 by filling four sample vials and labeling two vials as "MW-D", which was given a fictitious sampling time. QA/QC documentation included a groundwater sampling data sheet and a laboratory chain-of-custody, copies of which are provided in Appendix C.

The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl-tert-butyl ether (MTBE) by Scitest Laboratory Services of Randolph, Vermont, using EPA Method 8020. Copies of the analytical reports are provided in Appendix C.

### **3.4 Indoor Air Quality Screening**

In order to assess the potential for petroleum vapor migration, PID surveys were conducted in buildings surrounding the site. The properties surveyed included the Redwood Plaza building, the Century 21 office and Rick's Pizza to the southwest, McDonald's restaurant and the North Country Bagel Bakery to the northwest, and the Milton Bowling Center. During the PID survey, there was no answer at either Minor's Funeral Home (located north of the site) or any of the residences located to the east of the site. The surveys were conducted by using a PID to screen air at potential routes of entry (floor drains, cracks in foundations, etc.) within the buildings.

### **3.5 Soil Pile Screening**

Soils excavated during the piping replacement activities were stockpiled at the rear of the site. These soils were screened for petroleum contamination using a PID on May 22, 1996. Soil screening was conducted by two methods; direct readings by placing the PID tip near exposed soil, and headspace readings of soil samples placed into zip-lock plastic bags.

### **3.6 PID Measurements**

PID measurements during the well drilling, indoor air quality survey, and soil pile screening effort were taken with a Photovac Model 2020, equipped with a 10.6 eV lamp and calibrated to respond to isobutylene. Readings are reported in ppm equivalents to isobutylene. The PID was calibrated prior to each day's usage.

## **4.0 RESULTS**

### **4.1 Monitoring Well Installations**

#### **4.1.1 Stratigraphy**

Geologic logs for the monitoring wells are provided in Appendix B. The soils observed consisted primarily of fine to medium sand. Soils from depths greater than 10 feet became more silt and clay rich, but were still predominantly fine sands. No laterally continuous impeding layers were observed. Saturation was noted in samples collected from depths between 10 to 12 feet.

#### **4.1.2 Soil Contamination**

The only soil sample where a PID headspace reading registered above background occurred at the 15 to 20 foot interval in MW-2. A Photovac 2020 was used to obtain a reading of 0.8 ppm from the saturated sandy loam soil present at this depth.

### **4.2 Groundwater Elevations**

Depths to water and groundwater elevation data collected at the site are presented on Table 1. Groundwater depths range from 11 to 13 feet below grade. Water levels rose between April 23 and June 6 by nearly two feet. The highest groundwater elevation on April 23 was measured in MW-3, while the highest elevation on June 6 occurred in MW-4. As a result, the groundwater contour maps (see Figures 4 and 5) differ slightly for these two data sets. Nonetheless, groundwater flow direction in the vicinity of the pumps is northwestward, under a shallow gradient of about 0.005.

### **4.3 Groundwater Sampling Results**

The results of the April 23 sampling event are presented in Table 2. MTBE and BTEX contamination was found in MW-2, and regulatory thresholds were slightly exceeded for benzene and xylenes. Trace concentrations of toluene were detected in the remaining wells at concentrations ranging from 4 ug/L in MW-1 to 7 ug/L in MW-3 and MW-4. These values

are somewhat suspect since toluene was also detected in the field blank at a concentration of 3 ug/L. The toluene may have been introduced during well installation or sampling efforts.

The presence of BTEX and MTBE in MW-2 confirms the PID readings noted for the soil sample collected from the 15 to 20 foot interval during construction of this well.

#### **4.4 Indoor Air Quality Survey Results**

A PID survey of indoor air quality was performed on March 28, 1996, and included the Redwood Plaza Texaco, the Century 21 office, Rick's Pizza, McDonnell's, North Country Bagel Bakery, and the Milton Bowling Center. No readings above background levels were measured in any of these buildings. In addition, none of the occupants or employees interviewed during the survey indicated that they had ever detected gasoline odors in the buildings.

#### **4.5 Soil Pile Screening Results**

On May 22, 1996, soil from the piping replacement excavating were screened for the presence of contamination. Screening was conducted by headspace methods and samples were collected from a variety of depths within the piles. A total of 17 soil samples were screened. No readings above background levels were measured for any of the samples.

## 5.0 DISCUSSION OF RESULTS

### 5.1 Hydrogeologic Setting

Soil to a depth of 20 feet at the site consists of fine to medium sands. Below a depth of 10 feet, the sand becomes finer-grained and silt content increases. Groundwater depths range from 11 to 13 feet below grade, and elevations indicate a generally northwestward flow direction. Based on this flow direction, the presumed groundwater discharge zone is an unnamed tributary located about 1,000 feet northwest of the site.

The log of the nearest water well (Minor) indicates the following profile of unconsolidated material.

<u>Depth (feet)</u>	<u>Description</u>
0 - 90	fine brown sand
90 - 150	fine silt
150 - 212	heavy gray clay
212 - 218	gravel (water-bearing)

### 5.2 Extent of Contamination

During monitoring well drilling, the soil sample from the 10 to 15 foot interval in MW-2 showed a headspace of 0.8 ppm on a Photovac 2020 calibrated to isobutylene. No other elevated PID readings were obtained for soil samples collected during monitoring well drilling.

Analytical results of groundwater sampling show MTBE and BTEX in MW-2 at relatively low concentrations, although regulatory thresholds for benzene and xylenes were slightly exceeded. Existing groundwater level data suggests that MW-2 is side-gradient from the pump dispensers, where evidence of contamination in soil was found. Toluene was found in the remaining three wells at trace concentrations. Since toluene was also found in the field blank, the toluene detected in these wells may not represent actual groundwater quality. Groundwater elevations indicate that at least two of these wells (MW-3 and MW-4) are upgradient from the suspected source area (pump dispensers).

### 5.3 Potential Receptors

Based on the indoor air quality survey, and results of the monitoring well drilling and sampling, conditions at the site do not appear to pose a risk to indoor air quality. Due to the sheer distance to the nearest surface water feature (1000 feet), and groundwater sampling results, site contamination does not appear to threaten surface water. Based on water well logs in the vicinity, which indicate the presence of an extensive deposit of low-permeability unconsolidated sediments above water-bearing zones, as well as the groundwater sampling results for shallow groundwater at the site, water supplies do not appear to be threatened by site contamination.

## REFERENCES

Doll, Charles G. (Ed.), 1961, Centennial Geologic Map of Vermont, Vermont Geological Survey, State of Vermont.

Stewart, David P., 1974, Geology for Environmental Planning in the Milton-St. Albans Region, Vermont, Vermont Geological Survey, State of Vermont.

**TABLE 1**  
 Groundwater elevation measurements,  
 Redwood Plaza, Milton, Vermont, SMS Site #95-1935

**DEPTH TO WATER MEASUREMENTS**  
 (feet below TOC)

WELL ID	Elev. Ground Surface (feet)	Elev. of TOC (feet)	TOC relative to ground surface	4/23/96	6/6/96
MW-1	100.28	100.00	-0.28	12.44	10.86
MW-2	100.57	100.43	-0.14	12.75	10.94
MW-3	101.15	100.91	-0.24	12.69	11.29
MW-4	101.01	100.70	-0.31	12.96	10.95

**GROUNDWATER ELEVATIONS (feet)**

WELL ID	Elev. Ground Surface (feet)	Elev. of TOC (feet)	TOC relative to ground surface	4/23/96	6/6/96
MW-1	100.28	100.00	-0.28	87.56	89.14
MW-2	100.57	100.43	-0.14	87.68	89.49
MW-3	101.15	100.91	-0.24	88.22	89.62
MW-4	101.01	100.70	-0.31	87.74	89.75

Notes:

TOC = top of casing (pvc)  
 Elevations are relative to an on-site benchmark of 100.00 feet

**TABLE 2**

Analytical results for April 23, 1996,  
Redwood Plaza, Milton, Vermont, SMS Site #95-1935.

**GROUNDWATER RESULTS (ug/L)**

WELL ID	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-1	<1	4	<1	<1	<1
MW-2	8	26	130	725	2
MW-3 / dupl.	<1 / <1	7 / 8	<1 / <1	<1 / <1	<1 / <1
MW-4	<1	7	<1	<1	<1
Field Blank	<1	3	<1	<1	<1
Trip Blank	<1	<1	<1	<1	<1

**Notes:**

< 1 = below a detection level of 1  
< 1 / < 1 = sample result / field duplicate result

**REGULATORY THRESHOLDS (ug/L)**

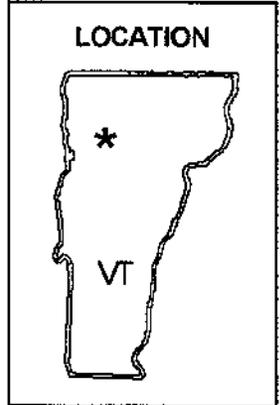
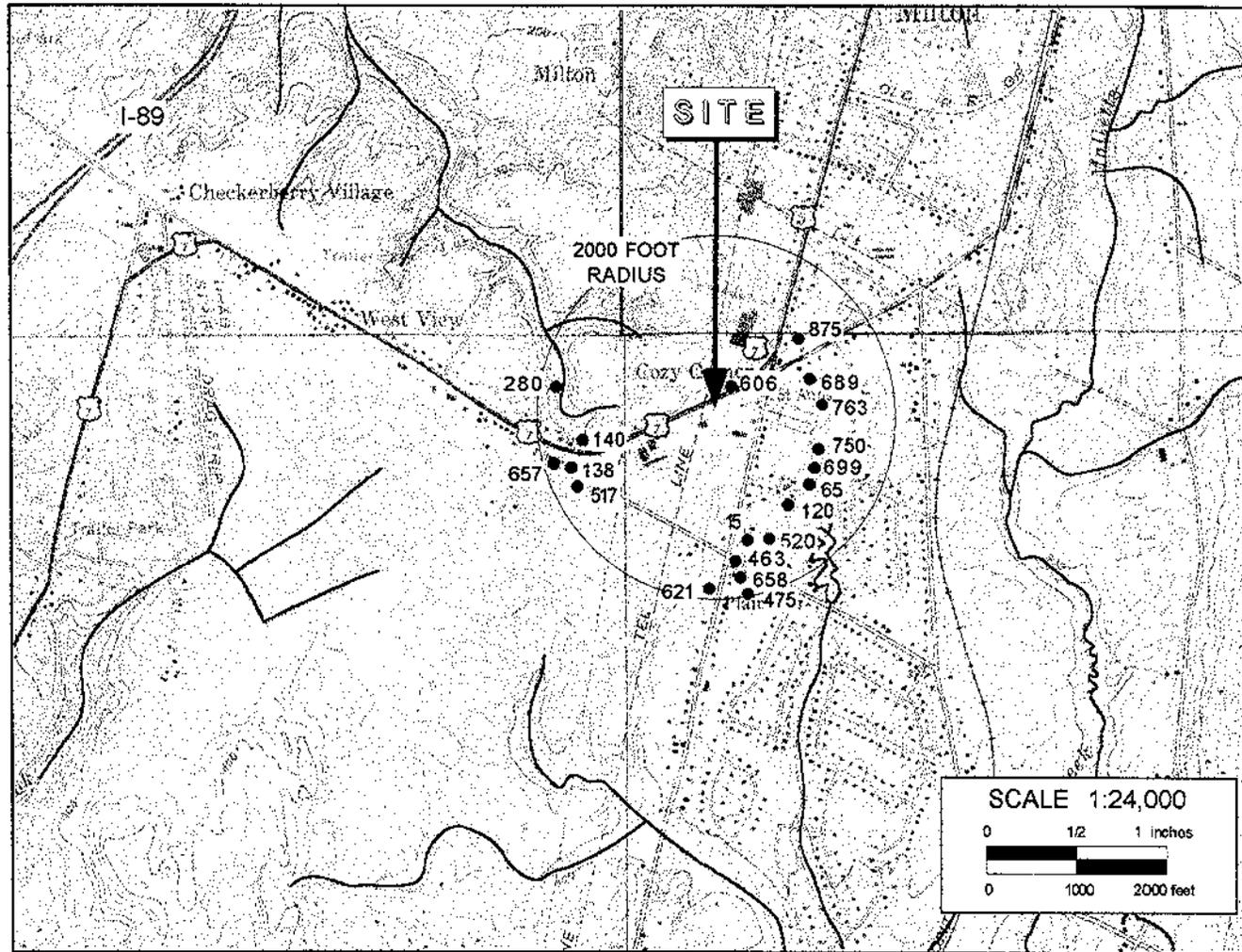
Standard	Benzene	Toluene	Ethylbenzene	Xylenes	MBTE
VT GES	5	2420	680	400	-
VT PAL	0.5	1210	340	200	-
VHA	1	-	-	-	40
MCL	5	1000	700	10000	-

VT GES = Vermont Groundwater Enforcement Standard

VT PAL = Vermont Preventative Action Limit

VHA = Vermont Health Advisory

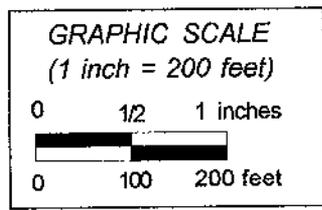
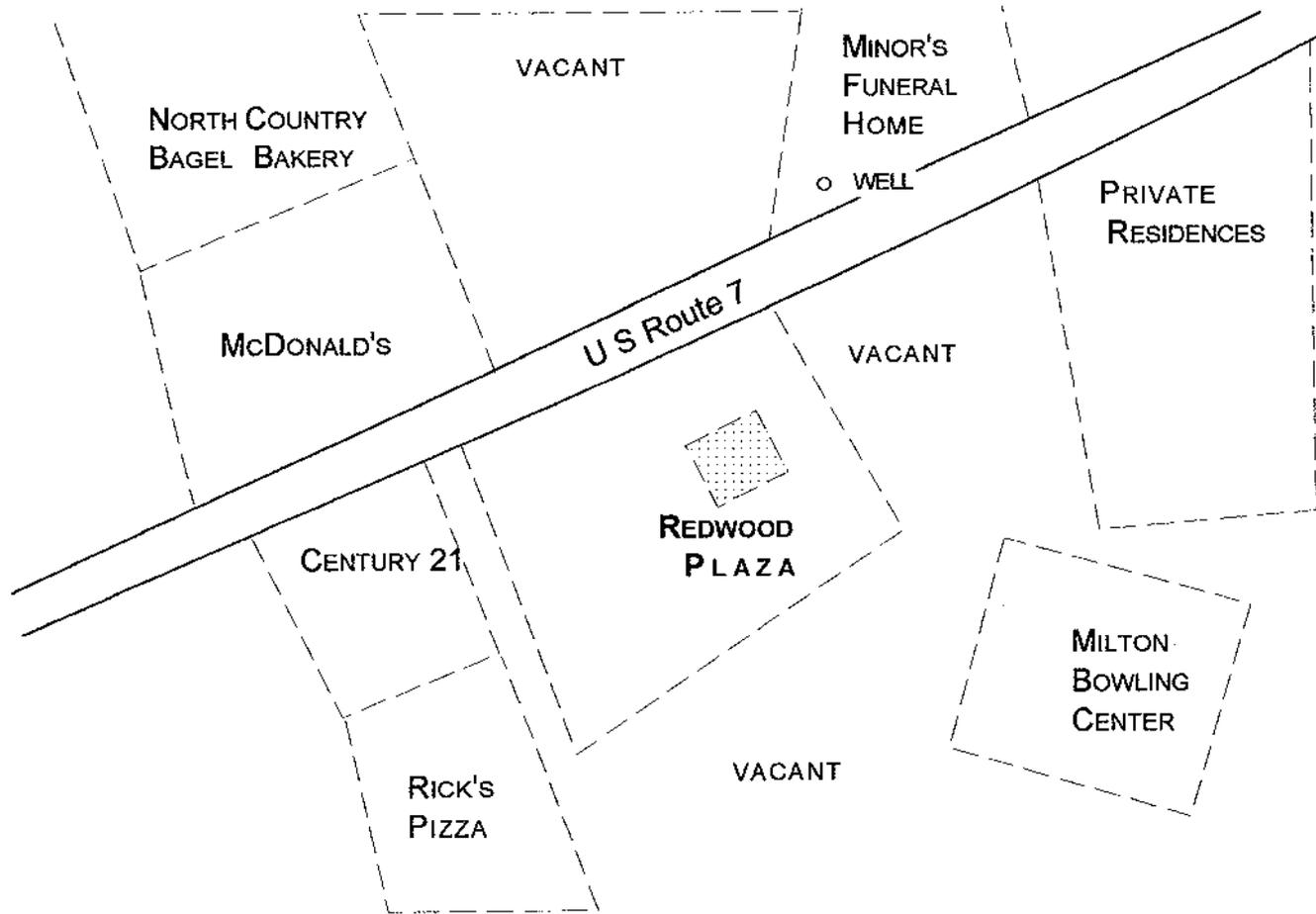
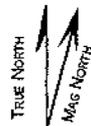
MCL = Maximum Contaminant Level



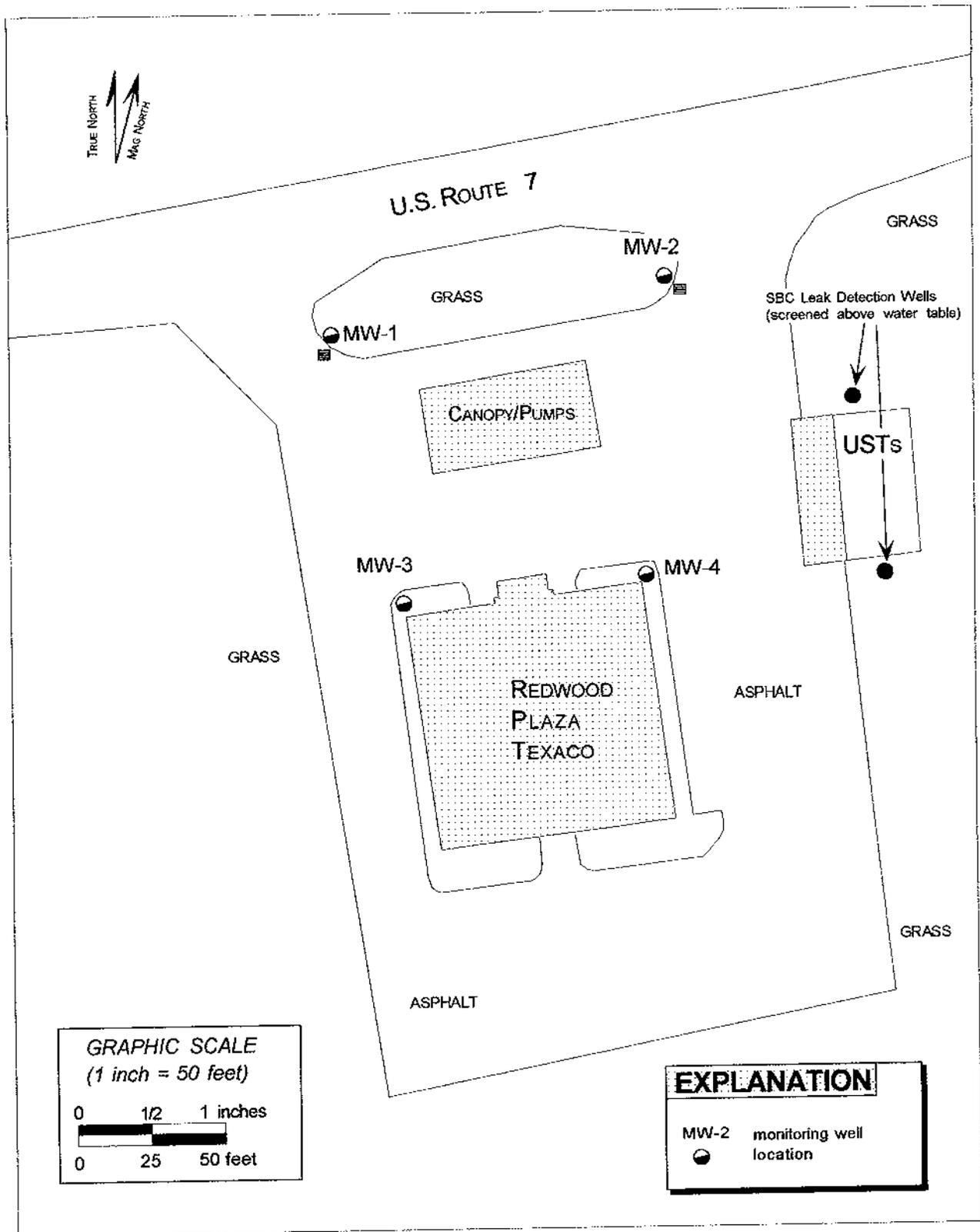
BASEMAPS: USGS TOPOGRAPHIC QUADRANGLES,  
 GEORGIA PLAINS, VT, 1987; ESSEX CENTER, VT, 1987;  
 COLCHESTER, VT, 1987; MILTON, VT, 1987

● 660 WATERWELL AND WR#  
 LOCATIONS NOT VERIFIED

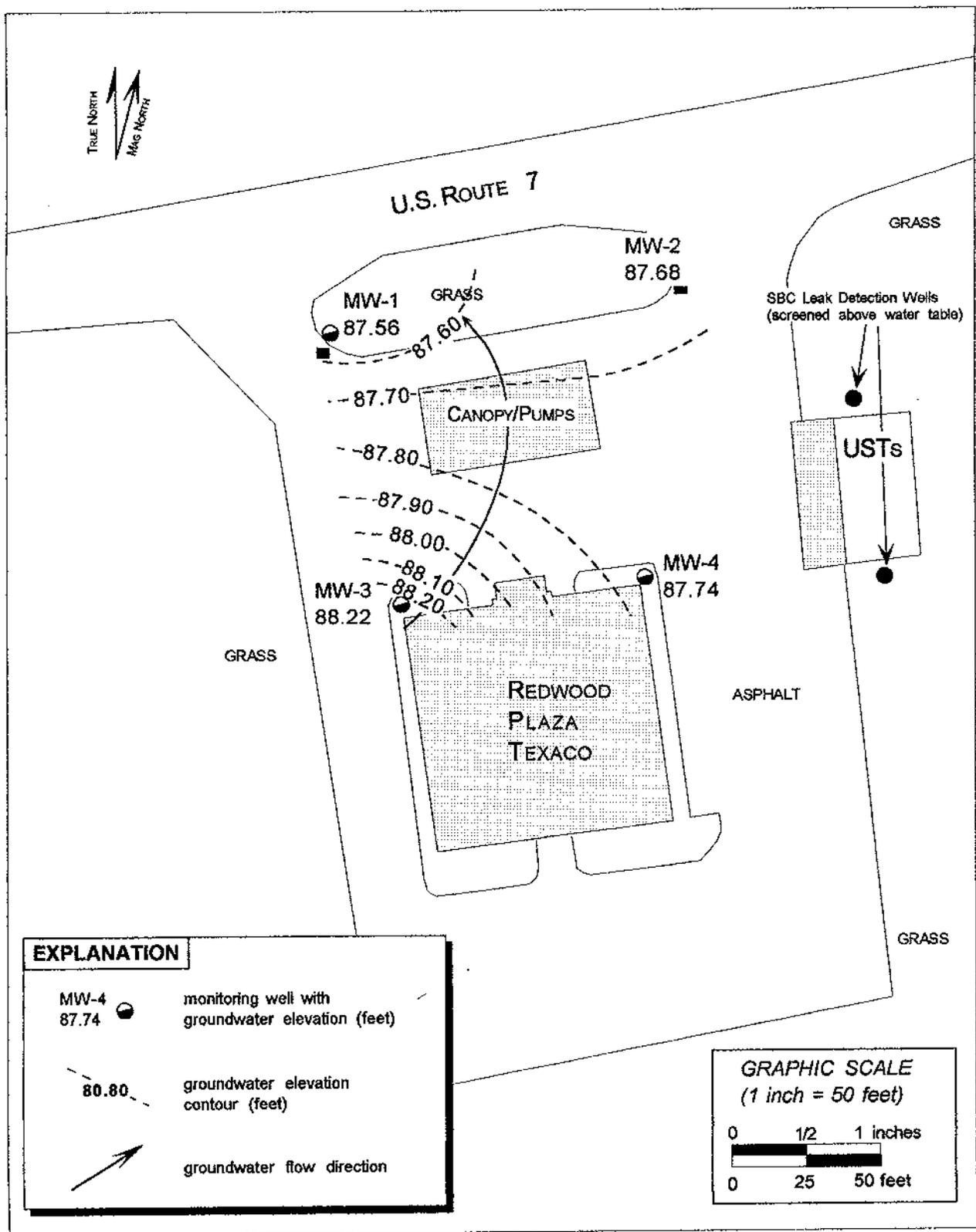
**FIGURE 1**  
 SITE LOCATION MAP  
 REDWOOD PLAZA TEXACO, MILTON, VERMONT, SMS SITE #95-1935.



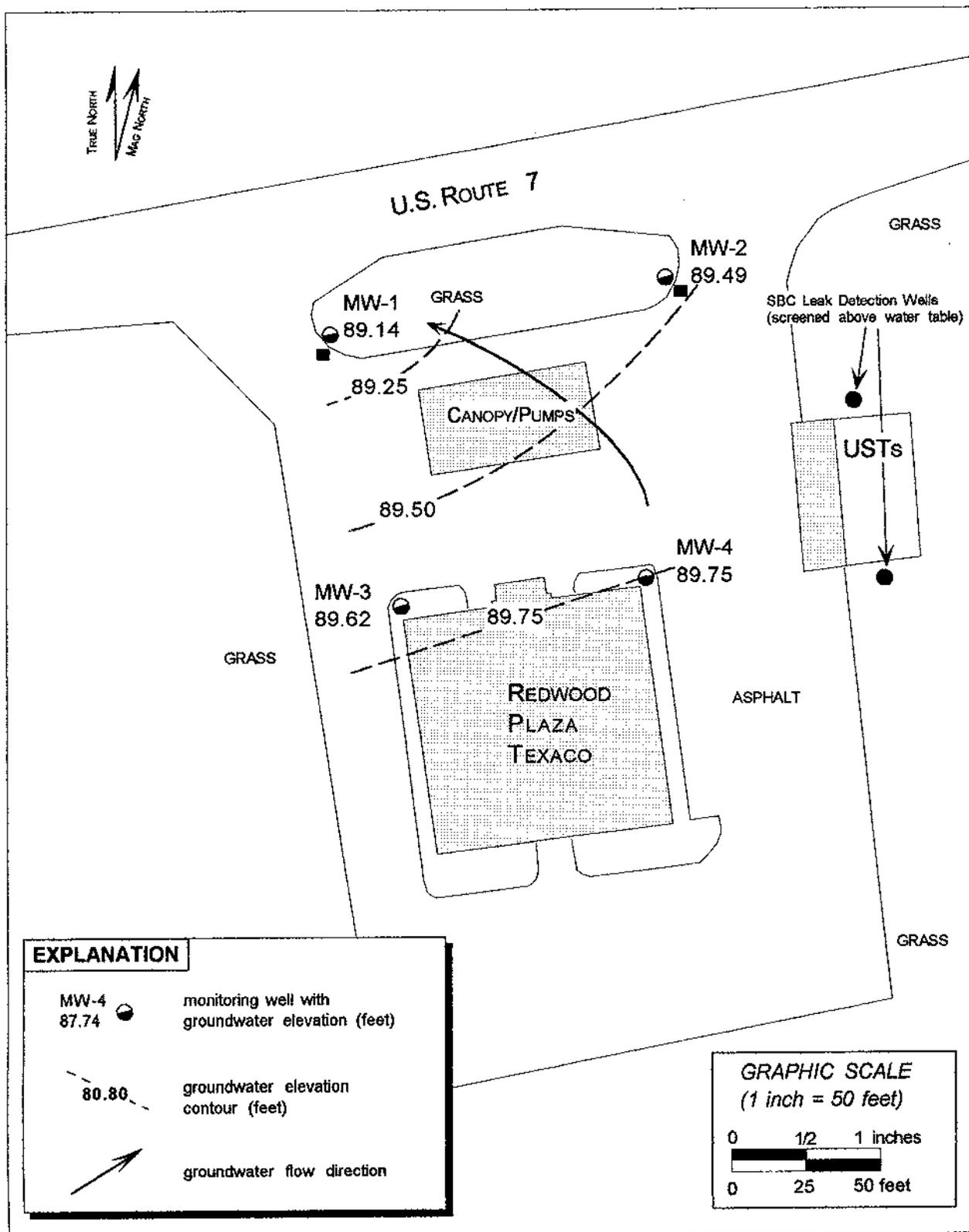
**FIGURE 2**  
SITE VICINITY MAP AND ADJACENT PROPERTY BOUNDARIES,  
REDWOOD PLAZA TEXACO,  
MILTON, VERMONT, SMS SITE #95-1935



**FIGURE 3**  
 SITE MAP, REDWOOD PLAZA TEXACO,  
 MILTON, VERMONT, SMS SITE #95-1935



**FIGURE 4**  
**WATER-TABLE MAP, APRIL 23, 1996,**  
**REDWOOD PLAZA TEXACO,**  
**MILTON, VERMONT, SMS SITE #95-1935**



**FIGURE 5**  
**WATER-TABLE MAP, JUNE 6, 1996,**  
**REDWOOD PLAZA TEXACO,**  
**MILTON, VERMONT, SMS SITE #95-1935**

Basic well data for wells near the Redwood Plaza Texaco,  
Milton, Vermont, SMS Site #95-1935.

<i>WR Well No.</i>	<i>Owner</i>	<i>Well Yield (gpm)</i>	<i>Total Depth (feet)</i>	<i>Bedrock Depth (feet)</i>	<i>Casing Depth (feet)</i>	<i>Static Water Level (ft)</i>
15	William Flanders	9	775	260	272	
65	Paul & Keith Morgan	3	335	181	185	50
120	Hvokes Corp.	1.33	422	295	301	
138	Leo Ashline	15	343	185	191	35
140	Lloyd Gilbert	10	210	195	198	
280	Milton Child Center	20	449	106		
463	Ronald Carton	30	140	135	136	20
475	Lorenzo Bushway	3	320	284	290	
517	Michael Coty	45	197	G	194	
520	Delma Hobbs	25	85	70	71	56
606	Shirley Minor	100	218	158	218	
621	Bill Jackson	35	52	40	45	14
657	Don Lablanc	3	302	100	101	
658	Letha Dupuis	0.75	423	117.5	121	
689	Dan Turner (builder)	15	248	G	237	
699	Tom Goodwin	3	299	146	149	
750	Donald Turner (builder)	30	240	G	229	
763	Marcel Dostie	7	269	G	269	
875	Ed Cassidy	4	200	80	95	30

G = gravel well

WELL NUMBER

7

(For Driller's Use)

WR. 140 USGS MSW 138  
Field Loc  Map Des 12C-3  
La. 44° 38' 16" Alt 475 TS  
Lo. 73° 05' 45" HU 0206005  
Scale: 62500  , 25000  , 24000

1287

State of Vermont  
DEPARTMENT OF WATER RESOURCE

WELL COMPLETION REPORT

MAY 19 1975

Dept. of Water Resources

DO NOT FILL IN

# 140

(This report must be completed and submitted to the Department of Water Resources, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of well. Complete or line out all blanks.)

WELL OWNER Lloyd Gilbert Name Mt. View Heights, Milton, VT Mailing Address

TOWN IN WHICH WELL IS LOCATED: Milton, VT (Please locate well on a large scale map to accompany this report. Maps are available on request.)

DATE WELL WAS COMPLETED: 2/25/75

PROPOSED USE OF WELL:  Domestic  Agricultural  Business Establishment

DRILLING EQUIPMENT:  Municipal  Industrial  Other (Specify)

Cable Tool  Rotary  Air Percussion

Other (Specify)

TOTAL DEPTH OF WELL: 210' STATIC WATER

CASING DETAILS: Length 198' ft. Diameter 6 in. Material Steel  
Weight 19.45 lb./ft.

SCREEN DETAILS: Make \_\_\_\_\_ Material \_\_\_\_\_ Length \_\_\_\_\_ ft.  
Diameter \_\_\_\_\_ in. Slot Size \_\_\_\_\_

METHOD OF SEALING CASING TO SCREEN OR BEDROCK: Butler Larkin Well Seal

FINAL YIELD TEST:  Bailed, or  Pumped, or  Compressed Air  
\_\_\_\_\_ Hours at \_\_\_\_\_ gallons per minute

Water level during yield test \_\_\_\_\_

WELL LOG

Depth From

Ground Surface

Give description of formations penetrated, such as: peat, silt, sand, gravel, clay, hardpan, shale, limestone, granite, etc. Include size of gravel (diameter) and sand (fine, medium, coarse, color of material, structure (loose, packed, cemented, hard). For example: Surface to 27 ft. fine, packed, yellow sand; to 134 ft. gray granite.

Surface to 100 ft. sand  
100 to 160 ft. sand  
160 to 195 ft. clay  
195 to 198 ft. green shale  
198 to 210 ft. green shale

YIELD TEST DATA IN G.P.M.

If yield was tested at different depth during drilling, List Below

ft. \_\_\_\_\_ G.P.M.  
ft. \_\_\_\_\_ G.P.M.  
ft. \_\_\_\_\_ G.P.M.

WATER ANALYSIS: Has water been analyzed?  Yes  No If Yes, Where \_\_\_\_\_  
Include Analysis

DRILLED BY: N.A. Manosh

DOING BUSINESS AS: N.A. Manosh Corp.

Signature

DATE OF REPORT: 3/5/75

WELL DRILLERS LICENSE NO. 8

Company

WELL NUMBER

836  
(For Driller's Use)

12A9  
State of Vermont  
DEPARTMENT OF WATER RESOURCE  
WELL COMPLETION REPORT

NR 280 USGS: MTW 18  
Field Loc  Map Des 12A-9  
a. 44°37'31" Alt 325 TST  
o. 73°07'54"  HU 02010005  
Scale: 62500  , 25000  , 24000

DO NOT FILL IN

# 280

(This report must be completed and submitted to the Department of Water Resources, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of well. Complete or line out all blanks.)

OCT 23 1978

WELL OWNER

Milton Child Co.  
Name

RD 3 Milton, Vt. Mailing Address  
Mike. Nick ATN

TOWN IN WHICH WELL IS LOCATED:

same

(Please locate well on a large scale map to accompany this report. Maps are available on request.)

DATE WELL WAS COMPLETED:

8/14/78

PROPOSED USE OF WELL:

- Domestic
- Municipal
- Agricultural
- Industrial
- Business Establishment
- Other (Specify)

DRILLING EQUIPMENT:

- Cable Tool
- Other (Specify)
- Rotary
- Air Percussion

TOTAL DEPTH OF WELL:

449

STATIC WATER

CASING DETAILS: Length

108 ft.

Diameter

6 in.

Material

Steel

Weight

lb./ft.

Length

ft.

SCREEN DETAILS: Make

Material

Diameter

in. Slot Size

METHOD OF SEALING CASING TO SCREEN OR BEDROCK: Butter Larkin Well Seal

FINAL YIELD TEST:  Bailed, or  Pumped, or  Compressed Air

1 Hours at 20 gallons per minute  
Water level during yield test

WELL LOG

Depth From Ground Surface

Give description of formations penetrated, such as: peat, silt, sand, gravel, clay, hardpan, shale, limestone, granite, etc. Include size of gravel (diameter) and sand (fine, medium, coarse, color of material, structure (loose, packed, cemented, hard). For example: Surface to 27 ft. fine, packed, yellow sand; 27 ft. to 134 ft. gray granite.

Surface to 20 ft. Brown Sand

20 to 60 ft. Clay

60 to 106 ft. Gray Sand

106 to 448 ft. Green Bedrock

448 - 449 Water

YIELD TEST DATA IN G.P.M.

If yield was tested at different depths during drilling, List Below

G.P.M. @          ft.

G.P.M. @          ft.

G.P.M. @          ft.

G.P.M. @          ft.

WATER ANALYSIS: Has water been analyzed?  Yes  No If Yes, Where Include Analysis

DRILLED BY: H.A. Marosh

Signature

DOING BUSINESS AS: H.A. Marosh Corp.

Company

DATE OF REPORT: 8/24/78

WELL DRILLERS LICENSE NO. 8

233 B  
(For Driller's Use)

DEPARTMENT OF WATER RESOURCES  
AND ENVIRONMENTAL ENGINEERING  
WELL COMPLETION REPORT

W.R. 517 U.S.G.S.  
Field Location  Map area 1237  
Latitude \_\_\_\_\_ "Elev. \_\_\_\_\_  
Longitude \_\_\_\_\_ "Topo. \_\_\_\_\_  
Scale: 62,500  25,000  24,000   
Data in Town Files

This report must be completed and submitted to the Department of Water Resources and Environmental Engineering, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of the well.

DEC 10 1984

Location map attached to WCR 513

1. WELL OWNER: Mike Cook & Mrs. Michael J. Cote 1 Pine Crest Lane Milton  
OR Name Permanent Mailing Address

WELL PURCHASER \_\_\_\_\_  
Name Permanent Mailing Address

2. LOCATION OF WELL: TOWN Milton SUBDIVISION \_\_\_\_\_ LOT NO. \_\_\_\_\_

3. DATE WELL WAS COMPLETED 19 Nov 84

4. PROPOSED USE OF WELL:  Domestic,  Other \_\_\_\_\_

5. REASON FOR DRILLING WELL:  New Supply,  Replace Existing Supply,  Deepen Existing Well,  Test or Exploration,  
 Provide Additional Supply,  Other \_\_\_\_\_

6. DRILLING EQUIPMENT:  Cable Tool,  Rotary with A-P,  Other \_\_\_\_\_

7. TYPE OF WELL:  Open Hole in Bedrock,  Open End Casing,  Screened or Slotted,  Other \_\_\_\_\_

8. TOTAL DEPTH OF WELL: 197 feet below land surface.

9. CASING FINISH:  Above ground, Finished,  Above ground, Unfinished,  Burled,  in Pit,  Removed,  None used,  Other \_\_\_\_\_

10. CASING DETAILS: Total length 196 ft. Length below L.S. 194 ft. Dia. 6 in. Material steel Wt. 19 lb./ft.

11. LINER OR INNER CASING DETAILS: Length used \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. Material \_\_\_\_\_ Weight \_\_\_\_\_ lb./ft.

12. METHOD OF SEALING CASING TO BEDROCK:  Drive Shoe,  Grout - type \_\_\_\_\_, Drilled \_\_\_\_\_ in. hole \_\_\_\_\_ ft. in Bedrock  
 Other \_\_\_\_\_

13. SCREEN DETAILS: Make and Type \_\_\_\_\_, Material \_\_\_\_\_, Length \_\_\_\_\_ ft., Diameter \_\_\_\_\_  
Slot Size \_\_\_\_\_, Depth to top of screen in feet below land surface \_\_\_\_\_ ft., Gravel pack if used: Gravel Size or Type \_\_\_\_\_

14. YIELD TEST:  Bailed,  Pumped,  Compressed Air, for 1 Hours at 45 Gallons per minute  
Measured by  Bucket,  Orifice pipe,  Weir,  Meter  Permanent Airline (Insta)

15. STATIC WATER LEVEL: \_\_\_\_\_ feet below land surface, Date or Time measured \_\_\_\_\_, Overflows of \_\_\_\_\_ G.P.M.

16. WATER ANALYSIS: Has the water been analyzed?  Yes  No, If Yes, Where \_\_\_\_\_

17. SPECIAL NOTES: \_\_\_\_\_

18. WELL LOG

Depth from Land Surface		Water Bearing	Formation Description	Sketch
Feet	Feet			
Ground Surface	3.0		Sand & Silt	
3.0	190		Blue Clay	
190	197		Gravel	

19. SITE MAP  
Show permanent structure such as buildings, septic tanks, and/or other land marks and indicate not less than two distances to the well. Indicate local street name and subdivision lot number.

20. TESTED YIELD

If the yield was tested at different depths during drilling, list below.

Feet	Gallons Per Minute

WELL DRILLED BY: Mark Claude

DOING BUSINESS AS: Chevalier Drilling Co. Inc  
Company or Business Name

REPORT FILED BY: Charles P. Chevalier  
Authorized Signature

DATE OF REPORT: 19 Nov 84 WELL DRILLERS LIC. NO. 36

WELL NUMBER

158 F

(For Driller's Use)

This report must be completed and submitted to the Department of Water Resources and Environmental Engineering, State Office Building, Montpelier, Vermont 05602, no later than 60 days after completion of the well.

State of Vermont

DEPARTMENT OF WATER RESOURCES  
AND ENVIRONMENTAL ENGINEERING  
WELL COMPLETION REPORT

WATER RESOURCE USE ONLY

W.R. 6060 U.S.G.S. \_\_\_\_\_  
Field Location (1) Map area 1267  
Latitude \_\_\_\_\_ " Elev. \_\_\_\_\_  
Longitude \_\_\_\_\_ " Topo. \_\_\_\_\_  
Scale: 62,500  25,000  24,000   
Data in Town Files (1) \_\_\_\_\_

Location map attached to WCR \_\_\_\_\_

1. WELL OWNER Shirley + Madeline Munro Box 54 Westford RR# 1  
OR  
WELL PURCHASER \_\_\_\_\_  
Name \_\_\_\_\_ Permanent Mailing Address \_\_\_\_\_
2. LOCATION OF WELL: TOWN Milton SUBDIVISION \_\_\_\_\_ LOT NO. \_\_\_\_\_
3. DATE WELL WAS COMPLETED 24 Sept 86
4. PROPOSED USE OF WELL:  Domestic,  Other funeral home
5. REASON FOR DRILLING WELL:  New Supply,  Replace Existing Supply,  Deepen Existing Well,  Test or Exploration,  
 Provide Additional Supply,  Other \_\_\_\_\_
6. DRILLING EQUIPMENT:  Cable Tool,  Rotary with A-P,  Other \_\_\_\_\_
7. TYPE OF WELL:  Open Hole in Bedrock,  Open End Casing,  Screened or Slotted;  Other \_\_\_\_\_
8. TOTAL DEPTH OF WELL: 218 feet below land surface.
9. CASING FINISH:  Above ground, Finished,  Above ground, Unfinished,  Buried,  In Pit,  Removed,  None used,  Other \_\_\_\_\_
10. CASING DETAILS: Total length 218 ft Length below L.S. 217 ft Dia. 6 in. Material steel Wt. 19 lb./ft.
11. LINER OR INNER CASING DETAILS: Length used \_\_\_\_\_ ft Diameter \_\_\_\_\_ in. Material \_\_\_\_\_ Weight \_\_\_\_\_ lb./ft.
12. METHOD OF SEALING CASING TO BEDROCK:  Drive Shoe,  Grout - Type \_\_\_\_\_, Drilled \_\_\_\_\_ in. hole \_\_\_\_\_ ft. in Bedrock  
 Other finished in gravel
13. SCREEN DETAILS: Make and Type \_\_\_\_\_, Material \_\_\_\_\_, Length \_\_\_\_\_ ft, Diameter \_\_\_\_\_ in.,  
Slot Size \_\_\_\_\_, Depth to top of screen in feet below land surface \_\_\_\_\_ ft, Gravel/rock if used Gravel Size or Type \_\_\_\_\_
14. YIELD TEST:  Bailed,  Pumped,  Compressed Air, for \_\_\_\_\_ hours at \_\_\_\_\_ gallons per minute  
Measured by  Bucket,  Orifice pipe,  Wier,  Meter  Permanent Airline installed
15. STATIC WATER LEVEL: \_\_\_\_\_ feet below land surface, Date or Time measured \_\_\_\_\_, Overflows at \_\_\_\_\_ G.P.M.
16. WATER ANALYSIS: Has the water been analyzed?  Yes  No, If Yes, Where \_\_\_\_\_
17. SPECIAL NOTES: \_\_\_\_\_
18. WELL LOG

Depth from Land Surface		Water Bearing	Formation Description	Sketch
Feet	Feet			
Ground Surface	90		Fine Brown sand	<p>Well is approx 100' from building</p> <p>Gravel</p> <p>ste 7</p>
90	150		Fine silt	
150	212		Heavy gray clay	
212	218		Gravel	

## 19. SITE MAP

Show permanent structures such as buildings, septic tanks, and/or other long marks and indicate not less than two distances to the well. Indicate local street name and subdivision lot number.

## 20. TESTED YIELD

If the yield was tested at different depths during drilling, list below

Feet	Gallons Per Minute

WELL DRILLED BY: Dave Cherub  
DOING BUSINESS AS: Cherub Drilling Co  
REPORT FILED BY: Dave Cherub  
DATE OF REPORT: 24 Sept 86 WELL DRILLERS LIC. NO. 36

WELL NO. / TAG NO.

280-183A

(For Driller's Use)

This report must be completed and submitted to the Department of Environmental Conservation 103 South Main Street (10N), Waterbury, VT 05676 no later than 60 days after completion of the well.

State of Vermont Dept. of Environmental Conservation 103 South Main Street (10N) Waterbury, Vt. 05676

WELL COMPLETION REPORT

NOV 18 1988

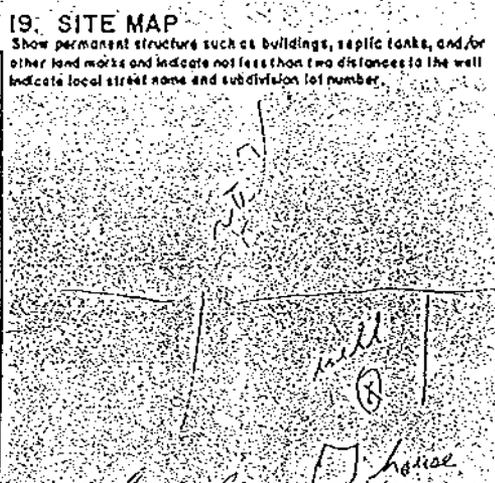
Location map attached to WCR 685

DEPARTMENT USE ONLY

E.C. 689 U.S.G.S. Field Location Map area 7201 Latitude \* Elev. Longitude \* Topo. Scale: 62,500 25,000 24,000 Data in Town Files

- 1. WELL OWNER OR WELL PURCHASER: Don Turner, P.O. Box 24 Milton, VT 05468
2. LOCATION OF WELL: TOWN Milton SUBDIVISION LOT NO.
3. DATE WELL WAS COMPLETED: 14 Oct 88
4. PROPOSED USE OF WELL: Domestic
5. REASON FOR DRILLING WELL: New Supply
6. DRILLING EQUIPMENT: Rotary with A-P
7. TYPE OF WELL: Open End Casing
8. TOTAL DEPTH OF WELL: 248 feet below land surface
9. CASING FINISH: Above ground, Finished
10. CASING DETAILS: Total length 237 ft. Length below L.S. 236 ft. Dia. 6 in. Material steel Wt. 19 lb./ft.
11. LINER OR INNER CASING DETAILS:
12. METHOD OF SEALING CASING TO BEDROCK: Drive Shoe
13. SCREEN DETAILS:
14. YIELD TEST: Compressed Air, for 5 Hours at 15 Gallons per Minute
15. STATIC WATER LEVEL:
16. WATER ANALYSIS:
17. SPECIAL NOTES:
18. WELL LOG

Table with 4 columns: Depth from Land Surface (Feet), Water Bearing, Formation Description, Sketch. Rows include Ground Surface, 30-230, and 230-248 feet depths with descriptions like Sand, Blue Clay, and Gravel.



- 20. TESTED YIELD: Table for recording yield at different depths.
WELL DRILLED BY: Ward Cherish
DOING BUSINESS AS: Cherish Drilling Co.
REPORT FILED BY: Ward Cherish
DATE OF REPORT: 17 Oct 88 WELL DRILLERS LIC. NO. 36

WELL NO./TAG NO.

358 / 374A  
(For Driller's Use)

This report must be completed and submitted to the Department of Environmental Conservation 103 South Main Street (10M), Waterbury, VT 05676 no later than 60 days after completion of the well.

State of Vermont  
Dept. of Environmental Conservation  
103 South Main Street (10M)  
Waterbury, Vt. 05676

WELL COMPLETION REPORT

MAR 15 1990

Location map attached to WCR 759

DEPARTMENT USE ONLY

E.C. 763 U.S.G.S.  
Field Location or Map Area 1201  
Latitude \_\_\_\_\_ Elev. \_\_\_\_\_  
Longitude \_\_\_\_\_ Topo. \_\_\_\_\_  
Scale: 62,500  25,000  24,000   
Data in Town Files

1. WELL OWNER Marcel Dostie, 722 W. Milton Rd. Milton, VT 05468  
OR  
WELL PURCHASER \_\_\_\_\_

2. LOCATION OF WELL: TOWN Milton SUBDIVISION \_\_\_\_\_ LOT NO. \_\_\_\_\_

3. DATE WELL WAS COMPLETED 27 Dec 89

4. PROPOSED USE OF WELL:  Domestic,  Other \_\_\_\_\_

5. REASON FOR DRILLING WELL:  New Supply,  Replace Existing Supply,  Deepen Existing Well,  Test or Exploration,  
 Provide Additional Supply,  Other \_\_\_\_\_

6. DRILLING EQUIPMENT:  Cable Tool,  Rotary with A-P,  Other \_\_\_\_\_

7. TYPE OF WELL:  Open Hole in Bedrock,  Open End Casing,  Screened or Slotted,  Other \_\_\_\_\_

8. TOTAL DEPTH OF WELL: 269 feet below land surface.

9. CASING FINISH:  Above ground, Finished,  Above ground, Unfinished,  Buried,  In Pit,  Removed,  None used,  Other \_\_\_\_\_

10. CASING DETAILS: Total length 269 ft Length below L.S. 268 ft Dia. 6 in. Material steel Wt. 19 lb./ft.

11. LINER OR INNER CASING DETAILS: Length used \_\_\_\_\_ ft. Diameter \_\_\_\_\_ in. Material \_\_\_\_\_ Weight \_\_\_\_\_ lb./ft.

12. METHOD OF SEALING CASING TO BEDROCK:  Drive Shoe,  Grout - type \_\_\_\_\_, Drilled \_\_\_\_\_ in. hole \_\_\_\_\_ ft. in Bedrock  
 Other: Finished in Gravel

13. SCREEN DETAILS: Make and Type \_\_\_\_\_, Material \_\_\_\_\_, Length \_\_\_\_\_ ft., Diameter \_\_\_\_\_ in.,  
Slot Size \_\_\_\_\_, Depth to top of screen in feet below land surface \_\_\_\_\_ ft.; Gravel pack if used: Gravel Size or Type \_\_\_\_\_

14. YIELD TEST:  Bailed,  Pumped,  Compressed Air, for \_\_\_\_\_ Hours at \_\_\_\_\_ Gallons per minute  
Measured by  Bucket,  Orifice pipe,  Wire,  Meter.  Permanent Airline installed

15. STATIC WATER LEVEL: \_\_\_\_\_ feet below land surface, Date or Time measured \_\_\_\_\_, Overflows at \_\_\_\_\_ G.P.M.

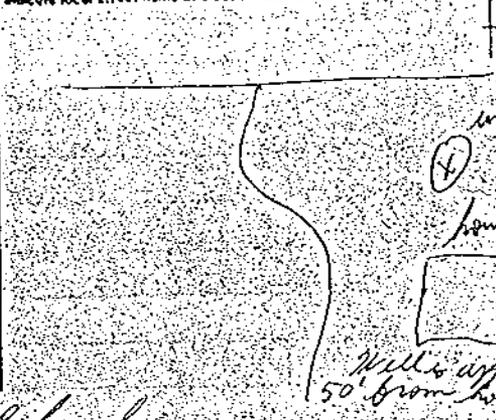
16. WATER ANALYSIS: Has the water been analyzed?  Yes  No, if Yes, Where \_\_\_\_\_

17. SPECIAL NOTES: \_\_\_\_\_

18. WELL LOG

Depth from Land Surface		Water Bearing	Formation Description	Sketch
Feet	Feet			
Ground Surface	50		Fine Sand	
50	215		Blue Clay	
215	223		Gravel	
223	248		Dense Till	
248	249		Thin Layer of Gravel	
249	269		Dense Till	
			Casing perforated 220' to 223'	

19. SITE MAP  
Show permanent structure such as buildings, septic tanks, and/or other land marks and indicate not less than two distances to the well. Indicate local street name and subdivision lot number.



20. TESTED YIELD

If the yield was tested at different depths during drilling, list below.

Feet	Gallons Per Minute

WELL DRILLED BY: Dave Chevler

DOING BUSINESS AS: Chevalier Drilling Co., Inc  
Company or Business Name

REPORT FILED BY: Dave Chevler  
Authorized Signature

DATE OF REPORT: 29 Dec 89 WELL DRILLERS LIC. NO. 36

# SOIL BORING / MONITORING WELL CONSTRUCTION LOG

WELL BORING ID: MW-1

Client / Site:	S. B. Collins / Redwood Texaco
Location:	Redwood Plaza, Milton, VT
Project Number:	04-23
Driller:	G. Adams, Adams Engineering
Drilling Method:	2 3/8" sample barrel
Geologist:	T. Schmalz, Hoffer & Associates
Sampling Method:	2 3/8" continuous sample sample barrel
Date:	4/18/96
Weather:	Clear, breezy, mild 50°
Boring Location:	In island between Route 7 and property

Well Construction Information	
Total Depth Drilled:	20.0' BGS
Screen Type/Interval:	1.5" PVC 0.010 inch id / 19.0' - 9.0' BGS
Riser Type/Interval:	1.5" PVC / 9.0' - 0.5' BGS
Sandpack Type/Interval:	#1 sand / 20.0' - 7.0' BGS
Seal Type/Interval:	Bentonite slurry / 7.0' - 1.5' BGS
Water Level/Date-Time:	
Elevation Ground:	
Elevation TOC:	
Other:	

Sample Interval (feet BGS)	Total Driven / Recovery (feet)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
0.0 - 5.0	3.5 / 3.0	0.0 - 3.0	0.0 - 0.5	Brown to dark brown, moist, sandy silt (topsoil); 60% silt and clay, 40% fine to medium sand.	clay loam	0.0
			0.5 - 3.0	Gray-brown, slightly moist, loose silty sand; 60% medium to fine sand, angular to sub-rounded, partially graded, 40% silt and clay, low plasticity, low toughness.	sandy loam	0.0
5.0 - 10.0		0.0 - 3.5	5.0 - 8.5	Same as above, becoming slightly more coarse sand, moist, loose, soft; 60% sand, 40% silt and clay.	sandy loam	0.0
10.0 - 15.0		0.0 - 3.8	10.0 - 13.8	Same as above, saturation at 14-15'; becoming slightly siltier below the water table.	sandy loam to loam	0.0
15.0 - 20.0		0.0 - 3.7	15.0 - 18.7	Same as above, saturated.	sandy loam to loam	0.0

## Generalized Geologic Log and Other Observations:

### Notes:

\* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene.

BGS = Below Ground Surface, AGS = Above Ground Surface, NR = No Recovery

## SOIL BORING / MONITORING WELL CONSTRUCTION LOG

### WELL BORING ID: MW-2

Client / Site:	S. B. Collins / Redwood Texaco
Location:	Redwood Plaza, Milton, VT
Project Number:	04-23
Driller:	G. Adams, Adams Engineering
Drilling Method:	2 3/8" sample barrel
Geologist:	T. Schmalz, Hoffer & Associates
Sampling Method:	2 3/8" continuous sample sample barrel
Date:	4/18/96
Weather:	Clear, breezy, mild 50°
Boring Location:	In island between Route 7 and property

Well Construction Information	
Total Depth Drilled:	25.0' BGS
Screen Type/Interval:	1.5" PVC 0.010 inch id / 20.0' - 10.0' BGS
Riser Type/Interval:	1.5" PVC / 10.0' - 0.5' BGS
Sandpack Type/Interval:	#1 sand / 20.0' - 8.0' BGS
Seal Type/Interval:	Bentonite slurry / 8.0' - 1.5' BGS
Water Level/Date-Time:	
Elevation Ground:	
Elevation TOC:	
Other:	

Sample Interval (feet BGS)	Total Driven / Recovery (feet)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
0.0 - 5.0	3.5 / 3.0	0.0 - 3.0	0.0 - 1.5	Auger to 1.5'		
			1.5 - 3.5	Brown, slightly firm sandy silt (topsoil); 65% silt and clay, 35% fine sand.	clay loam	0.0
			3.5 - 4.5	Brown, soft, dry to moist silty sand; 60% loose fine to medium sand, 40% silt and clay.	sandy loam	0.0
5.0 - 10.0		0.0 - 3.9	5.0 - 8.0	Brown, moist silty sand; 60-70% soft, loose fine to medium sand 30% silt and clay.	sandy loam	0.0
			8.0 - 8.9	Brown, firm, moist to wet (perched?) sand and silt; 50% silt and clay, 50% very firm sand.	sandy clay loam	0.0
10.0 - 15.0		0.0 - 4.0	10.0 - 11.0	Same as above, moist to wet.	sandy clay loam	0.0
			11.0 - 14.0	Gray-brown silty fine sands; 70% sand, 30% silt and clay; bottom 1' wet (saturated at 14.0').	sandy loam	0.0
15.0 - 20.0				Overpack to 25'; Same as above, fine to medium sand with silt, wet.	sandy loam	0.8

#### Generalized Geologic Log and Other Observations:

#### Notes:

\* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene.

BGS = Below Ground Surface, AGS = Above Ground Surface, NR = No Recovery

# SOIL BORING / MONITORING WELL CONSTRUCTION LOG

WELL BORING ID: MW-3

Client / Site:	S. B. Collins / Redwood Texaco
Location:	Redwood Plaza, Milton, VT
Project Number:	04-23
Driller:	G. Adams, Adams Engineering
Drilling Method:	2 5/8" sample barrel
Geologist:	T. Schmalz, Hoffer & Associates
Sampling Method:	2 5/8" continuous sample sample barrel
Date:	4/18/96
Weather:	Clear, breezy, mild 50°
Boring Location:	Southwest corner of building

Well Construction Information	
Total Depth Drilled:	20.0' BGS
Screen Type/Interval:	1.5" PVC 0.010 inch id / 19.0' - 9.0' BGS
Riser Type/Interval:	1.5" PVC / 9.0' - 0.5' BGS
Sandpack Type/Interval:	#1 sand / 20.0' - 8.0' BGS
Seal Type/Interval:	Bentonite slurry / 8.0' - 4.0' BGS
Water Level/Date-Time:	
Elevation Ground:	
Elevation TOC:	
Other:	

Sample Interval (feet BGS)	Total Driven / Recovery (feet)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
0.0 - 5.0	3.5 / 2.7	0.0 - 2.7	0.0 - 1.5 1.5 - 4.0	Augered through silty sand (topsoil) to 1.5' BGS. Brown, soft, slightly moist silty sand; 60% fine to medium sand, sub-rounded to subangular, 40% soft silt and clay.	sandy loam	0.0
5.0 - 10.0	5.0 / 3.9	0.0 - 3.9	5.0 - 8.9	Same as above, becoming coarser (to medium subrounded sand) with increasing depth, slightly moist.	sandy loam	0.0
10.0 - 15.0	5.0 / 4.5	0.0 - 4.5	10.0 - 12.5 12.5 - 14.5	Same as above, slightly finer sands; water at 12.5' BGS. Brown to gray, wet silty sands; 50% sand, 50% silt and clay.	sandy loam sandy clay loam	0.0 0.0
15.0 - 20.0	5.0 / 4.0	0.0 - 4.0	15.0 - 19.0	Same as above, wet.	sandy clay loam	0.0

Generalized Geologic Log and Other Observations:

Notes:

\* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene.

BGS = Below Ground Surface, AGS = Above Ground Surface, NR = No Recovery

# SOIL BORING / MONITORING WELL CONSTRUCTION LOG

## WELL BORING ID: MW-4

Client / Site:	S. B. Collins / Redwood Texaco
Location:	Redwood Plaza, Milton, VT
Project Number:	04-23
Driller:	G. Adams, Adams Engineering
Drilling Method:	2 5/8" sample barrel
Geologist:	T. Schmalz, Hoffer & Associates
Sampling Method:	2 5/8" continuous sample sample barrel
Date:	4/18/96
Weather:	Clear, breezy, mild 50°
Boring Location:	Grassy area southeast of building

Well Construction Information	
Total Depth Drilled:	20.0' BGS
Screen Type/Interval:	1.5" PVC 0.010 inch id / 19.0' - 9.0' BGS
Riser Type/Interval:	1.5" PVC / 9.0' - 0.5' BGS
Sandpack Type/Interval:	#1 sand / 20.0' - 8.0' BGS
Seal Type/Interval:	Bentonite slurry / 8.0' - 3.0' BGS
Water Level/Date-Time:	
Elevation Ground:	
Elevation TOC:	
Other:	

Sample Interval (feet BGS)	Total Driven / Recovery (feet)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
0.0 - 5.0	3.5 / 2.4	0.0 - 2.4	0.0 - 1.5	Augered through silts and sandy silt topsoil.	gravelly loamy sand	0.0
			1.5 - 2.0	Light gray, dry gravelly silty sand (fill); 60% angular gravel, 30% sand.		
			2.0 - 3.9	Red-brown, loose, silty sand, soft, moist; 65% angular, medium to fine sand, 35% moist, soft, silt and clay, low toughness.		
5.0 - 10.0	5.0 / 4.0	0.0 - 4.0	5.0 - 9.0	Red-brown, moist, soft, loose, silty sands; 80% fine to medium sand, 20% silt and clay.	loamy sand	0.0
10.0 - 15.0	5.0 / 3.7	0.0 - 3.7	10.0 - 12.0	Same as above.	loamy sand	0.0
			12.0 - 13.0	Gray-brown, moist to wet silt and sandy silt; 85% firm silt and clay, low toughness, low plasticity, 15% very fine sand.	silt loam	0.0
			13.0 - 13.7	Red-brown, moist, soft, loose, silty sands; 80% fine to medium sand, 20% silt and clay.	loamy sand	0.0
15.0 - 20.0	5.0 / 3.9	0.0 - 3.9	15.0 - 18.9	Same as above, saturated.	loamy sand	0.0

### Generalized Geologic Log and Other Observations:

#### Notes:

\* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene.  
 BGS = Below Ground Surface, AGS = Above Ground Surface, NR = No Recovery

Send c: coc w/ Hoffer results

**citest, Inc.**

O. Box 339  
 Suite 66 Professional Center, Randolph, VT 05080  
 Phone: (802)728-6313 Fax: (802)728-6044  
 Client: Jeff Hoffer and Associates  
 Contact: Tim Schmalz

Address: RR 4 Box 2286, Comstock Road  
 Montpelier, VT 05602  
 Date requested: 04/22/96  
 Date shipped: Send With Rod  
 Date scheduled: 04/23/96

Project # 70249  
 Phone No:  
 Requested by: TS

to: Carl Runrecht  
 S.B. Collins, Inc  
 54 Lower Welden St.  
 St. Albans, VT 05478  
 results to: Hoffer & Assoc.

CHAIN OF CUSTODY RECORD		DATE	TIME
Sampled By:	<i>Walter D. Smith</i>	4/23/96	
Accepted By:			Relinquished By: <i>Walter D. Smith</i>
Accepted By:			Relinquished By: *
			Received by Scitest: <i>Kathleen Dignan</i>

Item Nos	Client ID or Description	Sampling Date	Sampling Time	Matrix	Preservative or Label	Bottle Type Plastic/Glass	Container Volume	Bottles per Sample	Parameters and Expiration Time 7days
1	MW-01	4/23/96	1120	GW	HCl	G	40 mL	2	EPA 8020
2	MW-04		1140	GW	HCl	G	40 mL	2	EPA 8020
3	MW-02		1155	GW	HCl	G	40 mL	2	EPA 8020
4	MW-03		1210	GW	HCl	G	40 mL	2	EPA 8020
5	MW-D		1215	GW	HCl	G	40 mL	2	EPA 8020
6	FB-01		1220	GW	HCl	G	40 mL	2	EPA 8020
				<del>GW</del>	<del>HCl</del>	<del>G</del>	<del>40 mL</del>	<del>2</del>	<del>EPA 8020</del>
			1100	GW	HCl	G	40 mL	2	EPA 8020

38 Trip Blank  
 requests hoffer 103 28 95 w/1

Report Reviewed By: \_\_\_\_\_ Preserve Check: *cool*

Project Nos: 70249  
 LABORATORY NUMBER: 9604-01244  
 LOGIN: *KDign*

Post-it Fax Note 7671  
 Date: 4/24/96 # of pages: 1  
 To: Tim Schmalz  
 From: \_\_\_\_\_  
 Co./Dept: Scitest

# GROUNDWATER SAMPLING DATA SHEET

LOCATION: REDWOOD PLAZA - MILTON  
 DATE: APRIL 23, 1996

SAMPLE METHOD: 1.5" PVC BAILERS  
 SAMPLING TEAM: T. SCHMALE

WELL ID	PID Head Space (ppm)	Depth to Water (ft)	Total Well Depth (ft)	Water Column (ft)	3 Well Volumes* (gals)	Total Purged (gals)	Sample Time	Sample Type	Chain-of-Custody		Remarks
									Number	Time	
TB-01	NA						1100	TB	TB-01	1100	TRIP BLANK
MW-1	0.0	12.44	19.0'	6.56	1.81	2.0	1120	S	MW-01	1120	Slightly Turbid, Brown
MW-2	0.4	12.75	20.0'	7.25	2.01	2.0	<del>1135</del> 1135	S	MW-02	<del>1135</del> 1135	Red-brown, Turbid
MW-3	0.0	12.69	20.0'	7.31	2.02	<del>1140</del> 1.0	1210	S	MW-03	<del>1150</del> 1210	*
MW-4	0.0	12.96	19.0'	6.04	1.66	2.0	<del>1140</del> 1140	S	MW-04	<del>1140</del> 1140	Brown, Turbid
MW-3	AS FOR MW-03							DP	MW-1	1215	DUPLICATE SAMPLE
FB-01	NA						1225	FB	FB-01	1225	FIELD BLANK

\* (1.5" = 0.092 gals/ft, 2" = 0.16 gals/ft, 4" = 0.65 gals/ft, 6" = 1.5 gals/ft)

REMARKS \* MW-03 IS BENT @ 3' BGS (1st Joint) AND COULDN'T BE SAMPLED USING A BAILER. 3/8" POLY TUBING WAS USED INSTEAD.



ANALYTICAL REPORT

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

SB Collins, Inc.  
54 Lower Welden Street  
St. Albans, VT 05478

Carl Ruprecht

Work Order No.: 9604-01244

Project Name: Redwood Plaza, Milton, VT  
Customer Nos.: 090048

Date Received: 4/24/96  
Date Reported: 4/26/96

Sample Desc.: Hoffer-MW 01

Sample Date: 4/23/96

Test Performed	Method	Results	Units	Analyst	Analysis Date
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Toluene	EPA 8020	4	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		103	% Recovery	JPM	4/26/96

Sample Desc.: Hoffer-MW 04

Sample Date: 4/23/96

Test Performed	Method	Results	Units	Analyst	Analysis Date
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Toluene	EPA 8020	7	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		102	% Recovery	JPM	4/26/96

## ANALYTICAL REPORT

Project Name: Redwood Plaza, Milton, VT  
 Project No.: 090048

Work Order No.: 9604-01244

Sample Desc.: Hoffer-MW 02		Collection Time: 11:55			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	2	ug/L	JPM	4/26/96
Benzene	EPA 8020	8	ug/L	JPM	4/26/96
Toluene	EPA 8020	26	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	130	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	725	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		105	% Recovery	JPM	4/26/96

Sample Desc.: Hoffer-MW 03		Collection Time: 12:10			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Toluene	EPA 8020	7	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		102	% Recovery	JPM	4/26/96

Sample Desc.: Hoffer-MW D		Collection Time: 12:15			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96

## ANALYTICAL REPORT

Project Name: Redwood Plaza, Milton, VT  
 Project No.: 090048

Work Order No.: 9604-01244

Sample Desc.: Hoffer-MW D		Collection Time: 12:15			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Toluene	EPA 8020	8	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		102	% Recovery	JPM	4/26/96

Sample Desc.: Hoffer-1B 01		Collection Time: 12:20			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Toluene	EPA 8020	3	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Surrogate: 8020				JPM	4/26/96
***Bromofluorobenzene-8020		103	% Recovery	JPM	4/26/96

Sample Desc.: Hoffer-TB 01		Collection Time: 11:20			
Sample Date: 4/23/96		Results	Units	Analyst	Analysis Date
Test Performed	Method				
Aromatic Volatile Organics	EPA 8020			JPM	4/26/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	4/26/96
Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Toluene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	4/26/96

## ANALYTICAL REPORT

Project Name: Redwood Plaza, Milton, VT  
 Project No.: 090048

Work Order No.: 9604-01244

Sample Desc.: Hoffer-TB 01	Method	Collection Time: 11:20	Results	Units	Analyst	Analysis Date
Sample Date: 4/23/96	Test Performed					
	Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
	1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
	1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
	1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	4/26/96
	Surrogate: 8020				JPM	4/26/96
	***Bromofluorobenzene-8020		103	% Recovery	JPM	4/26/96

BPQL = Below Practical Quantitation Limits; 1 ug/L

c: Hoffer & Associates

Authorized by: *Cleric Lamotte*

send e. coc w/ Hoffer results



**Scitest, Inc.**

P.O. Box 339  
Route 66 Professional Center, Randolph, VT 05060  
Phone: (802)728-6313 Fax: (802)728-6044

Client: Jeff Hoffer and Associates  
Contact: Tim Schmalz

Address: RR 4 Box 2286, Comstock Road  
Montpelier, VT 05602

Project # 70249

Phone No:  
Requested by: TS

to: Carl Ruprecht  
S.B. Collins, Inc.  
54 Lower Welden St.  
St. Albans, VT 05478  
Results to: Hoffer & Assoc.

Project Name: Redwood Plaza, Milton

Date requested: 04/22/96  
Date shipped: Send With Rod  
Date scheduled: 04/23/96

**CHAIN OF CUSTODY RECORD**

	DATE	TIME		DATE	TIME
Sampled By: <i>Tim Schmalz</i>	<i>4/23/96</i>		Relinquished By: <i>Kevin [unclear]</i>	<i>4/23/96</i>	
Accepted By:			Relinquished By:		
Accepted By:			Received by Scitest: <i>Kathleen [unclear]</i>	<i>4/23/96</i>	<i>11:50</i>

Item No.	Client ID or Description	Sampling Date	Sampling Time	Matrix	Preservative or Label	Bottle Type <small>Plastic/Glass</small>	Container Volume	Bottles per Sample	Parameters and Expiration Time <small>7 days</small>
1	M10-01	<i>4/23/96</i>	<i>1120</i>	GW	HCl	G	40 mL	2	EPA 8020
2	M10-04		<i>1140</i>	GW	HCl	G	40 mL	2	EPA 8020
3	M10-02		<i>1155</i>	GW	HCl	G	40 mL	2	EPA 8020
4	M10-03		<i>1210</i>	GW	HCl	G	40 mL	2	EPA 8020
5	M10-01		<i>1215</i>	GW	HCl	G	40 mL	2	EPA 8020
6	FB-01		<i>1220</i>	GW	HCl	G	40 mL	2	EPA 8020
7				GW	HCl	G	40 mL	2	EPA 8020
8	Trip Blank		<i>1150</i>	GW	HCl	G	40 mL	2	EPA 8020

w/requests/hoffer/03-29-95/wb1

Report Reviewed By:  
Date:

Preserve Check: *Good*

Project Nos: *70249*

LABORATORY NUMBER: *0104-012-14*  
LOGIN: *[unclear]*