

SITE INVESTIGATION SUMMARY REPORT

**MERRILL TRANSPORT SITE
BENNINGTON, VERMONT**

APRIL 1993

prepared for

**Merrill Transport Co.
Portland, Maine**



prepared by

**Tewhey Associates
500 SouthBorough Drive
South Portland, Maine 04106
(207) 772-2242**



**SITE INVESTIGATION SUMMARY REPORT
MERRILL TRANSPORT SITE
BENNINGTON, VERMONT**

I. Introduction.

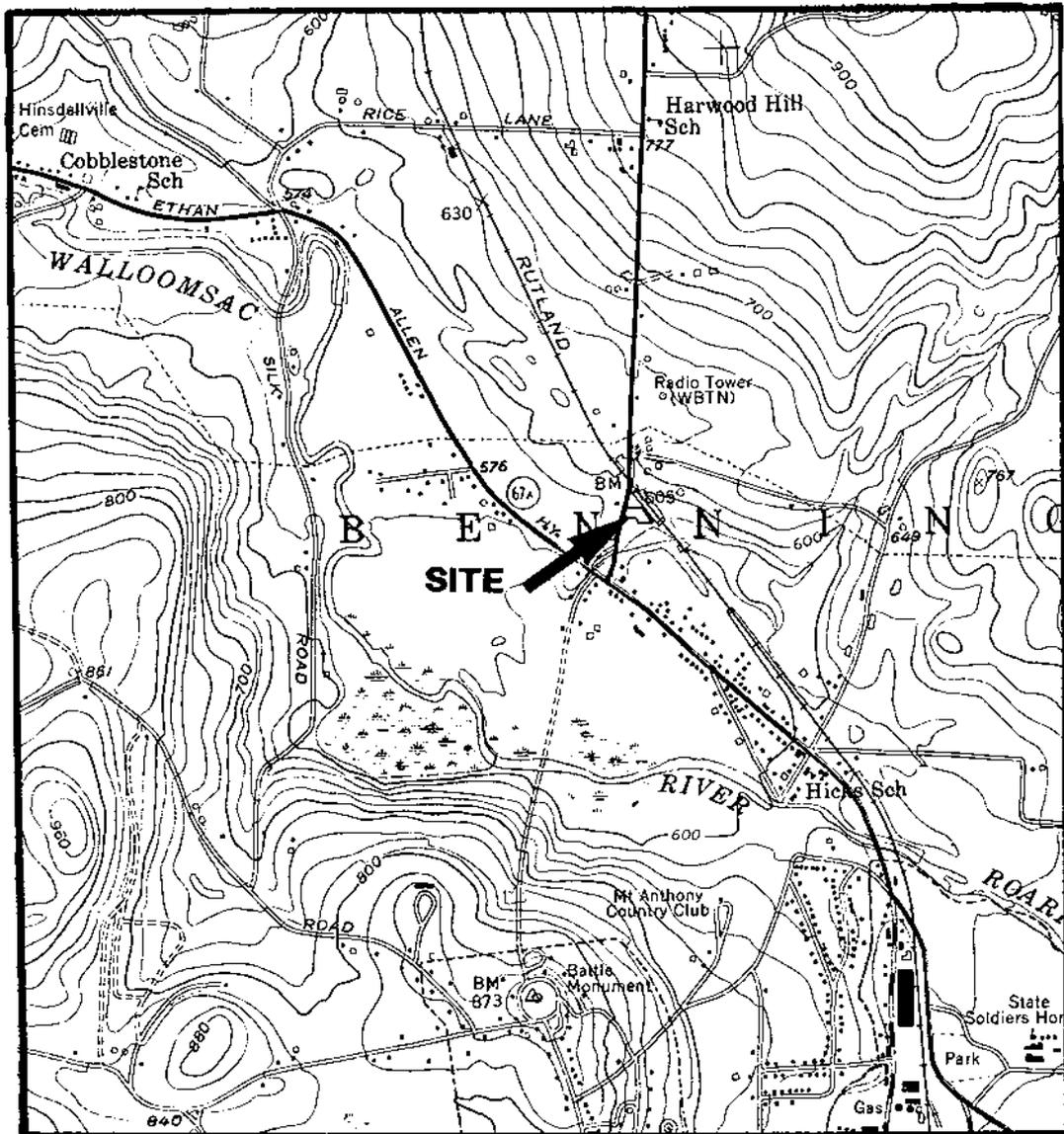
On January 22, 1993, Merrill Transport Company (Merrill) removed three underground storage tanks (USTs) from their trucking terminal located on U.S. Route 7A in Bennington, Vermont (Figure 1). Prior to removal, two 10,000-gallon tanks were used to store diesel fuel and one 6000-gallon tank was used to store #2 fuel oil. During removal of the tanks, Mr. James Shippee performed the initial UST Site Assessment. This assessment, which was delivered to the Vermont Department of Conservation on January 25, 1993, reported residual petroleum in soil and groundwater within the excavation. Inspection of the tanks revealed that one of the 10,000-gallon tanks had an incomplete weld and the other 10,000-gallon tank had a small hole. As a result, petroleum residues were detected in soil on the south and west sides of the tank excavation.

In a letter dated March 4, 1993, the Sites Management Section (SMS) of the Vermont Department of Conservation notified Merrill that additional investigations would be required to assess subsurface soil and groundwater quality on-site. On March 15, Tewhey Associates of South Portland, Maine delivered a Work Plan to the SMS on behalf of Merrill. In a letter dated March 19, the SMS approved implementation of the Tewhey Associates Work Plan.

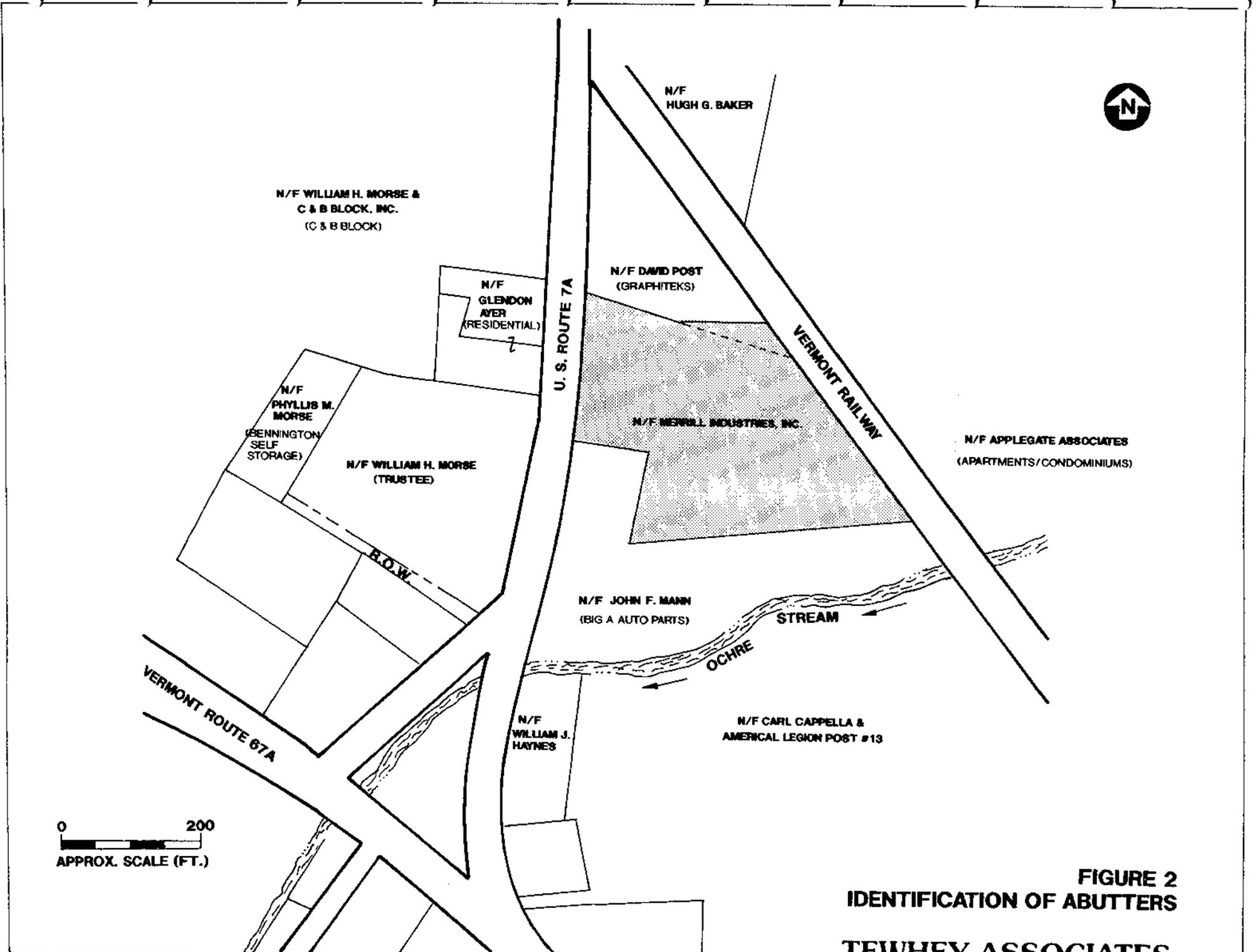
II. Site Setting.

Land Use. The Merrill site consists of a 2.1-acre parcel of land located on U.S. Route 7A north of the downtown area of Bennington (see Figure 1). Parcels located immediately to the north and south of the Merrill site are occupied by Graphiteks, Inc. and Big A Auto Parts, respectively (see Figure 2). The majority of the land west of the site, across U.S. Route 7A, is also commercial or industrial (e.g., Bennington Self Storage and C & B Concrete Block). There are two small residential parcels immediately across U.S. Route 7A and a large condominium/apartment complex east of the site, across the Vermont Railway Corporation tracks.

The area is serviced by the municipal sewer system. However, the Merrill site continues to dispose of sanitary waste in an on-site septic system. There is no public water supply available along the portion of U.S. Route 7A immediately in front of the Merrill site. However, the municipal water system runs along many of the nearby streets.



**FIGURE 1
SITE LOCATION**



**FIGURE 2
IDENTIFICATION OF ABUTTERS**

TEWHEY ASSOCIATES

Site Description. The Merrill site includes a 9,200-square foot concrete block building which houses the office and garage facilities. The building is bordered on the south and east by paved parking areas for trailers. Land located in the northwest corner of the site is a gravel parking area used for employee vehicles. Land in the southeast corner of the site is also gravel covered and used for additional trailer parking. The three USTs removed in January 1993 were located along the south side of the Merrill building as shown on Figure 3. The two USTs which are believed to have leaked were located at the west end of this tank area.

At the southeast corner of the Merrill building there is a dug well constructed of precast concrete (cylindrical sections) approximately 11.5 feet deep and 2.5 feet in diameter (see Figure 3). The well is covered with a concrete cap. The employees at the facility reportedly use the well for non-potable activities, i.e., maintenance operations. In the summer and fall seasons, the amount of water use is estimated to be only several hundred gallons per day. In the winter months, truck washing operations are more frequent and a somewhat larger volume of water is used. Bottled drinking water is provided for employees at the site.

III. Technical Approach.

In order to assess subsurface soil and water quality relating to the three USTs at the Merrill site, the following investigative tasks were conducted between the period March 22 and April 30, 1993.

1. On March 22 and 23, four soil borings were advanced with 4.25-inch inner diameter hollow-stem augers to a depth ranging from 15 to 17 feet below ground surface (bgs). Soil samples were collected continuously from each boring. These samples were screened for volatile petroleum residues which were present in the headspace of a reference jar using a MICROTIP photoionization detector (PID). The samples were also used to classify soil type.

A 2-inch diameter, flush-threaded schedule 40 PVC monitoring well was installed in each borehole. Each well consisted of a 10-foot screened section with 0.01-inch slots and a solid riser. Total well depths ranged from 15 to 17 feet bgs. Screens were placed to span the observed water table. The borehole annulus was backfilled with filter sand or native sand to a minimum of 1.5 feet above the top of the screen, then sealed with a minimum 1-foot thick layer of bentonite chips. All wells were secured in flush-to-the-ground road boxes. Each well was developed by pumping and surging until yielding relatively silt-free water.

Boring logs with well construction details are provided in Appendix A.



ROUTE 7A

GRAPHITEKS

VT RAILWAY CORP.

GRAVEL

MW-1

MERRILL INDUSTRIES

DUG WELL (DW-1)

FORMER UST LOCATION

PAVED GRAVEL

MW-4

MW-3

MW-2

BIG A AUTO PARTS

PROPERTY BOUNDARY

OCHRE STREAM



FIGURE 3
SITE DESCRIPTION

SITE PLAN BASED ON 10-26-87 DRAWING
BY C.T. MALE ASSOC. INC.

TEWHEY ASSOCIATES

2. The relative elevation of each well was determined with an elevation survey using a Topcon AT-F6 level. An assumed benchmark of 10.00 feet was established at the bottom concrete step into the building. A temporary measuring point was also established on the U.S. Route 7A bridge which crosses Ochre Stream, south of the site.

The horizontal location of each well was determined relative to the building on-site using a fiberglass tape measure.

3. Groundwater and surface elevations were measured and recorded in each well and in Ochre Stream.
4. Groundwater samples were collected from the four monitoring wells as well as the dug well on-site. Samples from the four monitoring wells were collected with a stainless steel bailer after purging of a minimum of three well volumes with an ISCO peristaltic pump and teflon tubing. All sampling equipment was decontaminated between wells with trisodium phosphate (TSP) and potable water followed by a distilled water rinse. Field sampling records for each well are included as Appendix B.

The sample from the on-site dug well was collected from the bathroom sink after the water had been allowed to flow for approximately 30 minutes at 2 gallons per minute.

5. Data from the exploration and sampling, along with published information on regional geologic and hydrogeologic conditions, was compiled, evaluated and presented in this report along with appropriate tables and figures.

IV. Study Results.

On the basis of the soil and groundwater investigation activities described above, the following results are presented by Tewhey Associates for the work completed at the Merrill site in Bennington, Vermont. The results are presented in terms of topography, geology, hydrogeology and soil and groundwater chemistry.

Topography. The topography at the site is flat and occurs at an elevation of approximately 580 feet above mean sea level. Surface runoff from the paved parking area drains to the south across the gravel parking area toward Ochre Stream. The land to the north and east rises steeply in elevation to 620 feet above mean sea level. A shallow drainage ditch along the northeast boundary of the Merrill site appears to collect drainage from the hillside and divert it around the parking area into Ochre Stream, upgradient from the site. Ochre Stream drains to the southwest across gently sloping terrain and flows into the Walloomsac River located about 2,500 feet west of the site.

Geology. The shallow soils encountered in the four borings advanced on-site were comprised of stratified fine sand and coarse sandy gravel with varying amounts of silt. Fine-grained lenses were encountered in most borings, ranging in thickness from a few tenths of a foot to approximately 1 foot. However, the soils were predominantly granular with 10 to 30 percent silt. The presence of stratified sand and gravel deposits is consistent with the Surficial Geologic Map of Vermont (Office of State Geologist, 1970) which shows the site to be located on a kame moraine/outwash (glacio-fluvial sand and gravel) deposit.

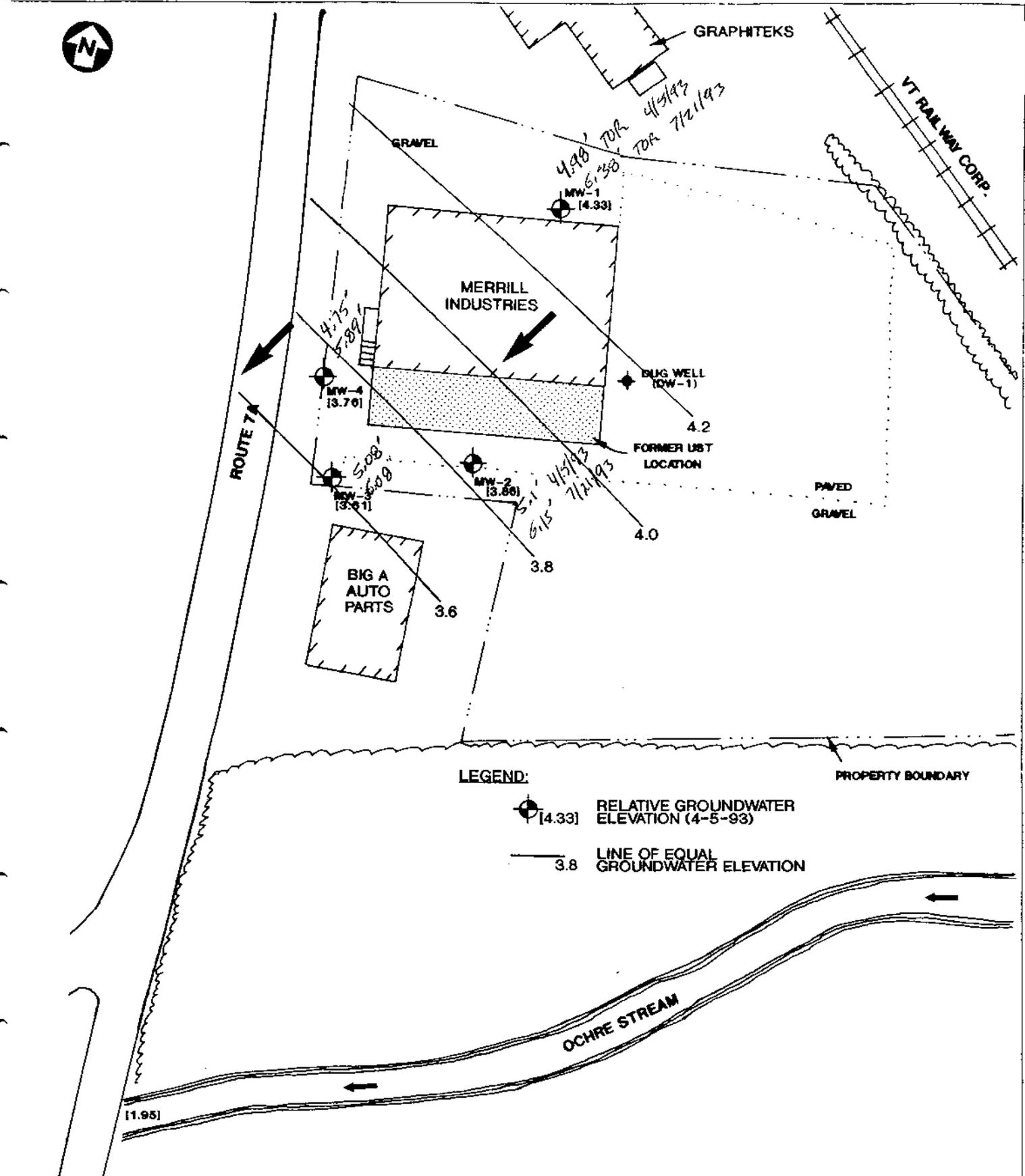
Hydrogeology. Groundwater was encountered at approximately 5 to 6 feet below ground surface. Using data from the four wells and the Ochre Stream, a groundwater contour map was prepared and is presented as Figure 4. These data indicate that groundwater flows in a southwesterly direction beneath the site. This general direction of flow is consistent with the topography of the area and the location of Ochre Stream nearby to the south. The ultimate discharge point for groundwater from the site is likely to be Ochre Stream.

Soil and Groundwater Quality. Soil samples from all borings were collected and screened for volatile petroleum residues with a PID using a headspace screening technique. PID data provide a relative indication of the presence of residual petroleum in soil and are useful in determining the degree to which petroleum constituents vary with depth in each boring. PID data are presented on the boring logs found in Appendix B.

Soil from MW-1, the background well, and MW-4, located to the west of the former USTs, exhibited headspace PID readings believed to represent background conditions (e.g., 0 to 5 ppm). Soil from MW-2 contained somewhat elevated volatile petroleum levels (125 ppm and 41 ppm) in samples S-2 (5 to 7 ft) and S-3 (7 to 9 ft), respectively. Likewise, soil from a similar depth in boring MW-3 exhibited 20 ppm and 270 ppm total volatile petroleum, respectively. PID data indicate that soil concentrations were representative of background conditions above the water table and below 9 feet in MW-2 and MW-3. As expected, PID readings in borings at MW-2 and MW-3 are lower than the maximum readings reported within the tank excavation by Shippee.

Groundwater samples were collected from MW-1, MW-2, MW-3 and MW-4. A duplicate sample (designated MW-D) was collected from MW-3. The sample collected from the dug well on-site was designated DW-1. In addition, a trip blank (TB-1) was submitted with the six samples from the site. All groundwater samples were analyzed for volatile aromatic hydrocarbons using Method 8020/602 as specified by the SMS in their March 4 letter.

The results of the laboratory analysis are tabulated below and presented on Figure 5. Laboratory reports are included in Appendix C.



LEGEND:

- RELATIVE GROUNDWATER ELEVATION (4-5-93)
- LINE OF EQUAL GROUNDWATER ELEVATION

0 60
SCALE (FT.)

**FIGURE 4
GROUNDWATER FLOW REGIME**

SITE PLAN BASED ON 10-26-87 DRAWING
BY C.T. MALE ASSOC. INC.



GRAPHITEKS

VT RAILWAY CORP.

GRAVEL

MW-1

MW-1:
ALL COMPOUNDS=BDL

MERRILL INDUSTRIES

MW-4:
TOL=1.0

MW-4

DW-1:
ALL COMPOUNDS=BDL

DUG WELL (DW-1)

FORMER UST LOCATION

ROUTE 7A

PAVED GRAVEL

MW-3:
BZ=0.56
XYL=4.9
CBZ=2.6

MW-3

MW-2:
XYL=2.3
CBZ=0.68

MW-2

BIG A AUTO PARTS

PROPERTY BOUNDARY

LEGEND:
 ALL CONCENTRATIONS ARE UG/L.
 BZ IS BENZENE.
 TOL IS TOLUENE.
 XYL IS XYLENE.
 CBZ IS CHLOROBENZENE.
 BDL IS BELOW DETECTION LIMIT
 VALUES FOR MW-3 ARE MAXIMUM
 OF TWO DUPLICATE ANALYSES.

OCHRE STREAM

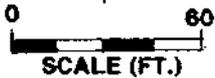


FIGURE 5
GROUNDWATER QUALITY DATA

SITE PLAN BASED ON 10-26-87 DRAWING
BY C.T. MALE ASSOC. INC.

TEWHEY ASSOCIATES

AROMATIC HYDROCARBONS IN GROUNDWATER

<u>WELL</u>	<u>BENZENE</u> <u>(ug/L)</u>	<u>TOLUENE</u> <u>(ug/L)</u>	<u>ETHYLBENZENE</u> <u>(ug/L)</u>	<u>XYLENE</u> <u>(ug/L)</u>	<u>CHLOROBENZENE</u> <u>(ug/L)</u>
MW-1	<0.5	<1.0	<1.0	<1.5	<0.5
MW-2	<0.5	<1.0	<1.0	2.3	0.68
MW-3	0.56	<1.0	<1.0	<1.5	2.2
MW-D	0.52	<1.0	<1.0	4.9	2.6
MW-4	<0.5	1.0	<1.0	<1.5	<0.5
DW-1	<0.5	<1.0	<1.0	<1.5	<0.5
TB-1	<0.5	1.0	<1.0	2.0	<0.5

Data from sample DW-1 indicate that none of the target compounds were detected in MW-1 or the dug well on-site. The data show that, while low levels of petroleum-related compounds (i.e., benzene, toluene, ethylbenzene and xylene or BTEX) were detected in MW-2, MW-3 and MW-4, the concentrations of these constituents are significantly lower than applicable drinking water standards. The groundwater quality data demonstrate that the historical releases from the former tanks have not resulted in significant migration of volatile petroleum constituents in groundwater.

V. Conclusions.

Investigation and testing conducted at the Merrill site indicate that the shallow soil consists of stratified granular material with some fine-grained lenses. Groundwater, which was encountered at 5 to 6 feet below ground surface, appears to flow in a southwesterly direction from the former UST area.

Petroleum-related compounds were only detected in trace concentrations in groundwater in MW-2 and MW-3, despite some level of residual petroleum in soil. No applicable water quality standards were approached or exceeded. This suggests that the volatile petroleum constituents detected in soil by the PID are predominantly residual alkanes rather than the aromatic BTEX compounds. Furthermore, the data indicate that the residual petroleum detected in the soil samples has been degraded and weathered in the subsurface and is likely to be further degraded with time. For this reason, it is unlikely that levels of BTEX compounds in groundwater will increase in the future.

MW-4, located west of the UST area, showed no evidence of impact in soil and only a trace detection of toluene in groundwater. This well is across gradient from the former tank area and directly between the former tank area and the nearest residential properties. Water quality and hydrogeologic data suggest that historical releases from these tanks pose no threat to the two homes located across U.S. Route 7A.

VI. Recommendations.

The low levels of BTEX compounds detected downgradient of the tank area (i.e., MW-2 and MW-3) indicate that the residual material remaining in the subsurface at the Merrill site is not having a significant impact on groundwater quality. As such, there does not appear to be any significant potential for off-site impact to nearby properties or the Ochre Stream. Residual petroleum constituents detected in soil are expected to decrease over time under the natural action of weathering.

The area of the former tanks will be repaved, which will reduce infiltration in this area and minimize the leaching of the residual material. Based on the hydrogeologic and groundwater quality data gathered for this report, no further action appears to be warranted at this time.

APPENDICES

A. BORING LOGS

B. FIELD SAMPLING RECORDS

C. LABORATORY REPORTS

APPENDIX A

BORING LOGS

SITE *MORRELL TRANSPORT - BERRINGTON, VT*

BORING NO. *MW-1*

INVESTIGATOR <i>MDZ</i>	CONTRACTOR <i>CON-TEC</i>	PROJECT NO. <i>89-057</i>
METHOD <i>4.25" HSA</i>	DATE STARTED <i>3-22-93</i>	DATE COMPLETED <i>3-22-93</i>
SOIL DRILLED <i>17'</i>	ROCK DRILLED <i>0</i>	TOTAL <i>17'</i>
		WATER DEPTH <i>4.18' TOR</i> <i>(4-5-93)</i>

DEPTH (FT)	PID (PPM)	SAMPLE NO.	GRAIN SIZE CHEMICAL LAB	SOIL/ROCK DESCRIPTION	SOIL CLASS.	BLOW COUNTS	PREZ. SPECS TOP of Pier Elev - 9.54 (Relative)
3.0		S-1		BROWN FINE-COARSE SAND w/ little GRAVEL AND SILT, DRY, LOOSE		17-14-9-8 0.4/2.0'	
5.0		S-2		5-5.4 similar to S-1 6.4-6.7 GRAY SILTY FINE SAND 6.7-7.0 BROWN MED-FINE SAND w/ RED STAINING, WET		5-9-12-12 1.0/2.0'	
2.9		S-3		BROWN MED-COARSE SAND w/ SOME GRAVEL, TRACE FINE SAND + SILT, MOD. DENSE, WET		6-12-24-20 0.8/2.0	
10.0		S-4		BROWN FINE SILTY SAND + GRAVEL, WET (WASH)		9-18-24-15 0.2/2.0'	
3.1		S-5		11.8-12.1 MED-COARSE SAND (WASHED) 12.1-13 SIMILAR TO S-4, WET		18-9-7-4 1.2/2.0'	
2.9		S-6		BROWN MED-COARSE SAND w/ LITTLE FINE SAND + SILT. SOME GRAVEL - LOOSE, WET BOTTOM OF AUGERS		20-13-7-8 0.8/2.0	
3.2		S-7		15-16.5 BROWN - SIMILAR TO S-6 16.5-17 BROWN-GRAY MED-COARSE SAND w/ LITTLE GRAVEL. BOB=17'		11-15-8-12 2.0/2.0'	

TEWHEY ASSOCIATES

SITE MERRELL TRANSPORT - BENNINGTON, VT

BORING NO. MW-2

INVESTIGATOR MDR	CONTRACTOR CON-TEC	PROJECT NO. 89-057
METHOD 4.25" HSA	DATE STARTED 3-22-93	DATE COMPLETED 3-22-93
SOIL DRILLED 16.5	ROCK DRILLED 0	TOTAL 16.5
		WATER DEPTH 5.10' TOR (4-5-93)

DEPTH (FT)	PRO (PPM)	SAMPLE NO.	GRAIN SIZE	CHEMICAL LAB	SOIL/ROCK DESCRIPTION	SOIL CLASS.	BLOW COUNTS	PREZ. SPECS. Top of Risker = 0.96' Relative
3.8	5-1				Br - light Brown FINE - COARSE SAND w/ GRAVEL, trace SILT		35-24-14-2 0.7/2.0	
12.5	5-2				DARK GRAY MED SAND w/ little fine and little coarse sand, moist-wet, faint odor		9-6-11-8 0.5/2.0	
4.1	5-3				8.1-8.3 GRAY - SIMILAR TO 5-2 8.3-9.0 BROWN M-COARSE SAND w/ GRAVEL, trace F SAND + SILT, WET		7-10-18-15 0.8/2.0	
5.3	5-4				BROWN FINE to COARSE SAND w/ GRAVEL (SOOPY WASH)		23-19-30-17 0.2/2.0	
-	5-5				NO RECOVERY		13-7-4-2	
5.6	5-6				BROWN MED SAND w/ little FINE + coarse SAND, trace SILT, faintly STRATIFIED		2 (2.0) - 1 (1.5') (cavities) 2.0/2.0	
					BOB			

TEWHEY ASSOCIATES

SITE MERRILL TRANSPORT - BENNINGTON, VT

BORING NO. MW-3

INVESTIGATOR MOR	CONTRACTOR CONTEC	PROJECT NO. 89-057
METHOD 4.25" HSA	DATE STARTED 3-23-93	DATE COMPLETED 3-23-93
SOIL DRILLED 16.5'	ROCK DRILLED 0	TOTAL 16.5'
		WATER DEPTH 5.00' TBR (4-5-93)

DEPTH (FT)	PRO (PPM)	SAMPLE NO.	GRAIN SIZE	CHEMICAL LAB	SOIL/ROCK DESCRIPTION	SOIL CLASS.	BLOW COUNTS	PREZ. SPECS. Top of River 8.5 ft Below
0-1'					Brown SAND + GRAVEL			
1-3'					DARK GRAY SAND w/ SOME SILT			
4.3	5-1				DARK GRAY MEDIUM-COARSE SAND w/ LITTLE GRAVEL, TRACE SILT, DRY, LOOSE (FILL)		5-3-4 5/4 0.2/2.0	
20	5-2				DARK BROWN-GRAY MEDIUM SAND w/ LITTLE FINE SAND, TRACE GRAVEL, WET AT BOTTOM, MILD ODOR		1-2-7-15 0.6/2.0	
27.0	5-3				DARK BROWN-GRAY MED.-COARSE SAND; SOME GRAVEL, TRACE FINE SAND, TRACE SILT, LOOSE, WET, MILD ODOR		8-5-3-9 0.9/2.0	
-	5-4				No Recovery, WASH ONLY		10-15-10-13 0.1/2.0	
3.2	5-5				BROWN MEDIUM SAND; SOME COARSE SAND, SOME GRAVEL; TRACE FINE SAND, SILT WET		17-12-9-10 1.4/2.0	
8.0	5-6				13.4-14 BROWN MEDIUM SAND; SOME COARSE SAND + GRAVEL 14-14.3 BROWN-GRAY SILTY CLAY, MOD. PLASTIC 14.2+ SIMILAR TO 5-5		11-11-26-32 1.4/2.0	

TEWHEY ASSOCIATES

SITE MERRILL TRANSPORT, BIRNINGTON, VT

BORING NO. MW-4

INVESTIGATOR MDR	CONTRACTOR CON-TEL	PROJECT NO. 89-057
METHOD 4.25" HSA	DATE STARTED 3-23-93	DATE COMPLETED 3-23-93
SOIL DRILLED 15'	ROCK DRILLED 0	TOTAL 15'
		WATER DEPTH 4.75' TOR (4-5-93)

DEPTH (FT)	PID (PPM)	SAMPLE NO.	GRAIN SIZE CHEMICAL LAB	SOIL/ROCK DESCRIPTION	SOIL CLASS.	BLOW COUNTS	PREZ. SPECS Top of Rise = 8.51' Relative
3.5	5-1			BROWN- GRAY FINE- MEDIUM SAND; LITTLE SILT; LITTLE GRAVEL, LOOSE, MOIST- DRY		2-3-3-3	
2.8	5-2			GRAY FINE SANDY SILT GRADING DOWNWARD TO GRAY- DARK GRAY MED-FINE SAND; SOME SILT, WET - 6'		1-1-2-4 1.4/2.0	
3.3	5-3			DA SIMILAR TO BOTTOM OF 5-2 GRADING TO BROWN SILTY FINE SAND; SOME MED- COARSE SAND AND GRAVEL, MOIST-WET		5-17-26-8 1.2/2.0	
3.8	5-4			BROWN MED SAND; SOME GRAVEL; LITTLE FINE + LITTLE COARSE SAND, LOOSE, WET		1-5-33-16 0.8/2.0	
4.1	5-5			BROWN MED. - COARSE SAND; SOME GRAVEL; LITTLE FINE SAND; TRACE SILT		13-18-24-20 1.0/2.0	
4.0	5-6			RED BROWN - YELLOW COARSE SAND + GRAVEL; SOME MED. SAND			

TEWHEY ASSOCIATES

APPENDIX B

FIELD SAMPLING RECORDS

FIELD SAMPLING RECORD

Page 1 of 5

Site Location MERRILL TRANSPORT, BENNINGTON VT. File No. 89-057

Sample Location MW-1 Date 4-5-93 Time 1210

Depth to Water 4.98' TOR Well Depth 13.85' Well Dia. 2-in. PVC

Purge Volume 4.25 gal Purge Equipment ISCO PUMP; TEFLON TUBING

Purge Observations WATER WAS CLOUDY BUT CLEARED

Recharge Observations RAW DRY AT 3.5 gal PURGE, WAIT FOR RECHARGE

Field Measurements 6° .290
Temp. Deg.C. Sp. Conductance micromhos/cm

7.94 —
pH Headspace PID Reading ppm

Decontamination TSP + POTABLE WATER

Sampling Equipment STAINLESS STEEL BAITER

Sample Bottles Filled 2 40-ml VOA vials

Analysis To Be Requested EPA 8020/602

Preservation COOLER w/ ICE

Sampler Identification MATHIAS Reynolds

Comments _____

FIELD SAMPLING RECORD

Page 2 of 5

Site Location MIRRELL TRANSPORT, BENNINGTON VT. File No. 89-057

Sample Location MW-2 Date 4-5-93 Time 1420

Depth to Water 5.10' Well Depth 13.75' Well Dia. 2-in. PVC

Purge Volume 5 GAL Purge Equipment ISLO PUMP; TEFLON TUBING

Purge Observations WATER WAS CLOUDY, BECAME CLEAR

Recharge Observations WATER RAN DRY AT 2.5 GAL

Field Measurements

<u>8</u>	<u>435</u>
Temp. Deg.C.	Sp. Conductance micromhos/cm
<u>7.1</u>	
pH	Headspace PID Reading ppm

Decontamination TSP + POTABLE WATER

Sampling Equipment STAINLESS STEEL BAILER

Sample Bottles Filled 2 40-ml VOA VIALS

Analysis To Be Requested EPA 8020/602

Preservation COOLER w/ ICE

Sampler Identification Matthew D. Reynolds

Comments _____

FIELD SAMPLING RECORD

Page 4 of 5

Site Location MERRILL TRANSPORT, BENNINGTON VT. File No. 89-057

Sample Location 4.75' MW-4 Date 4-5-93 Time 1435

Depth to Water 4.75' Well Depth 14.10 Well Dia. 2-inch PVC

Purge Volume 10 GAL Purge Equipment ISIO PUMP; TEFLON TUBING

Purge Observations WATER CLEAR

Recharge Observations RECHARGE > 1 gpm

Field Measurements 8 1000
Temp. Deg.C. Sp. Conductance micromhos/cm

6.8
PH Headspace PID Reading ppm

Decontamination TSP + POTABLE WATER

Sampling Equipment STAINLESS STEEL BAILER

Sample Bottles Filled 2 40-ml VOA vials

Analysis To Be Requested EPA 8020/602

Preservation COOLER w/ ICE

Sampler Identification Matt D. Reynolds

Comments _____

Tewhey Associates
South Portland, Maine 04106
(207) 772-2242

FIELD SAMPLING RECORD

Page 5 of 5

Site Location HEERLE TRANSPORT, BENVENIGNO, VT. File No. 89-057

Sample Location DW-1 (Water Supply Well) Date 4-5-93 Time 1545

Depth to Water - Well Depth 12'± Well Dia. 2.5' dia

Purge Volume ~80 gal Purge Equipment Pump in Well

Purge Observations RAW WATER THROUGH WATER SYSTEM IN BACK YARD
UNTIL PUMP SUCKS AIR

Recharge Observations _____

Field Measurements 8.5 350
Temp. Deg.C. Sp. Conductance micromhos/cm
7.1
pH Headspace PID Reading ppm

Decontamination _____

Sampling Equipment FROM TAP IN BATHROOM

Sample Bottles Filled 2 40-ml VOA Vials

Analysis To Be Requested EPA 8020/602

Preservation Cooler w/ Ice

Sampler Identification John W. Ryan

Comments _____

Tewhey Associates
South Portland, Maine 04106
(207) 772-2242

APPENDIX C
LABORATORY REPORTS



April 16, 1993

APR 19 RECD

Mr. Matt Reynolds
John D. Tewhey Assoc.
500 Southborough Drive
South Portland, ME 04106

Dear Mr. Reynolds:

Please find enclosed the Report of Analysis (ROA) for the samples received by the laboratory on April 6, 1993. This cover letter is an integral part of the ROA.

Sample results are reported on our new Laboratory Information Management System (LIMS) Report of Analysis. Results are presented by sample and by analytical group. The LIMS ROA presents the results for each analytical group on separate pages. PQLs, methods, dilution factors, dates of preparation and analysis as well as any applicable footnotes all appear on the page(s) where the parameter is reported. Analytical data are approved for the reporting by a qualified reviewer by signature on the authorization page.

If you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact me or Geoff Pellechia. We appreciate your continued use of our laboratory for your analytical needs and look forward to working with you in the future.

Sincerely,

Coast-to-Coast Analytical Services, Inc.

Laura J. O'Meara, Supervisor
Client Services

LJO/dmt

Enclosure



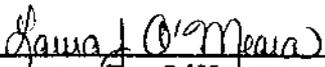
Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 775-4029

Coast-to-Coast Analytical Services, Inc. - Northeast Division (CCAS) has completed analysis of your samples identified by the CCAS order number: WJ0376; sample numbers: 1-7. These samples were analyzed in accordance with the methods noted on the Report of Analysis. Samples and associated QC samples met CCAS internal quality control except as noted on the Report of Analysis. The attached Report of Analysis, which consists of 7 pages, is authorized for release by:



Laura J. O'Meara
Client Services Supervisor



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Sample No. : WJ-0376-1
Report Date: 04/16/93
PO No. : 89-057

APR 19 REC'D

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
MW-1	Aqueous	M. REYNOLDS		04/05/93	04/06/93		
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics			1.0				
Benzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Chlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Xylenes	<1.50	µg/L		1.50	EPA 602/8020	04/13/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
4-Bromofluorobenzene (% Recovery)	117.	%			EPA 602/8020	04/13/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dmg/lab



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
 Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
 Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
 340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
 Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Sample No. : WJ-0376-2
 Report Date: 04/16/93
 PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
MW-2	Aqueous	M. REYNOLDS		04/05/93	04/06/93		
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics				1.0			
Benzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Chlorobenzene	0.68	µg/L		0.50	EPA 602/8020	04/13/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Xylenes	2.3	µg/L		1.50	EPA 602/8020	04/13/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
4-Bromofluorobenzene (% Recovery)	122.	%			EPA 602/8020	04/13/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dmg/lab



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
 Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
 Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
 340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
 Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Sample No. : WJ-0376-3
 Report Date: 04/16/93
 PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX		SAMPLED BY		SAMPLED DATE RECEIVED		
MW-3	Aqueous		M.REYNOLDS		04/05/93	04/06/93	
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics				1.0			
Benzene	0.56	µg/L		0.50	EPA 602/8020	04/14/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/14/93	LB
Chlorobenzene	2.2	µg/L		0.50	EPA 602/8020	04/14/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/14/93	LB
Xylenes	<1.50	µg/L		1.50	EPA 602/8020	04/14/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/14/93	LB
1,4-Dichlorobenzene	1.0	µg/L		0.50	EPA 602/8020	04/14/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/14/93	LB
4-Bromofluorobenzene (% Recovery)	113.	%			EPA 602/8020	04/14/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dmg/lab



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Sample No. : WJ-0376-4
Report Date: 04/16/93
PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED				
MW-4	Aqueous	M.REYNOLDS	04/05/93	04/06/93			
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics				1.0			
Benzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Toluene	1.0	µg/L		1.00	EPA 602/8020	04/13/93	LB
Chlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Xylenes	<1.50	µg/L		1.50	EPA 602/8020	04/13/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
4-Bromofluorobenzene (% Recovery)	113.	%			EPA 602/8020	04/13/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dmg/kp/lab



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
 Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
 Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
 340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
 Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
 500 SOUTHBOROUGH DRIVE
 SO PORTLAND, ME 04106

Sample No. : WJ-0376-5
 Report Date: 04/16/93
 PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY			SAMPLED DATE RECEIVED		
MW-D	Aqueous	M.REYNOLDS			04/05/93	04/06/93	
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics			1.0				
Benzene	0.52	µg/L		0.50	EPA 602/8020	04/13/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Chlorobenzene	2.6	µg/L		0.50	EPA 602/8020	04/13/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Xylenes	4.9	µg/L		1.50	EPA 602/8020	04/13/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
4-Bromofluorobenzene (% Recovery)	114.	%			EPA 602/8020	04/13/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Sample No. : WJ-0376-6
Report Date: 04/16/93
PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY			SAMPLED DATE RECEIVED		
TB-1	Aqueous	M. REYNOLDS			04/05/93	04/06/93	
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics			1.0				
Benzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Chlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/13/93	LB
Xylenes	2.0	µg/L		1.50	EPA 602/8020	04/13/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/13/93	LB
4-Bromofluorobenzene (% Recovery)	111.	%			EPA 602/8020	04/13/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dng/lab



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA
Newport Beach, CA • Valparaiso, IN • Westbrook, ME

Northeastern Division
340 County Road, No. 5 • P.O. Box 720 • Westbrook, ME 04098

(207) 874-2400
Fax (207) 775-4029

CLIENT: JOHN D TEWHEY ASSOC
500 SOUTHBOROUGH DRIVE
SO PORTLAND, ME 04106

Sample No. : WJ-0376-7
Report Date: 04/16/93
PO No. : 89-057

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY			SAMPLED DATE RECEIVED		
DW-1	Aqueous	M.REYNOLDS			04/05/93	04/06/93	
PARAMETER	RESULT	UNITS	DF	PQL*	METHOD	ANALYZED	BY NOTES
Purgeable Aromatics			1.0				
Benzene	<0.50	µg/L		0.50	EPA 602/8020	04/12/93	LB
Toluene	<1.00	µg/L		1.00	EPA 602/8020	04/12/93	LB
Chlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/12/93	LB
Ethylbenzene	<1.00	µg/L		1.00	EPA 602/8020	04/12/93	LB
Xylenes	<1.50	µg/L		1.50	EPA 602/8020	04/12/93	LB
1,3-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/12/93	LB
1,4-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/12/93	LB
1,2-Dichlorobenzene	<0.50	µg/L		0.50	EPA 602/8020	04/12/93	LB
4-Bromofluorobenzene (% Recovery)	116.	%			EPA 602/8020	04/12/93	LB

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

LJO/kfg/dmg/lab

