

97-2216



TWIN STATE ENVIRONMENTAL CORP.

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Phase (check one)	Type (check one)
<input checked="" type="checkbox"/> Site Investigation	<input type="checkbox"/> Work Scope
<input type="checkbox"/> Corrective Action Feasibility Investigation	<input checked="" type="checkbox"/> Technical Report
<input type="checkbox"/> Corrective Action Plan	<input type="checkbox"/> PCF Reimbursement Request
<input type="checkbox"/> Corrective Action Summary Report	<input type="checkbox"/> General Correspondence
<input type="checkbox"/> Operations & Monitoring Report	

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SITE INVESTIGATION REPORT

January 14, 1998

Ehler's Mobil
70 Upper Main Street
Essex Junction, Vermont

TSEC Project # 97-095

Report Prepared for:
R.L. Vallee, Inc.
280 South Main Street
P.O. Box 192
St. Albans, Vermont 05478
Contact: Mr. Jim Driver
(802) 524-8710

Written By:
Jon Berntsen 
Geologist

Reviewed By:
John R. Diego 
Vice President



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January 14, 1998

Mr. Jim Driver
R.L. Vallee, Inc.
280 South Main Street
P.O. Box 192
St. Albans, VT 05478

**RE: Site Investigation Activities
Ehler's Mobil - Essex Junction, Vermont
TSEC Project #97-095**

Dear Mr. Driver:

Enclosed is the Site Investigation Report that was prepared to evaluate the environmental condition of the above mentioned SITE following the removal of three (3) gasoline underground storage tanks (USTs). This investigation was conducted under the State of Vermont Expressway Site Investigation Program. Approval from the State of Vermont to participate in this program was received on October 17, 1997.

Soil contamination was observed in the former UST excavation during tank removal activities in August 1997. Our recent subsurface investigation in November 1997 has indicated that petroleum contamination, a result of the former tank, has impacted soil, groundwater, and bedrock beneath the SITE.

Contaminated groundwater was encountered in one (1) boring at a depth above bedrock, and contaminated soils were observed in contact with bedrock. One sample collected indicated that weathered bedrock has been contaminated.

We have recommended that bedrock monitoring wells be installed at the SITE using either air rotary or air hammer drilling methods. Additionally, a water sample should be collected from water supply wells installed in the immediate vicinity, and analyzed for volatile organic compounds (VOCs) via a US EPA approved method.

If you have any questions regarding the results of this investigation, please feel free to contact us.

Sincerely,
TWIN STATE ENVIRONMENTAL CORPORATION

Jon Berntsen
Geologist

cc: Mr. Bob Butler, VT Sites Management
Mr. Mike Ehler, Ehler's R.V. Center

1.0 INTRODUCTION

This report was prepared by Twin State Environmental Corporation (TSEC) under an agreement with R.L. Vallee, Inc. (owner of the former underground storage tanks [USTs]) to present the findings of our recent subsurface investigation at Ehler's Mobil located at 70 Upper Main Street in Essex Junction, Vermont (SITE) (See SITE Location Map, **Figure 1**, and SITE Plan, **Figure 2**). The investigation was initiated due to the discovery of petroleum impacted soils following the removal of three (3) gasoline USTs from the SITE.

The three (3) USTs which contained gasoline, were removed from the SITE on August 4 and 5, 1997, as part of an overall SITE reconstruction and upgrade. During the removal of the USTs and associated piping and pump islands, contaminated soils were encountered adjacent to the fill ports of the USTs, beneath the USTs, and beneath the former pump islands.

During the subsequent removal and inspection of the USTs, minor rusting and pitting were observed on all tanks, but no holes were evident. Soils at the bottom of the excavation exhibited petroleum staining and elevated PID readings. Based on the degree and extent of contamination discovered during the UST closure assessment, additional investigation was warranted.

2.0 SCOPE OF SERVICES

The following scope of services were performed by TSEC during this investigation:

- Four (4) Geoprobe[®] borings were advanced at the SITE to investigate soil and groundwater contamination resulting from the former USTs. Recovered soil samples were screened for VOCs using a Thermo Environmental Instruments Organic Vapor Meter (OVM) equipped with a 10.6 eV photoionization detector (PID) lamp. Conventional jar headspace methods were utilized to measure the volatile components liberated from the soil.
- One (1) boring, located in the former tank cavity, was completed with a 1-inch diameter temporary monitoring well.
- The newly installed monitoring well was developed in accordance to TSEC's standard policies and procedures.
- A survey of sensitive receptors was conducted that included locating bedrock supply wells in the immediate vicinity.
- This summary report was prepared, discussing SITE history, investigation methods, procedures, and findings. Professional recommendations are also included that address the contamination discovered at the SITE.

3.0 SITE LOCATION AND DESCRIPTION

SITE Owner: Mr. Alden C. Ehler
UST Owner: R.L. Vallee, Inc.
SITE Address: 70 Upper Main Street (Route 15)
Essex Junction, Vermont
Lat./Long.: 42°30'29" North 73°05'18" West
Zoning: Commercial
Utilities: Water- Municipal Supply
Sewer- On-SITE Septic System
Natural Gas- Underground Connection from southeast corner of SITE.
Telephone- Underground Connection from northeast corner of SITE.
Electric- Underground Connection from northeast corner of SITE.
Structures: One (1) single story recreational vehicle (R.V.) sales and service center with attached retail gasoline distributor and convenience store. Two (2) pump island assemblies, located to the east of the main SITE structure, are covered with a canopy. Two (2) USTs are located adjacent to the pump islands.

The SITE is located on the west side of VT Route 15, just north of the intersection of Route 289 in Essex Junction, Vermont (see SITE Location Map, **Figure 1**. Note: SITE Location map does not indicate location of Route 289, which was completed after the source map was published.). The building on SITE, constructed in 1997, is currently in use as an R.V. sales and service center and convenience store/retail gasoline station. The current USTs at the SITE are located to the east of the SITE building, adjacent to the pump islands and canopy, and are covered by a concrete pad. The tanks consist of one (1) 10,000 gallon capacity UST containing super unleaded gasoline, and one (1) 12,000 gallon capacity UST containing regular unleaded gasoline. Product is transferred via underground lines to the pump dispensers

The SITE is commercially zoned and is situated in a mixed land use area. Properties adjacent to the SITE consist of Route 289 and its associated right-of-way to the south and west; a residence to the north (owned by Alden C. Ehler); and a McDonalds Restaurant and the Essex Outlet Fair shopping center across Upper Main Street (Route 15) to the east.

The topography of the SITE is relatively flat, with a gentle slope to the south. Along the south and west edges of the SITE, a steep slope drops down to Route 289, approximately 25 ft below SITE grade. The nearest surface water is the Indian Brook, located approximately ½ mile to the south and west of the SITE. The nearest sensitive receptor is the well located at the 70 Upper Main Street residence (owned by Mr. Mike Ehler).

4.0 UST CLOSURES ON SITE

Three (3) USTs were removed from the SITE in August 1997. These tanks consisted of one (1) 6,000 gallon capacity single wall steel UST containing super unleaded gasoline, one (1) 6,000 gallon capacity single wall steel UST containing special unleaded gasoline, and one (1) 6,000

gallon capacity single wall steel UST containing regular unleaded gasoline. UST piping consisted of single wall steel suction lines attached to one (1) or more product dispensers. All USTs and their associated piping were approximately 27 years old (installed in 1969 or 1970) and reportedly in fair to good condition.

Following the uncovering of the USTs, soil samples were collected next to the fill riser pipes and field screened using a PID calibrated to an isobutylene standard. The peak PID reading obtained at the fill pipes was 1186 parts per million volume (ppmv), adjacent to the super unleaded gasoline UST.

Upon the complete removal of the super unleaded gasoline UST, a test pit was excavated beneath the former UST to a total depth of 13 ft below grade (ft bg). PID readings on soil sampled collected from this test pit ranged from 142 ppmv (at 11 ft bg) to 592 ppmv (at 13 ft bg).

Soils encountered during the removal of the gasoline pump dispensers and associated piping were also contaminated by gasoline. VOC concentrations, as measured by a PID, ranged from 13.9 ppmv (at dispenser 1) to 981 ppmv (at dispenser 2).

Based on the degree and extent of the contamination encountered during the UST removal activities, all excavated soils were placed back into the UST cavity.

5.0 SITE INVESTIGATION ACTIVITIES

The subsurface exploration program was developed to gather data to provide a better understanding of the hydrogeology and contaminant distribution on SITE.

5.1 Advancement of Soil Borings

TSEC completed four (4) soil borings on SITE on November 5, 1997 using Geoprobe[®] direct push technology. One (1) boring was converted into a temporary monitoring well. The borings were installed in the following locations and are depicted on the SITE Plan, **Figure 2**.

- Soil Boring **B-1** was advanced in the location of the former eastern pump island.
- Soil Boring **B-2** was advanced in the location of the former western pump island.
- Soil Boring **B-3** was advanced in the location of the former tank cavity. A temporary monitoring well was installed in this boring.
- Soil Boring **B-4** was advanced in the presumed downgradient direction of the former USTs.

Further details of the soil borings and monitor well are presented below and in **Appendix A: Boring Logs**.

Borings were advanced to depths ranging from 12.0 to 16.0 ft bg. All borings were logged, describing soil strata conditions, and analyzed with the PID using conventional jar headspace techniques.

General soil conditions encountered at the SITE consisted of fine to coarse sand and gravel fill overlying a green to grey silty fine sand with gravel and clay. Groundwater was encountered at approximately 14.0 ft bg in Boring B-3.

Contaminated soil was encountered during the installation of all borings as evidenced by positive PID headspace readings. A headspace analysis performed on the samples collected indicated a maximum PID reading of 856 ppmv in B-2 between 4 and 8 ft bg. All other PID readings ranged between non detect (ND) and 850 ppmv. A heavy petroleum hydrocarbon (PHC) odor and product sheen was observed between 5.0 and 6.0 ft bg in the sample retrieved from B-2. A headspace analysis performed on weathered bedrock samples retrieved from the 13.0 to 14.0 ft bg interval in boring B-4 (581 ppmv) indicated that significant petroleum contamination has reached the top of the bedrock.

5.2 Monitor Well Installation and Construction

Boring B-3 was completed as a monitoring well. This well constructed of 1-inch schedule 40 PVC with 0.010-inch machine slotted screen. Standard construction techniques were used that include placing a clean filter pack in the boring annulus around the screened interval. A bentonite seal was placed above the screen, and the well was sealed with a locking expansion plug and a curb box set in concrete that is flush grade.

Prior to installing the well, approximately ½ foot of bentonite was placed at the bottom of the boring to seal the bedrock aquifer off from the overburden. This prevents the migration of contaminants from the overburden. The well is completed to a depth of 15.5 ft bg.

5.3 SITE Geology

A summary of the predominate geological units encountered during boring activities consisted of fine to coarse sand and gravel fill overlying a green to grey silty fine sand with gravel and clay. Bedrock was encountered between 14.0 and 16.0 ft bg.

Reports published by the Vermont Geological Survey indicate that the surficial deposits in the SITE vicinity are comprised of till materials mantling the bedrock. Bedrock beneath the SITE is reportedly comprised of a Lower Cambrian Age (540-570 million years ago) quartz-chlorite-sericite phyllite veined with quartz known as the Fairfield Pond Phyllite. For a more detailed description of geological units, see Monitoring Well and Boring Logs, **Appendix A**.

6.0 COLLECTION OF GROUNDWATER SAMPLES

TSEC attempted to collect a groundwater sample from the on-SITE monitoring well installed in boring B-3 on November 11, 1997. Upon the completion of purging, there was insufficient water present in the well to collect a sample.

7.0 RECEPTOR EVALUATION

Following the removal of the USTs and the initial discovery of petroleum contamination at the SITE, a sensitive receptor evaluation was conducted in the immediate vicinity. This investigation focused on surface water receptors, groundwater supply wells, and residences.

The SITE and vicinity is reportedly served by municipal water, however, there are several private wells that have been identified in the area. During the next phase of work to be completed at the SITE, a more detailed survey of private supply wells (which may include laboratory sampling) will be conducted.

There are no residential basements in the immediate vicinity and downgradient of the SITE, and the former SITE building has been removed.

No other sensitive receptors were identified during this investigation.

8.0 SUMMARY AND CONCLUSIONS

Based on the information and analytical data obtained during this investigation, TSEC concludes the following:

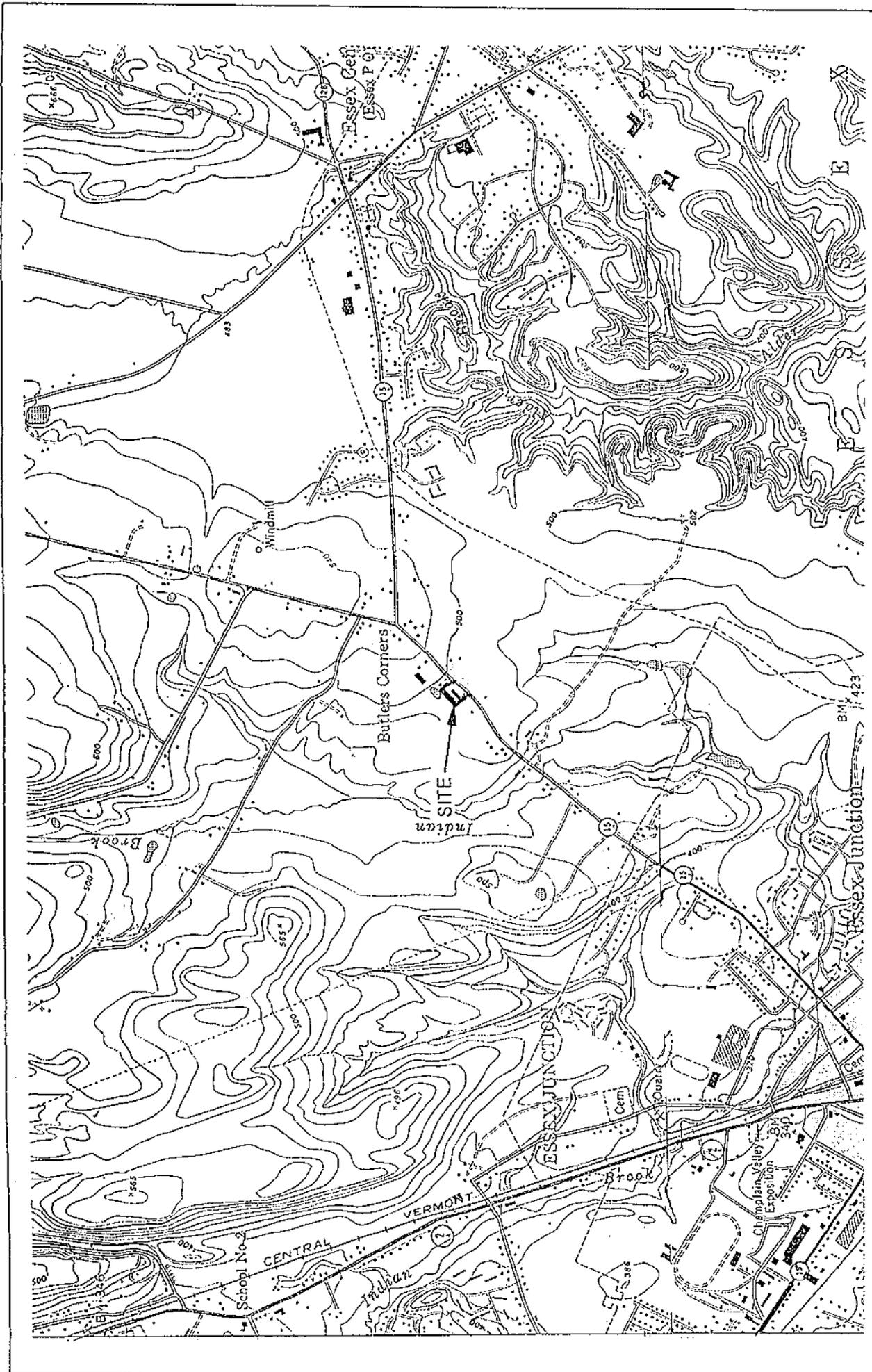
- The source of the contamination, the former USTs at the site, has been removed.
- Soils encountered in the vicinity of the former pump islands and the former tank cavity exhibit elevated VOC levels as evidenced by PID readings.
- Bedrock was encountered prior to a competent overburden aquifer, and bedrock samples collected indicate that petroleum contamination has entered the bedrock.
- Petroleum contamination was encountered at the downgradient edge of the SITE, indicating that petroleum contamination may be migrating off-SITE.
- No overburden groundwater samples were analyzed for VOCs due to insufficient recharge to the well.

9.0 RECOMMENDATIONS

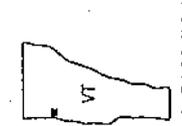
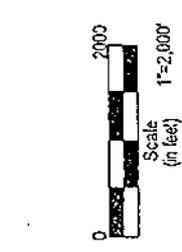
Due to the presence of contamination in soil, bedrock, and presumably groundwater at the SITE, TSEC recommends the following:

- Based on the degree and extent of soil contamination present in the overburden, and the discovery of petroleum contamination at the bedrock-overburden interface (581 ppmv registered on PID at 13.0 ft bg in B-4), TSEC is recommending that a supplemental SITE investigation (SSI) be conducted on-SITE that will include the installation of up to five (5) bedrock monitoring wells. These wells would be installed using either air rotary or air hammer drilling methods in the locations indicated on **Figure 3, Proposed Bedrock Monitoring Well Locations**. Bedrock samples would be collected, logged describing composition, and field screened for VOCs using a PID.
- Groundwater samples would be collected from the newly installed monitoring wells and analyzed via US EPA Method 8020 for BTEX and MTBE. Any potentially impacted groundwater supply wells will also be sampled via US EPA Method 8020 for BTEX and MTBE.

FIGURES



97-2216



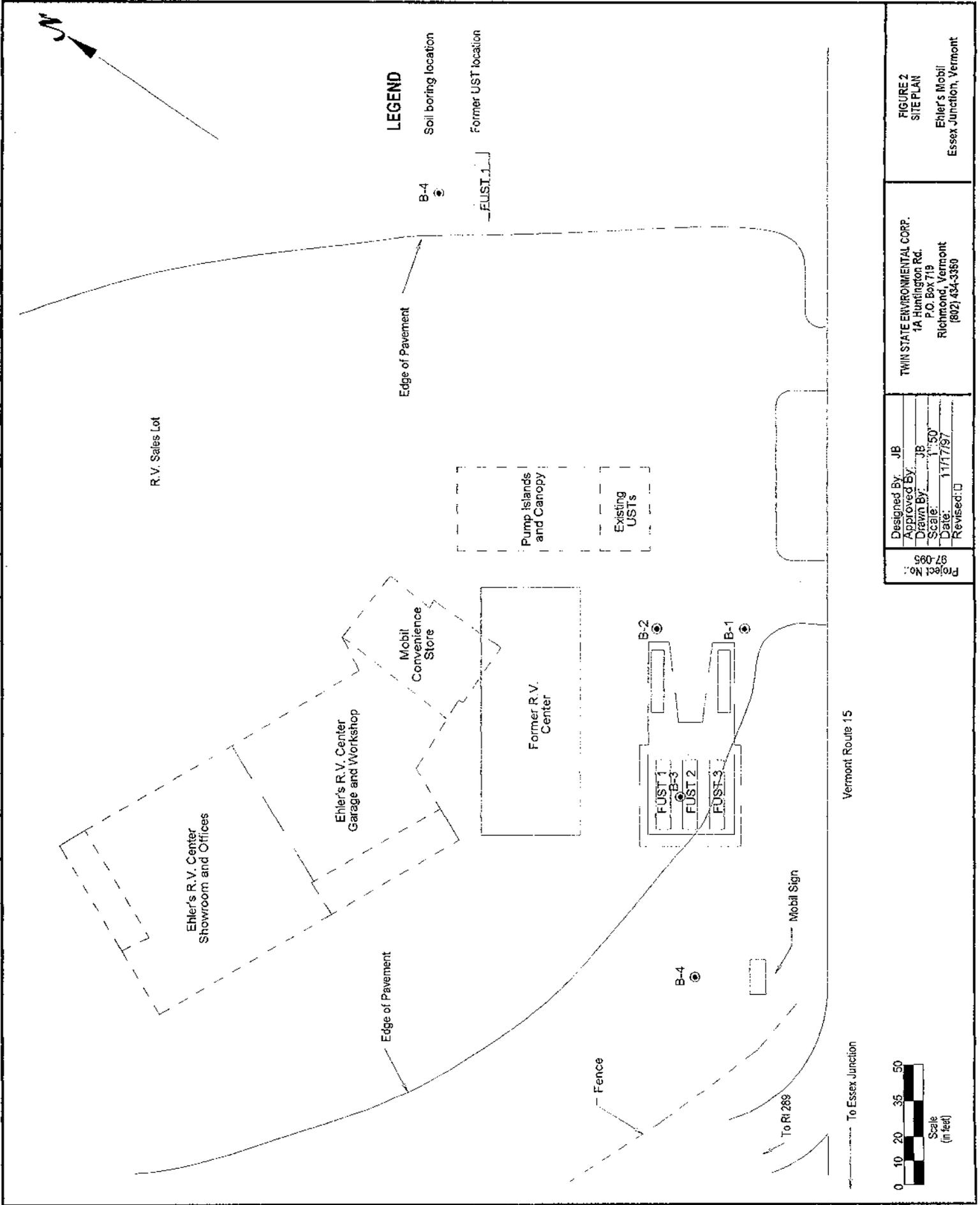
QUADRANGLE LOCATION

Project No.	97-095
Designed By	job
Checked By	
Approved By	
Drawn By	job
Scale	as shown
Date	8/17/97

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 Richmond, Vermont
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FIGURE 1
 SITE LOCATION MAP
 Ehler's RV Center
 Essex Junction, Vermont

Source: USGS 7.5 Minute Topographic Series
 Essex Center and Essex Junction, Vermont Quadrangles



LEGEND

- B-4 ●
- Soil boring location
- Former UST location
- FUST 1

Project No.: 87-095

Designed By: JB
 Approved By: JB
 Drawn By: JB
 Scale: 1"=50'
 Date: 11/7/97
 Revised: □

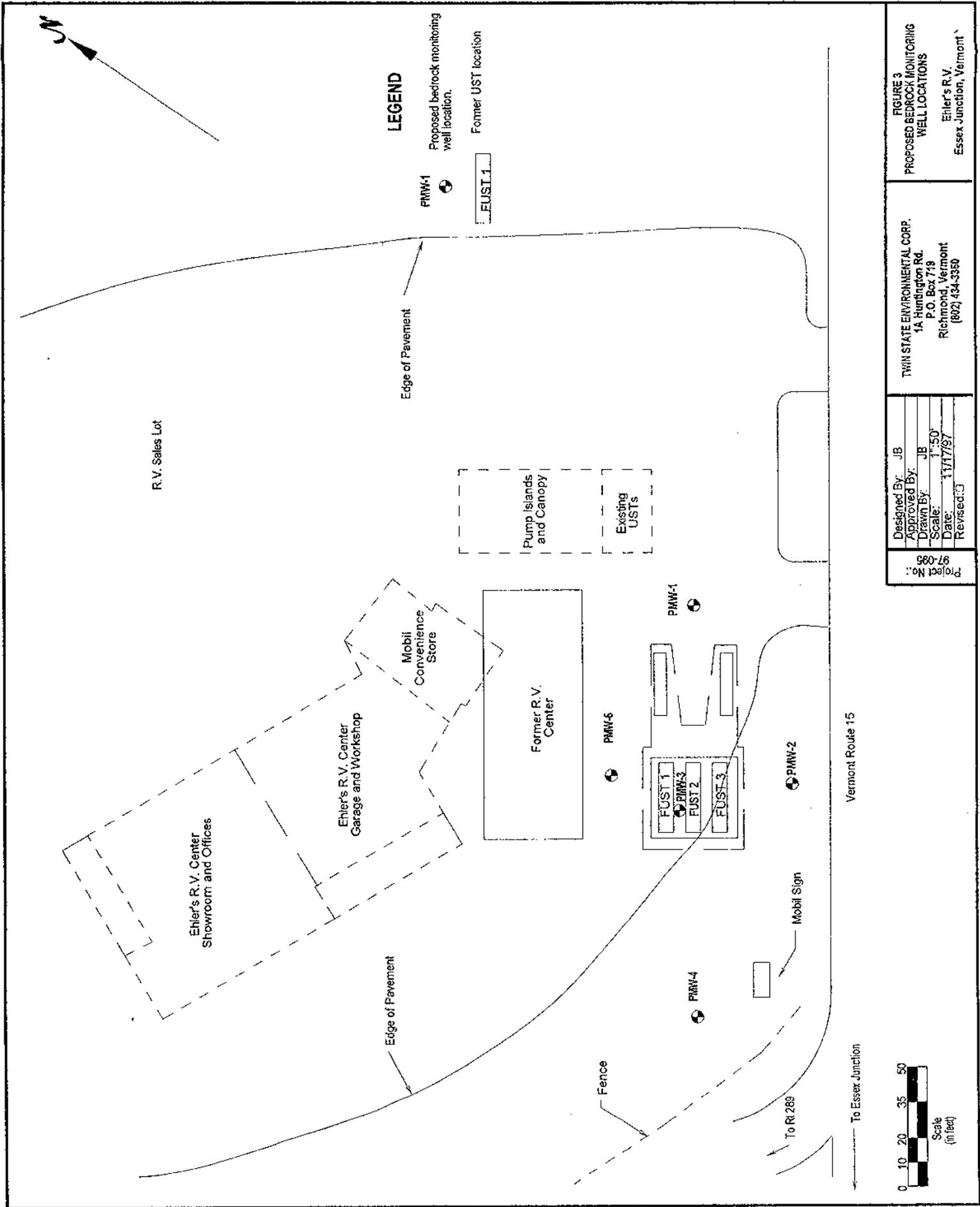
TWIN STATE ENVIRONMENTAL CORP.
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 Richmond, Vermont
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FIGURE 2
 SITE PLAN
 Ehler's Mobil
 Essex Junction, Vermont

Vermont Route 15

To Essex Junction





R.V. Sales Lot

Eher's R.V. Center Showroom and Offices

Eher's R.V. Center Garage and Workshop

Edge of Pavement

Edge of Pavement

PMW-1

FUST-1

Former R.V. Center

Pump Islands and Canopy

PMW-5

PMW-1

FUST-1

PMW-3

FUST-2

FUST-3

Mobil Sign

PMW-4

PMW-2

To Essex Junction

Vermont Route 15

0 10 20 35 50

Scale (in feet)

Project No. 97-095

Designed By: JB
 Approved By: JB
 Drawn By: JB
 Scale: 1:50
 Date: 11/17/87
 Revised: 3

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FIGURE 3
 PROPOSED BEDROCK MONITORING WELL LOCATIONS
 Eher's R.V.
 Essex Junction, Vermont

APPENDIX A



TWIN STATE ENVIRONMENTAL CORPORATION

1A Huntington Road, P.O. Box 719 Richmond, Vermont 05477
(802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

WELL/BORING NO: B-1	WELL DEPTH: N/A	BORING DEPTH: 12.0 ft
PROJECT NAME: Ehler's R.V. Center	DEPTH TO WATER: N/A	
PROJECT NO: 97-095	SCREEN DIA: N/A	DEPTH: N/A
INSTALL DATE: November 5, 1997	SCREEN TYPE/SIZE: N/A	
TSEC REP: Jon Berntsen	RISER TYPE: N/A	
DRILLING CO: TSEC	RISER DIA.: N/A	DEPTH: N/A
DRILLING METHOD: Geoprobe [®]	GUARD TYPE: N/A	
SAMPLING METHOD: Macrocore Sampler	RISER CAP: N/A	
REMARKS: Boring was backfilled with bentonite and sand to 3 inches below grade and finished with asphalt patch.		

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
0	N	0-4	758	1.6 ft recovery	0.0-0.8: Coarse gravel fill material. Grey, dry.	CEMENT GROUT
1	O				0.8-1.6: Silty very fine sand with trace of clay. Green/grey, PHC odor.	NATIVE BACKFILL
2						BENTONITE SEAL
3	W					SAND PACK
4	E	4-8	204.4	2.5 ft recovery	4.0-4.3: Cave in gravel from above.	WELL SCREEN
5	L				4.3-4.7: Silty clay with trace of fine to very fine sand and fine gravel. Brown, dry.	RISER PIPE
6	L				4.7-5.9: Silty clay with gravel. Brown, dry.	HEAD SPACE
7					5.9-6.5: Silty fine sand and gravel. Green/grey, damp.	WATER LEVEL (APPROX)
8	I	8-12	615	1.0 ft recovery	8.0-9.0: Silt and clay with some very fine sand and gravel. Green/grey, damp. PHC odor.	
9	N				End of boring = 12.0 feet	
10	S				End of sampling = 12.0 feet	
11	T					
12	A					
13	L					
14	L					
15	E					
16	D					
17						
18						
19						
20						
21						
22						
23						
24						
25						

GRANULAR SOILS		COHESIVE SOILS		PROPORTIONS USED		NOTES:
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	TRACE	0-10%	
0-4	V.LOOSE	<2	V.SOFT	LITTLE	10-20%	
4-10	LOOSE	2-4	SOFT	SOME	20-35%	
10-30	M.DENSE	4-8	M.STIFF	AND	35-50%	
30-50	DENSE	8-15	STIFF			
>50	V.DENSE	15-30	V.STIFF			
		>30	HARD			

1. See Figure 2, SITE Plan, for boring locations
2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.



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1A Huntington Road, P.O. Box 719 Richmond, Vermont 05477
 (802) 434-3350 FAX: (802) 434-4478

MONITORING WELL/SOIL BORING LOG

WELL/BORING NO:	B-2	WELL DEPTH:	N/A	BORING DEPTH:	12.0 ft
PROJECT NAME:	Ehler's R.V. Center	DEPTH TO WATER:	N/A		
PROJECT NO:	97-095	SCREEN DIA:	N/A	DEPTH:	N/A
INSTALL DATE:	November 5, 1997	SCREEN TYPE/SIZE:	N/A		
TSEC REP:	Jon Berntsen	RISER TYPE:	N/A		
DRILLING CO:	TSEC	RISER DIA.:	N/A	DEPTH:	N/A
DRILLING METHOD:	Geoprobe®	GUARD TYPE:	N/A		
SAMPLING METHOD:	Macrocore Sampler	RISER CAP:	N/A		
REMARKS:	Boring was backfilled with bentonite and sand to 3 inches below grade and finished with asphalt patch.				

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
0	N	0-4	850	3.0 ft recovery	0.0-1.0: Asphalt and coarse gravel base. Black/grey, dry.	CEMENT GROUT
1	O				1.0-2.5: Sand and gravel fill material. Geotextile at 2.5 ft.	NATIVE BACKFILL
2					2.5-3.0: Silty very fine sand with trace of clay and fine gravel. Heavy PHC odor. Brown, dry.	BENTONITE SEAL
3	W					SAND PACK
4	E	4-8	856	4.0 ft recovery	4.0-8.0: Silt, clay, and fine sand. Dry, brown. Product sheen at 5.0 ft. Heavy PHC odor.	WELL SCREEN
5	L					RISER PIPE
6	L					HEAD SPACE
7						WATER LEVEL (APPROX)
8	I	8-12	303	1.0 ft recovery	8.0-8.5: Silt, clay, and fine sand. Dry, brown.	
9	N				8.5-9.0: Clayey silt and fine sand. Red/brown, saturated. PHC odor.	
10	S					
11	T					
12	A				End of boring = 12.0 feet End of sampling = 12.0 feet	
13	L					
14	L					
15	E					
16	D					
17						
18						
19						
20						
21						
22						
23						
24						
25						

GRANULAR SOILS		COHESIVE SOILS		PROPORTIONS USED		NOTES:
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	TRACE	0-10%	
0-4	V.LOOSE	<2	V.SOFT	LITTLE	10-20%	
4-10	LOOSE	2-4	SOFT	SOME	20-35%	
10-30	M.DENSE	4-8	M.STIFF	AND	35-50%	
30-50	DENSE	8-15	STIFF			
>50	V.DENSE	15-30	V.STIFF			
		>30	HARD			

1. See Figure 2, SITE Plan, for boring locations
 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.



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1A Huntington Road, P.O. Box 719 Richmond, Vermont 05477
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MONITORING WELL/SOIL BORING LOG

WELL/BORING NO:	B-3	WELL DEPTH:	15.5 ft	BORING DEPTH:	16.0 ft
PROJECT NAME:	Ehler's R.V. Center	DEPTH TO WATER:	14.0 ft on 11/5/97		
PROJECT NO:	97-095	SCREEN DIA:	1-inch	DEPTH:	10.5-15.5 ft bgs.
INSTALL DATE:	November 5, 1997	SCREEN TYPE/SIZE:	0.010 slot Schedule 40 PVC		
TSEC REP:	Jon Berntsen	RISER TYPE:	Schedule 40 PVC		
DRILLING CO:	TSEC	RISER DIA.:	1-inch	DEPTH:	0.5-10.5 ft bgs
DRILLING METHOD:	Geoprobe [®]	GUARD TYPE:	Flush mounted road box set in concrete		
SAMPLING METHOD:	Macrocore Sampler	RISER CAP:	Expansion plug		
REMARKS:	A ½ foot bentonite seal was placed in the bottom of the boring to seal off the bedrock from the overburden.				

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND	
0		0-4	35.1	3.0 ft recovery	0.0-1.0: Asphalt and gravel base. 1.0-3.0: Sandy fill material (UST cavity fill material). Tan, dry.	CEMENT GROUT NATIVE BACKFILL BENTONITE SEAL SAND PACK WELL SCREEN RISER PIPE HS HEAD SPACE WATER LEVEL (APPROX)	
1							
2							
3							
4			4-8	223	3.0 ft recovery	4.0-7.0: Sandy fill material (UST cavity fill material). Tan, dry.	
5							
6							
7							
8			8-12	484	4.0 ft recovery	8.0-10.0: Sandy fill material (UST cavity fill material). Tan, dry. 10.0-12.0: Silty sand with fine gravel and trace of clay. Brown. Saturated between 11.3-11.5 ft.	
9							
10							
11							
12			12-16	519	4.0 ft recovery	12.0-12.8: Silty sand with fine gravel and trace of clay. Brown. saturated. 12.8-13.0: Coarse sand. Tan, saturated. 13.0-14.5: Silty sand with fine gravel and trace of clay. Brown. saturated. 14.5-14.7: Coarse sand. Tan, saturated. 14.7-16.0: Silty sand with fine gravel and trace of clay. Brown. End of Sampling = 16.0 feet. End of Boring = 16.0 feet.	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
GRANULAR SOILS BLOWS/FT DENSITY 0-4 V.LOOSE 4-10 LOOSE 10-30 M.DENSE 30-50 DENSE >50 V.DENSE		COHESIVE SOILS BLOWS/FT DENSITY <2 V.SOFT 2-4 SOFT 4-8 M.STIFF 8-15 STIFF 15-30 V.STIFF >30 HARD		PROPORTIONS USED TRACE 0-10% LITTLE 10-20% SOME 20-35% AND 35-50%		NOTES: 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.	



TWIN STATE ENVIRONMENTAL CORPORATION

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MONITORING WELL/SOIL BORING LOG

WELL/BORING NO:	B-4	WELL DEPTH:	N/A	BORING DEPTH:	14.0 ft
PROJECT NAME:	Ehler's R.V. Center	DEPTH TO WATER:	N/A		
PROJECT NO:	97-095	SCREEN DIA:	N/A	DEPTH:	N/A
INSTALL DATE:	November 5, 1997	SCREEN TYPE/SIZE:	N/A		
TSEC REP:	Jon Berntsen	RISER TYPE:	N/A		
DRILLING CO:	TSEC	RISER DIA.:	N/A	DEPTH:	N/A
DRILLING METHOD:	Geoprobe®	GUARD TYPE:	N/A		
SAMPLING METHOD:	Macrocore Sampler	RISER CAP:	N/A		
REMARKS:	Boring was backfilled with bentonite and sand to 3 inches below grade and finished with asphalt patch.				

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
0	N	0-4	<1	2.0 ft recovery	0.0-1.0: Silty topsoil. Brown, wet.	
1	O				1.0-2.0: Fine to very fine sandy fill material. Brown, dry.	
2						
3	W					
4	E	4-8	<1	3.0 ft recovery	4.0-6.0: Medium to coarse sand and gravel fill. 6.0-6.1: Coarse cobble.	
5	L					
6	L				6.1-7.0: Silty sand with fine gravel and trace of clay. Brown, dry.	
7						
8	I	8-12	3.0	4.0 ft recovery	8.0-12.0: Silty very fine sand with some gravel. Brown. Wet layer from 10.0-10.4.	
9	N					
10	S					
11	T					
12	A	12-16	35.2	2.0 ft recovery	12.0-13.0: Silty fine sand. No odor. Brown. 13.0-14.0: Weathered bedrock. Wet, heavy PHC odor.	
13	L		581			
14	L					
15	E				Refusal at 14.0 feet	
16	D				End of boring = 14.0 feet End of sampling = 14.0 feet	
17						
18						
19						
20						
21						
22						
23						
24						
25						
GRANULAR SOILS		COHESIVE SOILS		PROPORTIONS USED		NOTES: 1. See Figure 2, SITE Plan, for boring locations 2. PID readings were obtained using a Thermo Environmental Instruments Model 580 B PID equipped with a 10.6eV lamp. Conventional headspace techniques were used.
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	TRACE	0-10%	
0-4	V.LOOSE	<2	V.SOFT	LITTLE	10-20%	
4-10	LOOSE	2-4	SOFT	SOME	20-35%	
10-30	M.DENSE	4-8	M.STIFF	AND	35-50%	
30-50	DENSE	8-15	STIFF			
>50	V.DENSE	15-30	V.STIFF			
		>30	HARD			