TWIN STATE ENVIRONMENTAL CORPORATION
Environmental Scientists and Engineers

AUG 08 2001

Phase (check one)	Type (check one)
☐ Initial Site Investigation	☐ Work Scope
☐ Corrective Action Feasibility Investigation	√ ***Technical Report***
☐ Corrective Action Plan	☐ PCF Reimbursement Request
☐ Corrective Action Summary Rpt	☐ General Correspondence
√ ***Operations & Monitoring Report***	

April and June 2001
SITE OPERATIONS SUMMARY REPORT

J&M Country Store
61 East Richford Slide Road
East Richford, Vermont

TSEC Project # 00069

Date Prepared: August 6, 2001

Prepared for:

Response Environmental, Inc.
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1.0 INTRODUCTION

This summary report has been prepared by Twin State Environmental Corporation (TSEC) to present a summary of TSEC's site operations through July 2001 at the J&M Country Store (SITE) located in East Richford, Vermont (see SITE Location Map, **Figure 1**, and SITE Plan, **Figure 2**).

On December 27, 2000, TSEC was asked by Response Environmental, Inc. (REI) to respond to a fuel oil release in the basement of the J&M Country Store at the address noted above. A summary of TSEC's recent soil vapor extraction, supplemental investigation, groundwater monitoring, and sampling activities is provided below.

2.0 BACKGROUND/PREVIOUS WORK

2.1 Site Location and Description

SITE Owner:	Mr. Jeff Tessier
SITE Address:	61 East Richford Slide Road, East Richford, VT
Lot Size:	Approximately 1-2 acres
Latitude:	45°00'39''
Longitude:	72°35'12"
Zoning:	Mixed
Utilities:	Overhead electric, on-SITE drilled water supply well, on-SITE septic system
Structures:	Two story wood frame building with full basement

2.2 Spill Background and Subsurface Investigations

On December 26, 2000, the store received a delivery of fuel oil from H.G. Berger & Son Oil Co. The driver reportedly delivered approximately 275 gallons of #2 fuel oil through a section of pipe protruding through the basement wall, which he mistakenly believed to be the product fill. An undetermined quantity of fuel oil product flowed across the basement floor into an earthen sump at the east corner of the basement. The sump location is depicted on **Figure 2**. Some product may also have seeped through the bottom edges of the hand-laid stone foundation, and some product soaked into porous structural beams and miscellaneous items stored in the basement. However, the majority of the fuel oil product appeared to have drained from the basement through the sump opening. Initial spill response efforts were summarized in TSEC's Spill Response and Subsurface Investigation Report.

During preliminary and supplemental subsurface investigations in December 2000 and February 2001, TSEC identified evidence of subsurface petroleum contamination beneath the concrete slab of the basement floor. Soil conditions consisted generally of fine to medium silty sand to approximately 3 feet below the basement floor. Fine to medium silty sand with gravel was encountered approximately 3 to 3.5 feet below floor grade. Refusal was generally encountered at 3.5 feet below floor grade. Groundwater was not observed in any of the borings.

Four monitoring wells (MW-1- through MW-4) were installed in locations outside the basement to evaluate potential impacts to groundwater quality from the spill (see **Figure 2**). Soil outside the basement generally consisted of fine to medium silty sand and sandy silt to a depth of approximately 8 feet below ground surface (bgs). At approximately 8 feet bgs, fine to coarse sands and gravel were encountered.

2.3 Source Removal

On January 2 and January 11, 2001, TSEC and REI conducted source removal activities. Environmental Products and Services (EPS) of Burlington, Vermont was contracted to remove a section of concrete floor beginning at the sump and to excavate contaminated soils using a Vactor truck. A total of approximately 11 cubic yards of petroleum-contaminated soil was transported off-SITE for treatment. TSEC estimates that approximately 30 to 50 gallons of sorbed #2 fuel oil were recovered by the source removal efforts.

2.4 Soil Vapor Extraction System Installation

On December 29, 2000, TSEC personnel constructed a soil vapor extraction (SVE) system in the store basement. SVE wells constructed of 3 to 3.5 feet of 1" diameter 0.010 slot screen were installed in three locations. These wells were plumbed into the existing regenerative blower inlet using 2" and 1.5" diameter schedule 40 PVC piping. Discharge piping from the blower was connected to a 55-gallon vapor phase carbon drum to adsorb petroleum hydrocarbons from the extracted air prior to venting to the atmosphere. On January 12, 2001, TSEC installed a series of horizontal SVE lines under the foundation to improve vapor recovery from the subsurface. Eight (8) horizontal legs constructed of 1" diameter 0.010 slot PVC screen were installed and plumbed to a solid 2" schedule 40 PVC manifold line to the SVE blower. The horizontal pipes were backfilled with crushed stone to the base of the concrete floor and covered with polyethylene sheeting.

SVE system operations from December 2000 through February 13, 2001 were summarized in TSEC's Spill Response and Subsurface Investigation Report.

3.0 ADDITIONAL SUPPLEMENTAL INVESTIGATION

3.1 Advancement of Soil Borings

On May 23, 2001, TSEC conducted a supplemental soil boring program focused on the area behind the store. The well locations are depicted on **Figure 2** and boring logs are presented in **Appendix A**. Two soil borings were advanced by Environmental Drilling of New York, Inc. using a track-mounted Geoprobe® drill rig. Both borings were converted to monitoring wells (MW-5 and MW-6). Refusal was encountered during boring advancement for well MW-5 at approximately 9.9 feet bgs. Refusal was encountered during boring advancement for well MW-6 at approximately 9.5 feet bgs.

Soil conditions consisted of approximately 8 to 9 feet of fine to medium sands atop a layer of sandy, silty clay of undetermined thickness. No petroleum odors were detected in either location. PID readings were not taken due to a malfunctioning instrument.

3.2 SITE Survey

A Topcon AT-G6 auto level was used to perform a stadia survey to identify the location of the newly-installed monitoring wells. The collected data was used to update the SITE Plan (**Figure 2**).

4.0 SVE SYSTEM OPERATION

TSEC conducted SVE system monitoring at least monthly from February through July 2001. Three system shutdowns occurred in April and June 2001. These shutdowns appear to have occurred when the store owner unplugged the SVE blower from its power source. No other system shutdowns occurred during the reporting period.

A summary of the SVE system readings and recovery rates is provided as **Table 6**. The results show that flow rates from the subsurface have ranged from 64 to 97 actual cubic feet per minute (acfm). Based on PID readings, flow rates, and pressure readings, TSEC estimates that approximately 15.3 gallons of equivalent liquid fuel oil were recovered by the SVE system through July 19, 2001.

TSEC also conducted a shutdown test on the system in early July 2001. The system was intentionally left off for a period of approximately 2 weeks. After the intentional shutdown, TSEC conducted a startup test to evaluate the degree of rebound in petroleum vapor concentrations that occurs when the SVE system in not operating. The startup test data are summarized in the table below:

Date/Time	PID Concentration (ppmv)
7/12/01 10:55, prior to startup	60.7
7/12/01 10:56	34.4
7/12/01 11:10	19.9
7/19/01	0.0-1.2

Based on the results of the startup test, it appears that petroleum vapors accumulate beneath the basement slab in the absence of SVE system operation. However, when extracted by the current blower, the concentrations rapidly decline. This suggests that the rate of vapor diffusion in the soil is significantly less than the flow rate of the existing SVE blower. TSEC turned the SVE system off on July 19th and recently submitted a proposal to replace the existing regenerative blower with a small in-line fan.

4.1 Indoor Air PID Readings

PID readings collected of ambient air in the basement, store, and upstairs apartment are summarized on **Table 5**. As indicated, PID readings in the basement have remained low (1.2 ppmv) to non-detectable since February, 2001.

5.0 GROUNDWATER MONITORING AND SAMPLING

TSEC conducted groundwater sampling at this SITE on April 13 and June 26, 2001. Depth to groundwater measurements and groundwater samples were collected from all accessible on-SITE monitoring wells that contained sufficient water for sampling. No free phase product was detected during either monitoring event.

To allow for the collection of a representative groundwater sample, each well was purged of three (3) volumes of water with a dedicated bailer. Purge water from all wells was discharged directly to the ground surface. Sampling at each monitoring well was conducted with the use of a dedicated bailer.

Endyne, Inc. located in Williston, Vermont, performed all laboratory analyses for these monitoring events.

5.1 Groundwater Elevation and Flow Direction

Groundwater elevation data from the April 13 and June 26, 2001 monitoring events is presented in **Tables 1** and **3**. Groundwater Contour Plans are provided as **Figures 3** and **5**.

On April 13th, depth to water levels ranged from 7.75 to 12.62 feet below top of casing (btoc) in wells MW-4 and MW-1, respectively. In general, the water table elevation was approximately 4.8 feet higher than the February 2001 sampling round. Groundwater levels were below the top of the well screen in all wells measured.

On June 26th, depth to water levels ranged from 9.84 to 16.18 feet btoc in wells MW-5 and MW-2, respectively. The water table elevation was approximately 2.9 feet lower than the April 2001 sampling round. Groundwater levels were below the top of the well screen in all wells measured, and wells MW-4 and MW-6 were dry. Well MW-5 contained insufficient water (0.16 feet) for sampling.

Groundwater underlying the SITE on April 13th has been calculated to flow generally to the northwest with a horizontal hydraulic gradient of approximately 0.018 feet/foot between MW-3 and MW-2.

On June 26th, groundwater has been interpreted to flow to the southwest with a horizontal hydraulic gradient of approximately 0.047 feet/foot between MW-1 and MW-2.

5.2 Analytical Results

The laboratory analytical results for April 13th and June 26th are summarized in **Tables 2** and **4**. The April 13th BTEX distribution plan is presented as **Figure 4**, and the June 26th BTEX distribution plan is presented as **Figure 6**. The analytical laboratory reports are provided in **Attachment 1**.

The maximum dissolved concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) was detected in MW-1 at 31 micrograms per liter (µg/l) on April 13th and 7.8 µg/l on June 26th. MW-1 is located on the southern edge of the J&M Country Store, nearest to the basement sump opening. BTEX was not detected above the method detection limits (MDLs) in any other sample analyzed.

Methyl tertiary-butyl ether (MTBE) was not detected above the MDL in any of the samples analyzed, although the MDL for MW-1 was raised on April 13th to 20 µg/l due to laboratory dilution.

1,3,5-trimethylbenzene (135 TMB) was detected above the Vermont Groundwater Enforcement Standard (VGES) of 4.0 µg/l in well MW-1 on April 13th at 27 µg/l, and on June 26th at 9.3 µg/l. 135 TMB was not detected above the MDL in any other sampled well.

1,2,4-trimethylbenzene (124-TMB) was detected above the VGES (5.0 µg/l) in MW-1 on April 13th at 65 µg/l and on June 26th at 11 µg/l. 124 TMB was not detected above the MDL in any other sample submitted for laboratory analysis.

Naphthalene was detected above the VGES in well MW-1 on April 13th at 26 µg/l. On June 26th, naphthalene was detected above the MDL in MW-1 at 6.6 µg/l. Naphthalene was not detected above the MDL in any of the other sampled wells.

Total petroleum hydrocarbons as diesel range organics (TPH DRO) was detected above the MDL in well MW-1 on April 13th at 2,230 µg/l, and on June 26th at 6.27 µg/l. TPH DRO was not detected above the MDL in any other samples submitted.

Since the February 2001, BTEX and MTBE levels have fluctuated as follows:

Well Location	BTEX		TPH		Product Present	
	April	June	April	June	April	June
MW-1	na	-	na	+	¼"	no
MW-2	nc/nd	nc/nd	nc/nd	nc/nd	no	no
MW-3	-	nc/nd	-	nc/nd	no	no
MW-4	na	ns	na	ns	no	no
MW-5	ns	na	ns	na	ns	no
MW-6	ns	na	ns	na	ns	no
Supply Well	nc/nd	nc/nd	ns	ns	no	no

+ increase - decrease nc no change nd not detected
ns not sampled na not applicable because well was not sampled last sampling round

5.2.1 QA/QC Results

The laboratory data was evaluated for the following parameters prior to acceptance for this report:

- correct sample IDs;
- analysis date within method specified holding time;
- correct reporting units;
- acceptable detection limit multipliers; and,
- acceptable surrogate recoveries (where applicable).

All of the above-listed parameters were found to be acceptable upon review of the laboratory analytical reports.

6.0 CONCLUSIONS

Based on the data collected to date, TSEC offers the following conclusions:

- Approximately 275 gallons of fuel oil were released to the basement of the J&M Country store on December 26, 2000. The majority of the product impacted the subsurface through an unlined sump in the east corner of the basement.

- Based on laboratory analytical results, a total of 30 to 50 gallons of #2 fuel oil may have been recovered by the excavation and off-SITE treatment of approximately 11 cubic yards of contaminated soil from beneath the basement slab.

- TSEC estimates that approximately 15.3 gallons of equivalent liquid gallons of #2 fuel oil have been recovered by the SVE system.

- The soil vapor extraction system installed during the initial emergency response has successfully reduced vapor impacts to indoor air to non-detectable PID levels.

- An SVE system shutdown test conducted in early July 2001 suggested that the flow rate of the existing SVE blower exceeds the rate of vapor diffusion in the subsurface. TSEC recommended replacement of the existing regenerative blower with a small in-line fan in recent correspondence.

- Six monitoring wells have been installed at the SITE to determine the degree and extent of groundwater contamination. Petroleum-related compounds were detected in well MW-1 during the April and June 2001 sampling events. The concentrations of 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene detected in MW-1 in April and June, 2001 exceeded the applicable VGES. The concentration of naphthalene in MW-1 in April 2001 also exceeded the applicable VGES.

- Approximately ¼" of free product was measured in MW-1 on February 22, 2001. No free product has been detected in any of the on-SITE monitoring wells during subsequent groundwater monitoring events.

- No petroleum-related compounds were detected above the MDLs in samples collected from the SITE supply well (prior to the store's sulfur treatment system) in April or June 2001.

7.0 RECOMMENDATIONS

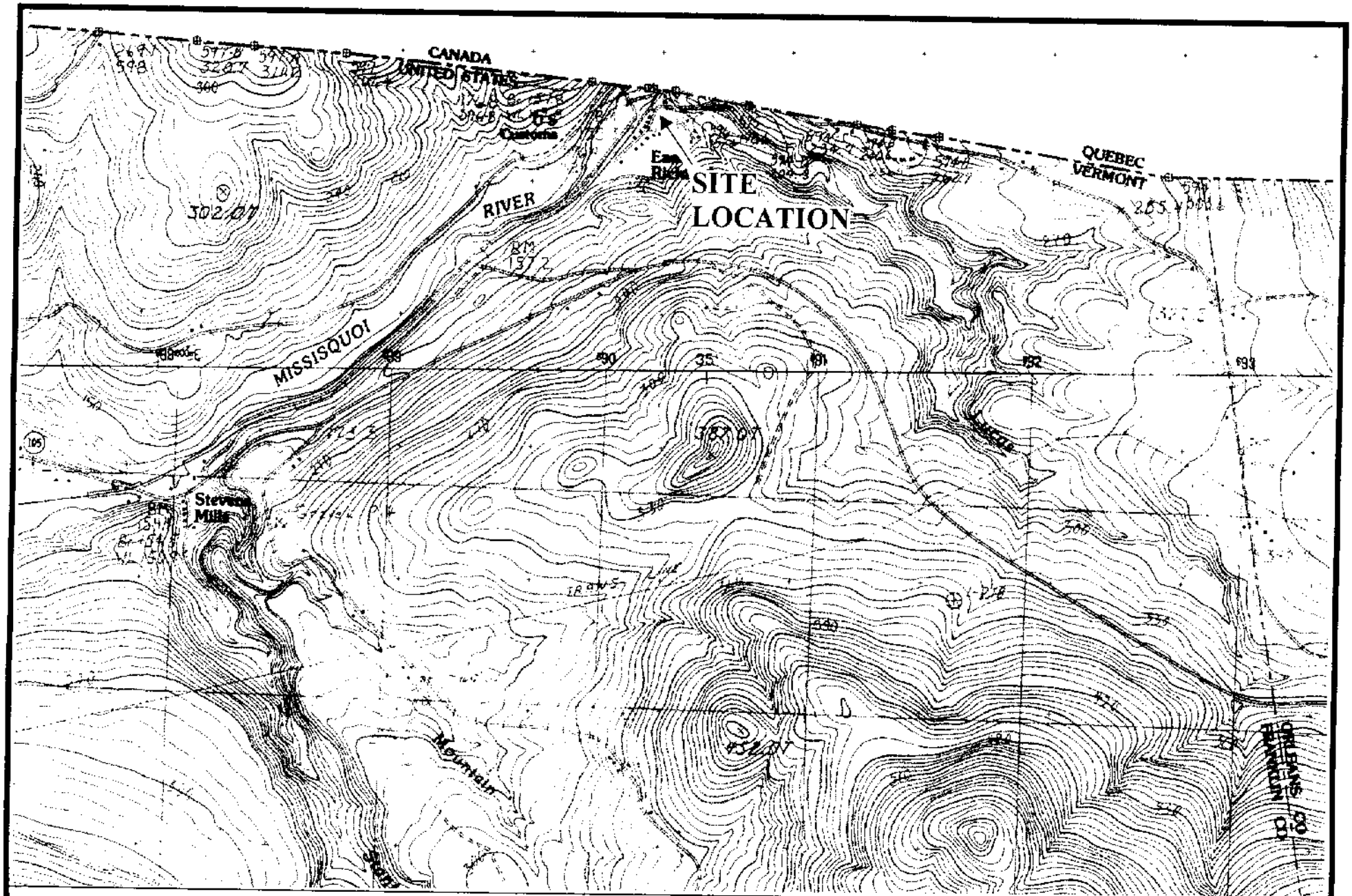
Based on the SITE conditions, TSEC recommends the following:

- Replacing the existing SVE blower with an in-line fan until influent vapor concentrations decline to less than 1.0 ppmv by PID for three consecutive monitoring events. TSEC recommends monthly SITE visits to perform required maintenance, monitor vapor levels, vacuums, and flow rates, and check for breakthrough of the vapor phase carbon drum.

- Water level and product thickness monitoring of the six (6) on-SITE monitoring wells on a monthly basis in conjunction with SVE system monitoring.

- An additional round of groundwater sampling should be scheduled for September 2001. Samples should be collected from MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and the supply well (prior to the treatment system). A duplicate sample from well MW-1 and a field blank will also be collected for QA/QC purposes. Monitoring well samples will be analyzed for volatile organic compounds (VOCs) by EPA Method 8021B and for TPH DRO by EPA Method 8015 DRO. The SITE supply well sample will be analyzed for VOCs by EPA Method 524.2. The results of this sampling event will be used to evaluate the appropriate frequency of future groundwater sampling at the SITE.

FIGURES



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SCALE
1":2,000'

SOURCE: USGS 15' Quadrangle
Springfield, VT 1968

TSEC Project #00069

DRAWN BY: JBA
CHECKED BY: ___
APPROVED BY: ___
DATE: 03/20/01
SCALE: 1" = 2000'

TWIN STATE ENVIRONMENTAL CORP.
414 Roosevelt Highway - Suite 200
Colchester, Vermont 05446
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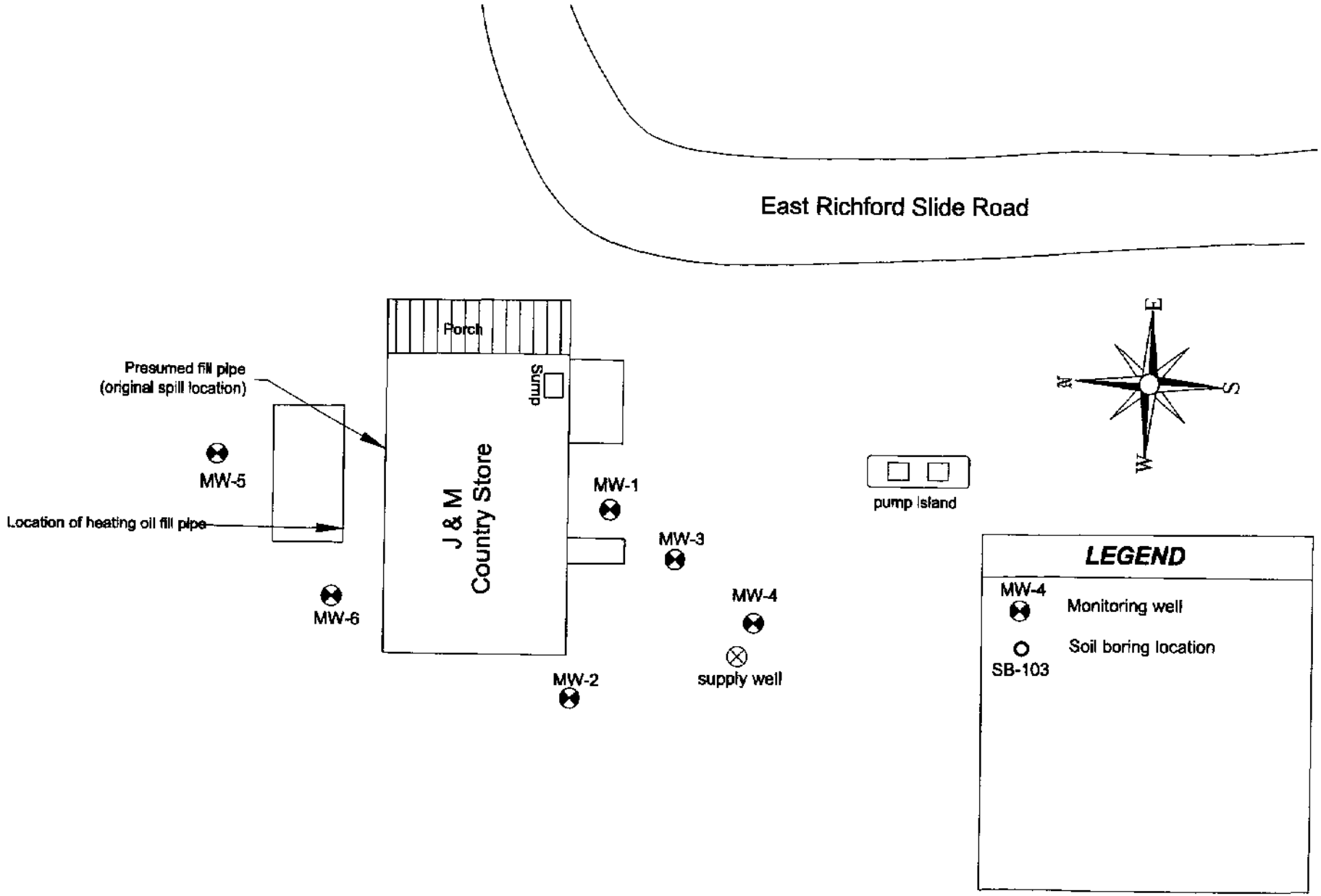
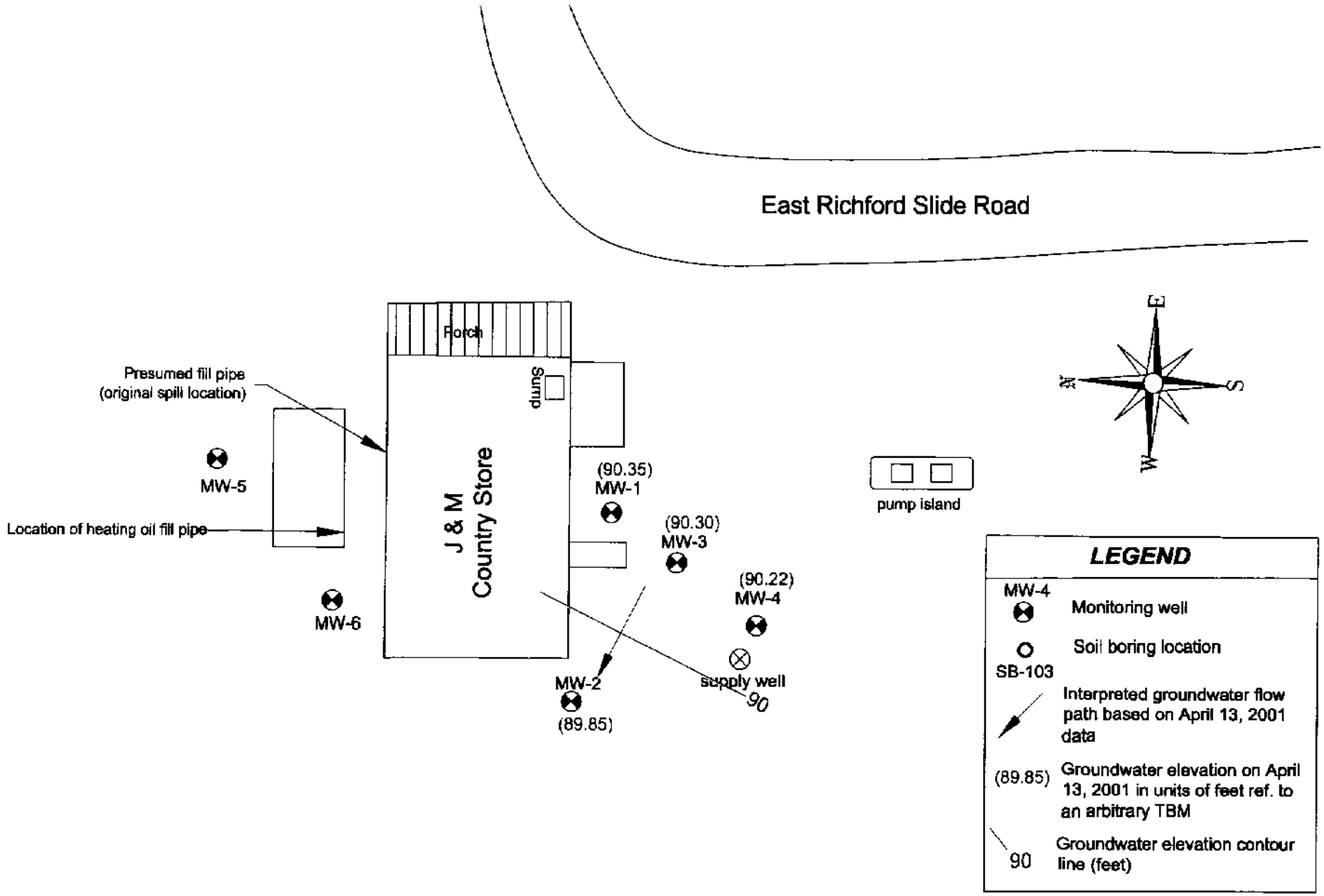
FIGURE 1
SITE LOCATION MAP

J&M Country Store
East Richford, Vermont



TSEC Project #000069	DRAWN BY: CJA CHECKED BY: JBA APPROVED BY: ____ DATE: 07/16/01 SCALE: 1" = 20'	**TWIN STATE ENVIRONMENTAL CORP.** 414 Roosevelt Highway - Suite 200 Colchester, Vermont 05446 (802) 654-8663	**FIGURE 2** **Site Plan** J & M Country Store East Richford, Vermont



TSEC Project #000069

DRAWN BY: CJA
CHECKED BY:
APPROVED BY:
DATE: 07/16/01
SCALE: 1" = 20'

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Colchester, Vermont 05446
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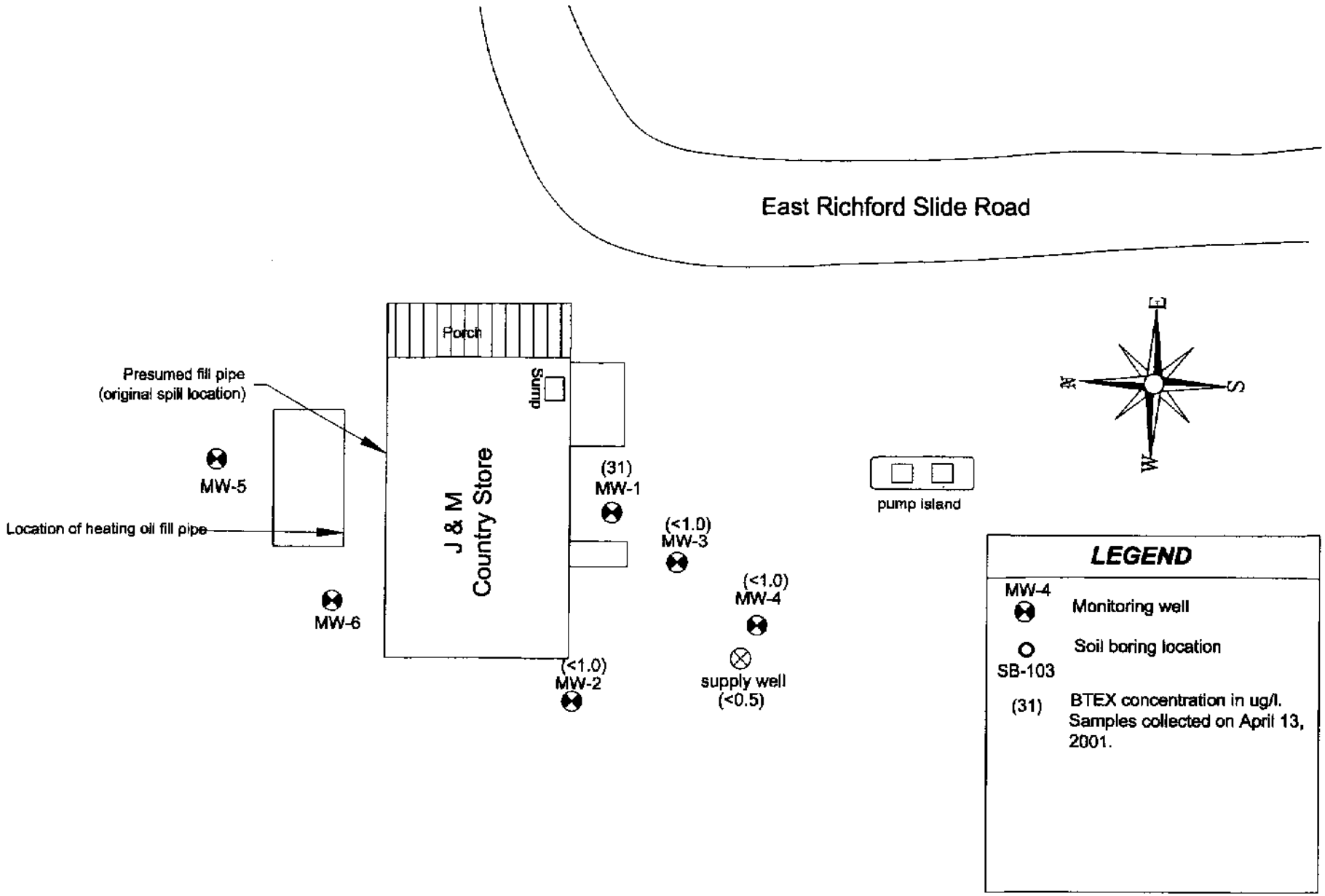
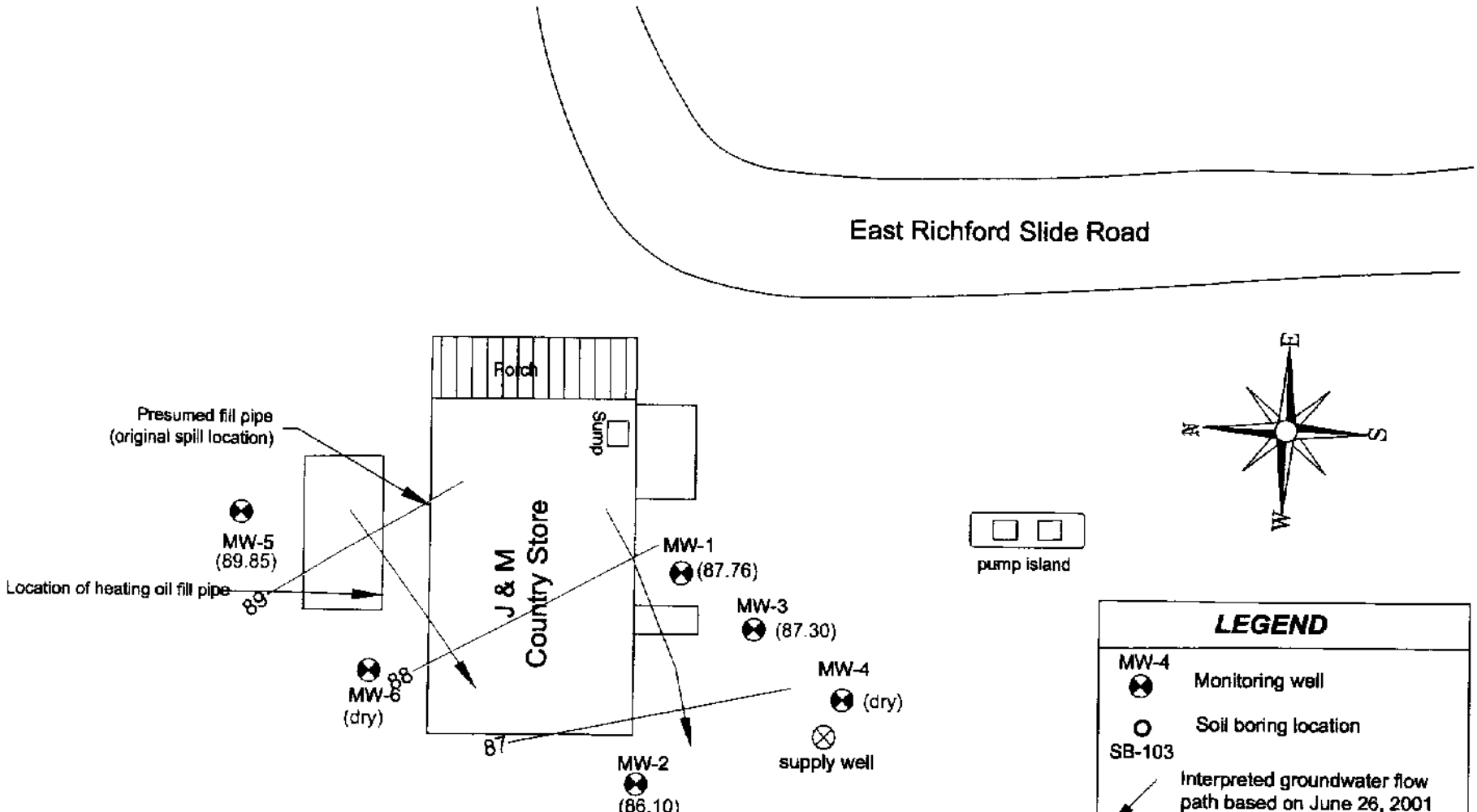
FIGURE 3
Groundwater Contour Plan
April 13, 2001
J & M Country Store
East Richford, Vermont



TSEC Project #000069	DRAWN BY: CJA CHECKED BY: JBA APPROVED BY: ___ DATE: 07/16/01 SCALE: 1" = 20'	**TWIN STATE ENVIRONMENTAL CORP.** 414 Roosevelt Highway - Suite 200 Colchester, Vermont 05446 (802) 654-8663	**FIGURE 4** **BTEX Distribution Plan** April 13, 2001 J & M Country Store East Richford, Vermont



TSEC Project #000069

DRAWN BY: CJA
CHECKED BY: JBA
APPROVED BY: ___
DATE: 07/16/01
SCALE: 1" = 20'

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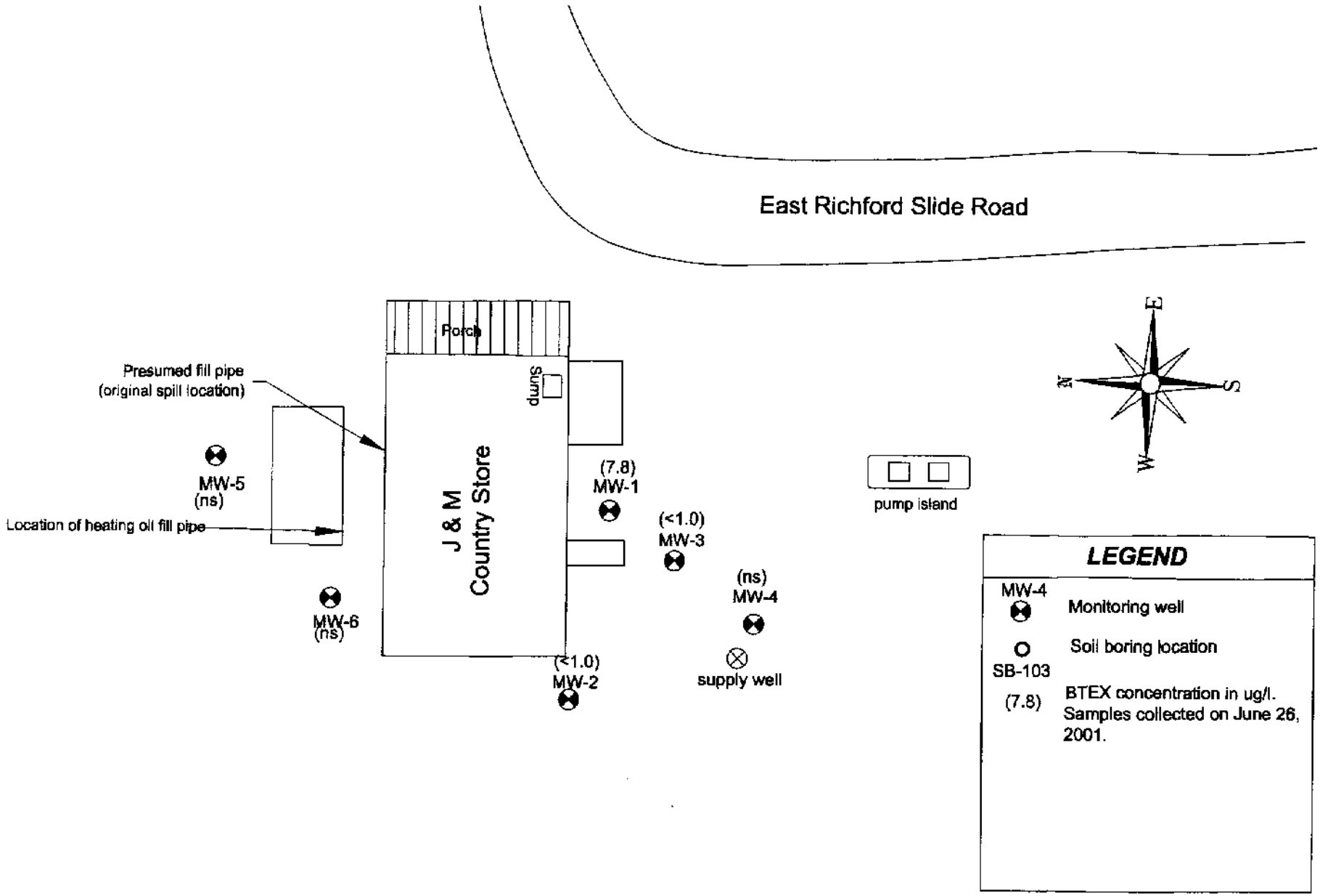
414 Roosevelt Highway - Suite 200
Colchester, Vermont 05446
(802) 654-8663

FIGURE 5
Groundwater Contour Plan
June 26, 2001
J & M Country Store
East Richford, Vermont



TSEC Project #00089	DRAWN BY: CJA CHECKED BY: JBA APPROVED BY: ___ DATE: 07/16/01 SCALE: 1" = 20'	**TWIN STATE ENVIRONMENTAL CORP.** 414 Roosevelt Highway - Suite 200 Colchester, Vermont 05446 (802) 654-8663	**FIGURE 6** **BTEX Distribution Plan** June 26, 2001 J & M Country Store East Richford, Vermont

TABLES

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS

J & M Store
East Richford, Vermont

April 13, 2001

well identification	top of PVC casing elevation	depth to water (ft)	depth of well (ft)	thickness of water table in well (ft)	product thickness (inches)	LNAPL correction factor	corrected depth to water (ft)	Water Table Elev. (ft)
MW-1	102.97	12.62	21.02	8.40	Sheen	0.00	12.62	90.35
MW-2	102.28	12.43	18.70	6.27	nd	0.00	12.43	89.85
MW-3	98.42	8.12	13.45	5.33	nd	0.00	8.12	90.30
MW-4	97.97	7.75	9.90	2.15	nd	0.00	7.75	90.22
	Average depth to water is		***10.23***	***feet***				

Water level is approximately *4.75* *feet higher than Feb. 2001*

LNAPL Correction Factor

$$CDTW = MDTW - \frac{\rho_{lnapl}}{\rho_w} * PT$$

Where:

- CDTW - corrected depth to water (feet)
- MDTW - measured depth to water (feet)
- ρ_{lnap} - density of LNAPL (0.74 g / ml for gasoline)
- ρ_w - density of water (1.0 g/ml)
- PT - measured LNAPL thickness (feet)

Notes:

1. *Elevation data based on an assumed datum expressed in feet and referenced to an onsite TBM.*
2. *nd - Not detected, ns - Not sampled*
3. *nt - Not tested due to damage or inaccessibility*
4. *Measurements recorded are referenced to a marking on top of the PVC riser.*
5. *Depth to fluid measurements in feet, were obtained using an electronic Solinst Interface Probe.*

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TWIN STATE ENVIRONMENTAL CORPORATION

TABLE 2

SUMMARY OF GROUNDWATER QUALITY

J & M Store
East Richford, Vermont

April 13, 2001

Compound	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX	MTBE	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Naphthalene	TPH DRO
Sample ID	Concentration (ug/L)									(mg/L)
MW-1	<2.0	<2.0	2.5	28	31	<20	***27***	***65***	***26***	2.23
MW-2	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
MW-3	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
MW-4	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
Supply Well	<0.5	<0.5	<0.5	<0.5	--	<1.0	<0.5	<0.5	<0.5	ns
VGES	5.0	1,000	700	10,000	ne	40	4.0	5.0	20	ne

Notes:

1. VGES - Vermont Groundwater Enforcement Standard.
2. ne - VGES not established.
3. **Bold** and *Italic* numbers indicate concentrations that exceed VGES.
4. All samples were analyzed for VOC's via US EPA Method 8021B.
5. ns - not sampled.
6. nt - not tested.

TABLE 3
SUMMARY OF GROUNDWATER ELEVATIONS

J & M Store
East Richford, Vermont

June 26, 2001

well identification	top of PVC casing elevation	depth to water (ft)	depth of well (ft)	thickness of water table in well (ft)	product thickness (inches)	LNAPL correction factor	corrected depth to water (ft)	Water Table Elev. (ft)
MW-1	102.97	15.21	21.02	5.81	Sheen	0.00	15.21	87.76
MW-2	102.28	16.18	18.70	2.52	nd	0.00	16.18	86.10
MW-3	98.42	11.12	13.45	2.33	nd	0.00	11.12	87.30
MW-4	97.97	dry	9.90	--	nd	0.00	--	--
MW-5	99.69	9.84	10.00	0.16	nd	0.00	9.84	89.85
MW-6	100.48	dry	11.00	--	nd	0.00	--	--
	Average depth to water is		***13.09***	***feet***				
	Water level is approximately		*2.86*	*feet lower than April 2001*				

LNAPL Correction Factor

$$CDTW = MDTW - \frac{\rho_{lnapl}}{\rho_w} * PT$$

Where:

- CDTW - corrected depth to water (feet)
- MDTW - measured depth to water (feet)
- ρ_{lnapl} - density of LNAPL (0.74 g / ml for gasoline)
- ρ_w - density of water (1.0 g/ml)
- PT - measured LNAPL thickness (feet)

Notes:

1. *Elevation data based on an assumed datum expressed in feet and referenced to an onsite TBM.*
2. *nd - Not detected, ns - Not sampled*
3. *nt - Not tested due to damage or inaccessibility*
4. *Measurements recorded are referenced to a marking on top of the PVC riser.*
5. *Depth to fluid measurements in feet, were obtained using an electronic Solinst Interface Probe.*

TABLE 4

SUMMARY OF GROUNDWATER QUALITY

J & M Store
East Richford, Vermont

June 26, 2001

Compound	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX	MTBE	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Naphthalene	TPH DRO
Sample ID	Concentration (ug/L)									(mg/L)
MW-1	<1.0	<1.0	<1.0	7.8	7.8	<10	***9.3***	***11***	6.6	6.27
MW-2	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
MW-3	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
MW-4	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
MW-5	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
MW-6	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Supply Well	<1.0	<1.0	<1.0	<1.0	--	<10	<1.0	<1.0	<1.0	<0.4
VGES	5.0	1,000	700	10,000	ne	40	4.0	5.0	20	ne

Notes:

1. VGES - Vermont Groundwater Enforcement Standard.
2. ne - VGES not established.
3. **Bold** and *Italic* numbers indicate concentrations that exceed VGES.
4. All samples were analyzed for VOC's via US EPA Method 8021B and/or 8015B.
5. ns - not sampled.
6. nt - not tested.

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TWIN STATE ENVIRONMENTAL CORPORATION

TABLE 5
Indoor Air PID Readings

Project Name: J&M Country Store
Project #: 00-069
Date: 08/02/2001
By: Jonathan Ashley

	PID Readings of Ambient Air (ppmv)		
Date	**Basement**	**Store**	**Notes**
12/27/2000	37	19	Readings collected after removing oil-stained materials
12/28/2000	20	10	Readings collected after ventilation blower ran overnight
12/28/2000	6.7	3.3	Readings collected after basement bulkhead open all day
12/29/2000	7.6	3.9	Connected SVE wells after readings collected
01/02/2001	1.5	1.5	Readings collected before sump excavation work
01/05/2001	1.5	ND	Readings collected upon arrival
01/09/2001	ND	ND	Readings collected after installing basement borings
01/11/2001	ND	ND	Readings collected before and after excavation work
01/15/2001		ND	Slight petroleum odor in store
01/22/2001	ND	ND	
01/26/2001	ND		
01/31/2001	ND	ND	SVE blower off on arrival, fuel oil odor in basement
03/21/2001	1.2		SVE system operating on arrival
04/13/2001	ND		SVE system operating on arrival
05/08/2001			SVE system off on arrival
06/26/2001	ND		SVE system off on arrival

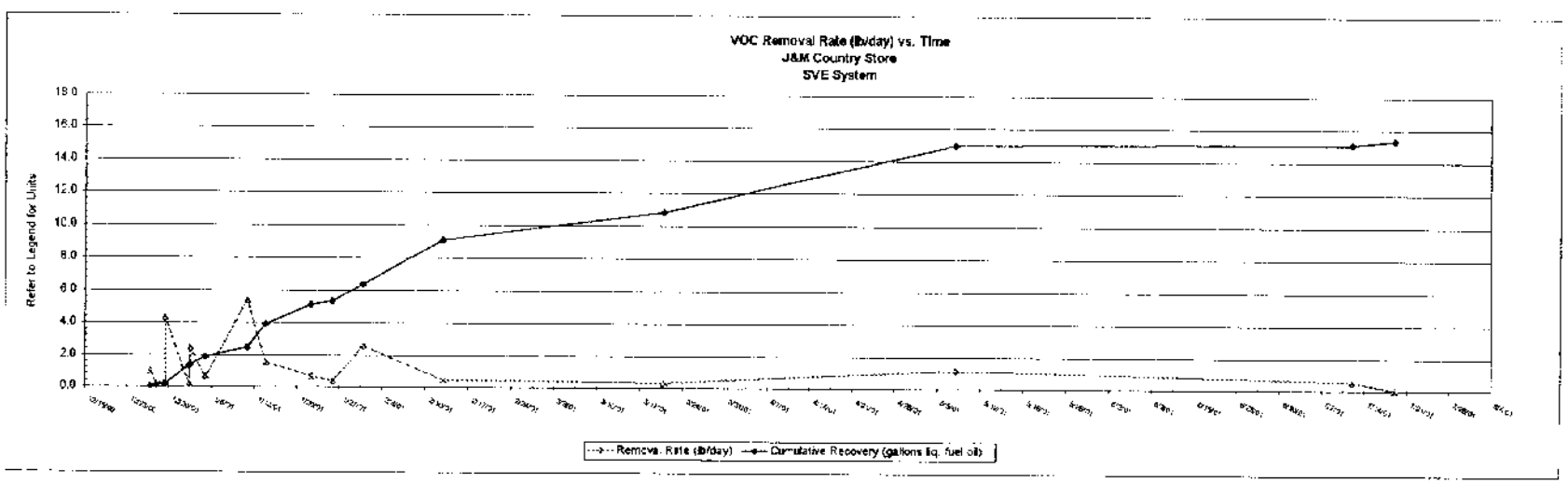
Notes:
1) ND = Not detected

TABLE 6
SVE System Readings

Project Name: J&M Country Store
Project #: 00-069
Date: 08/02/2001
By: Jonathan Ashley

Date	Applied Vac.[5]	PID[4]	velocity	flow[1]	temp	abs. Temp.	pressure	abs. Pressure	flow	removal rate			cumulative	equivalent fuel oil (liquid gallons)	notes
	("H_2O)	ppmv	fpm	scfm	deg F	deg K	"H_2O	atm	acfm	lb/day[2]	gal/day[3]	lb/day (avg)	removal (lbs)		
12/27/2000		28	5,800	80	68.5	293	11	1.00	86	1.0	0.14	1.0	0.0	0.0	Venting ambient basement air only
12/28/2000		5.6	5,800	80	68.5	293	11	1.00	86	0.2	0.03	0.6	0.6	0.1	
12/29/2000		7.9	5,800	80	68.5	293	11	1.00	86	0.3	0.04	0.2	0.9	0.1	
12/29/2000		85	5,300	121	47.7	282	11	1.00	125	4.3	0.6	0.3	0.9	0.1	Venting from: Sump#1, Basement #1, and Fill Port
01/02/2001		3.0	5,500	126	50	283	10.5	1.00	131	0.2	0.02	2.2	9.5	1.3	
01/02/2001		47	5,500	126	50	283	12	1.00	131	2.5	0.35	1.3	9.8	1.4	
01/05/2001		11	5,500	126	50	283	11.3	1.00	131	0.6	0.08	1.9	13	1.9	
01/12/2001		145	3,900	89	50	283	9.0	1.01	93	5.4	0.76	0.6	17	2.5	Venting from horizontal SVE legs
01/15/2001	22	42	3,900	89	50	283	9.0	1.02	91	1.5	0.22	3.5	28	3.9	
01/22/2001	22	20	3,600	82	50	283	7.6	1.02	84	0.7	0.09	1.1	36	5.1	
01/22/2001	39.5	24	2,700	62	50	283	5.0	1.01	63	0.6	0.09	0.6	36	5.1	
01/26/200'	22	10	3,800	87	50	283	8.0	1.02	90	0.4	0.05	0.5	38	5.3	
01/31/200'	22	74	3,600	82	50	283	7.8	1.02	86	2.6	0.36	1.5	45	6.4	
02/13/2001	22	13	3,600	82	50	283	7.8	1.02	84	0.4	0.06	1.5	65	9.1	
02/2'/2001	System shutdown occurred, blower replaced on 2/23/01														
03/2'/2001	19	7.6	3,900	89	85	303	7.2	1.02	97	0.3	0.04	0.4	77	10.8	
03/23/2001	nt	22	nt	nt	nt	nt	nt	nt	nt		nt	nt			Change Vapor phase carbon
04/'3/2001	nt	9.3	nt	nt	nt	nt	nt	nt	nt		nt	nt			
04/30/2001	Estimated date of system shutdown, power shut off by store owner														
05/08/2001	20	30	4,000	92	50	283	nt	1.00	96	1.1	0.16	0.7	106	14.9	System off upon arrival
06/01/2001	Estimated date of system shutdown, power shut off by store owner														
06/25/2001	nt	145	nt	nt	nt	nt	nt	nt	nt		nt	nt			System off upon arrival
06/27/2001	Estimated date of system shutdown, power shut off by store owner														
07/12/2001	18	19.9	2,700	62	48	282	nt	1.00	64	0.5	0.07	0.8	107	15.1	System off upon arrival
07/19/2001	19	0.6	3,000	69	47	281	nt	1.00	71	0.02	0.002	0.3	109	15.3	System on upon arrival/ system shut down upon departure

Notes:
1. *Flow rate (scfm) = e.s.a * fpm, where esa is for 1.5" or 2" sch 40 pipe.*
2. *Conc. (lbs/day) = focac (ppmv) x flow rate (cfm) x conversion factor(s).*
3. *Density of fuel oil est. at 7.09 lb/gal.*
4. *PID reading collected at influent to carbon*
5. *Applied vacuum measured at the well head*
6. *NR = No reading collected.*



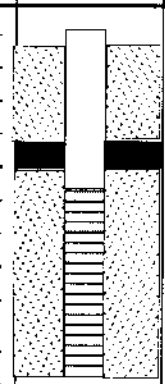
APPENDIX A

TWIN STATE ENVIRONMENTAL
414 Roosevelt Highway Colchester, Vermont 05446
(802) 654-8663 FAX: (802) 654-8667

MONITORING WELL/SOIL BORING LOG

Project Name:	**Richford Spill**	WELL/ BORING ID:
Location:	**Richford, Vermont**	**MW-5**
TSEC Project #:	**00069**	

INSTALL DATE:	May 23, 2001	WELL DEPTH: 9.9 ft	BORING DEPTH: 9.9 ft
TSEC REP:	Cris Altman	DEPTH TO WATER: (during drilling)	8-9.9 ft
DRILLING CO:	TSEC Colchester, VT	SCREEN DIA: 1-inch	DEPTH: 5.0-10.0 ft bgs
		SCREEN TYPE/SIZE:	0.010-slot Schedule 40 PVC
DRILLING METHOD:	Geoprobe® Tools	RISER TYPE:	Schedule 40 PVC - Solid riser
SAMPLING METHOD:	Macrocore	RISER DIA.: 1-inch	DEPTH: 0-5.0 ft
REFERENCE POINT (RP):	Grade	GUARD TYPE:	NA
ELEVATION OF RP:		RISER CAP:	Locking expansion plug
REMARKS:	Boring was completed as a monitoring well.		

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES*
0					
1					
2					
3					
4		0-4	nt*[2]	2.4' recovery	0.0-2.4': Fine to medium SAND, brown to dark brown, firm, moist, no odor.
5					
6					
7					
8		4-8	nt*[2]	2.9' recovery	0.0-2.9': Fine to medium SAND, brown, firm, moist to wet @ tip!,no odor.
9					
10					
11					
12		8-12	nt*[2]	1.9' recovery	0.0-1.3': Fine to medium SAND, brown, firm, wet, no odor. 1.3-1.9': Fine to medium SAND, brown to red, firm, wet, no odor Refusal at 9.9 feet. End of Sampling = 9.9 feet End of Boring = 9.9 feet
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

LEGEND: CEMENT GROUT; NATIVE BACKFILL; BENTONITE SEAL; SAND PACK; WELL SCREEN; RISER PIPE; HS HEAD SPACE; WATER LEVEL (APPROXIMATE)

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. nt - PID readings were not obtained due to malfunction.

TWIN STATE ENVIRONMENTAL
414 Roosevelt Highway Colchester, Vermont 05446
(802) 654-8663 FAX: (802) 654-8667

MONITORING WELL/SOIL BORING LOG

Project Name: **Richford Spill**
Location: **Richford, Vermont**
TSEC Project #: **00069**

WELL/ BORING ID: **MW-6**

INSTALL DATE:	May 23, 2001	WELL DEPTH: 9.5 ft	BORING DEPTH: 9.5 ft
TSEC REP:	Cris Altman	DEPTH TO WATER: (during drilling)	8-9.5 ft
DRILLING CO:	TSEC Colchester, VT	SCREEN DIA: 1-inch	DEPTH: 5.0-10.0 ft bgs
		SCREEN TYPE/SIZE:	0.010-slot Schedule 40 PVC
DRILLING METHOD:	Geoprobe® Tools	RISER TYPE:	Schedule 40 PVC Solid riser
SAMPLING METHOD:	Macrocore	RISER DIA.: 1-inch	DEPTH: 0-5.0 ft
REFERENCE POINT (RP):	Grade	GUARD TYPE:	NA
ELEVATION OF RP:		RISER CAP:	Locking expansion plug
REMARKS:	Boring was completed as a monitoring well.		

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES*
0					
1					
2					
3					
4		0-4	nt*[2]	1.9' recovery	0.0-1.9': Fine to medium silty SAND, tan to brown, firm, moist, no odor.
5					
6					
7					
8		4-8	nt*[2]	2.9' recovery	0.0-2.9': Fine to medium silty SAND, tan to brown, firm, moist (wet@ tip),no odor.
9					
10					
11					
12		8-12	nt*[2]	1.5' recovery	0.0-1.5': Silty CLAY, brown to orange, firm, wet, some weathered shale and quartz, no odor.
13					
14					Refusal at 9.5 feet.
15					End of Sampling = 9.5 feet
16					End of Boring = 9.5 feet
17					
18					
19					
20					
21					
22					
23					
24					
25					

LEGEND: CEMENT GROUT; NATIVE BACKFILL; BENTONITE SEAL; SAND PACK; WELL SCREEN; RISER PIPE; HS HEAD SPACE; WATER LEVEL (APPROXIMATE)

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. nt - PID readings were not obtained due to malfunction.

ATTACHMENT 1

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

Twin State Environmental Corp.
414 Roosevelt Highway
Colchester, VT 05446
Attn: Brian Wagner

PROJECT: J&M Store/00069
ORDER ID: 11995
RECEIVE DATE: April 16, 2001
REPORT DATE: April 23, 2001

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which include matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

CLIENT: Twin State Environmental Corp.
PROJECT: J&M Store/00069
REPORT DATE: April 23, 2001

ORDER ID: 11995
DATE RECEIVED: April 16, 2001
SAMPLER: BW

Site: MW-1
Ref. Number: 171760 Date Sampled: 4/13/01
Anal. Method: SW 8021B Time Sampled: 12:25 PM
Analyst: 222 Analysis Date: 4/20/01

Parameter	Results ug/L
MTBE	< 20.0
Benzene	< 2.0
Toluene	< 2.0
Ethylbenzene	2.5
Xylenes, Total	27.6
1,3,5 Trimethyl Benzene	27.3
1,2,4 Trimethyl Benzene	65.1
Naphthalene	25.8
UIP's	>10.
Surrogate 1	98.%

Site: MW-3
Ref. Number: 171762 Date Sampled: 4/13/01
Anal. Method: SW 8021B Time Sampled: 12:39 PM
Analyst: 222 Analysis Date: 4/19/01

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	> 10.
Surrogate 1	100.%

Site: MW-2
Ref. Number: 171761 Date Sampled: 4/13/01
Anal. Method: SW 8021B Time Sampled: 12:33 PM
Analyst: 222 Analysis Date: 4/19/01

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	0.
Surrogate 1	100.%

Site: MW-4
Ref. Number: 171763 Date Sampled: 4/13/01
Anal. Method: SW 8021B Time Sampled: 12:18 PM
Analyst: 222 Analysis Date: 4/19/01

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	4.
Surrogate 1	101.%

160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

Special Reporting Instructions:

43013

Project Name: J+M. 00069

Reporting Address: 414 Roosevelt Highway
Colchester VT 05446

Billing Address: Same

Endyne Order ID: (Lab Use Only) 11993

-O -I -S

Company: TSE

Contact Name/Phone #: Brian Wagner 654-8663

Sampler Name: B. Wagner

Phone #: Same

Ref # (Lab Use Only)	Sample Identification	Matrix	GRAB	COMP	Date/Time 4/13/01	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
17260	MW-1	AQ	✓		1225	~~2~~ 4	40mlVOA		8021B + 8100 TPH	HCL	N
761	MW-2				1233	4					
762	MW-3				1239	4					
763	MW-4				1218	4					
764	Supply well				1255	2			524.2		

Relinquished by: Brian Wagner Date/Time 4/16/01 1700

Received by: Date/Time 4/16/01 5:00

Received by: Date/Time

New York State Project: Yes ____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	PP13 Metals
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	RCRA8 Metals
4	Nitrite N	9	BOD	14	Turbidity	19	8021B	24	8260/8260B	29	
5	Nitrate N	10	Alkalinity	15	Conductivity	20	8010/8020	25	8270 B/N or Acid	30	
31	Metals (As Is, Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn										
32	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)					33					
34	Other										

LAB USE ONLY

Delivery:

Temp:

Comment:

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ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

Twin State Environmental Corp.
414 Roosevelt Highway
Colchester, VT 05446
Attn: Brian Wagner

PROJECT: J&M Store/00069
ORDER ID: 11995
RECEIVE DATE: April 16, 2001
REPORT DATE: April 24, 2001

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which include matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA 524.2

CLIENT: Twin State Environmental Corp.
PROJECT: J&M Store/00069
SITE: Supply Well
DATE RECEIVED: April 16, 2001
REPORT DATE: April 24, 2001
ANALYSIS DATE: April 20, 2001

ORDER ID: 11995
REFERENCE NUMBER: 171764
DATE SAMPLED: April 13, 2001
TIME SAMPLED: 12:55 PM
SAMPLER: BW
ANALYST: 725

Parameter	Result ug/L
Benzene	< 0.5
Bromobenzene	< 0.5
Bromochloromethane	< 0.5
Bromomethane	< 0.5
n-Butylbenzene	< 0.5
sec-Butylbenzene	< 0.5
tert-Butylbenzene	< 0.5
Carbon tetrachloride	< 0.5
Chlorobenzene	< 0.5
Chloroethane	< 0.5
Chloromethane	< 0.5
4-Chlorotoluene	< 1.0
2-Chlorotoluene	< 1.0
Dibromomethane	< 1.0
1,2-Dichlorobenzene	< 0.5
1,3-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.5
Dichlorodifluoromethane	< 0.5
1,1-Dichloroethane	< 0.5
1,2-Dichloroethane	< 0.5
1,1-Dichloroethene	< 0.5
cis-1,2-Dichloroethene	< 0.5
trans-1,2-Dichloroethene	< 0.5
Dichloromethane	< 1.0
1,2-Dichloropropane	< 0.5
1,3-Dichloropropane	< 0.5
2,2-Dichloropropane	< 0.5
1,1-Dichloropropene	< 0.5
cis-1,3-Dichloropropene	< 0.5
trans-1,3-Dichloropropene	< 0.5
Ethylbenzene	< 0.5

Parameter	Result ug/L
Hexachlorobutadiene	< 0.5
Isopropylbenzene	< 0.5
4-Isopropyltoluene	< 0.5
MTBE	< 1.0
Naphthalene	< 1.0
n-Propylbenzene	< 0.5
Styrene	< 0.5
1,1,1,2-Tetrachloroethane	< 0.5
1,1,2,2-Tetrachloroethane	< 1.0
Tetrachloroethene	< 0.5
Toluene	< 0.5
1,2,3-Trichlorobenzene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
1,1,1-Trichloroethane	< 0.5
1,1,2-Trichloroethane	< 0.5
Trichloroethene	< 0.5
Trichlorofluoromethane	< 1.0
1,2,3-Trichloropropane	< 0.5
1,2,4-Trimethylbenzene	< 0.5
1,3,5-Trimethylbenzene	< 0.5
Vinyl Chloride	< 0.5
Xylenes, Total	< 1.0
Bromodichloromethane	< 0.5
Bromoform	1.1
Chloroform	< 0.5
Dibromochloromethane	< 0.5
Total Trihalomethanes	1.1
Surrogate 1	99.%
Surrogate 2	94.%
UIP's	0.

160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

Special Reporting Instructions: _____

43013

Project Name: J+M 00069	Reporting Address: 414 Roosevelt Highway Colchester, VT 05446	Billing Address: Same
Endyne Order ID: (Lab Use Only) 11995 (8-O / -I / -S)	Company: TSEC Contact Name/Phone #: Brian Wagner 654-8663	Sampler Name: B Wagner Phone #: Same

Ref # (Lab Use Only)	Sample Identification	Matrix	GRAB	COMP	Date/Time 4/13/01	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
11760	MW-1	AQ	✓		1225	~~2~~ 4	40mlVOA		8021B + 8100 TPH	HCL	N
761	MW-2	↓	↓		1233	4			↓	↓	↓
762	MW-3	↓	↓		1239	4	↓		↓	↓	↓
763	MW-4	↓	↓		1218	4	↓		✓	↓	↓
764	Supply well	↓	↓		1255	2	↓		524.2	↓	↓

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
Brian Wagner	4/16/01 1700		4/16/01 5:00		

New York State Project: Yes _____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	PP13 Metals
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	RCRA8 Metals
4	Nitrite N	9	BOD	14	Turbidity	19	8021B	24	8260/8260B	29	
5	Nitrate N	10	Alkalinity	15	Conductivity	20	8010/8020	25	8270 B/N or Acid	30	
31	Metals (As Is, Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn										
32	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)							33			
34	Other										

LAB USE ONLY
Delivery:
Temp:
Comment:

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ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

Twin State Environmental Corp.
414 Roosevelt Highway
Colchester, VT 05446
Attn. Brian Wagner

PROJECT: J&M Store/00069
ORDER ID: 11995
RECEIVE DATE: April 16, 2001
REPORT DATE: May 2, 2001

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which include matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

CLIENT: Twin State Environmental Corp.
PROJECT: J&M Store/00069
REPORT DATE: May 2, 2001

ORDER ID: 11995
DATE RECEIVED: April 16, 2001
SAMPLER: BW
ANALYST: 128

Ref. Number: 171760 | Site: MW-1 | Date Sampled: April 13, 2001 | Time: 12:25 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	2.23	mg/L	SW 8015B	5/1/01

Ref. Number: 171761 | Site: MW-2 | Date Sampled: April 13, 2001 | Time: 12:33 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	4/29/01

Ref. Number: 171762 | Site: MW-3 | Date Sampled: April 13, 2001 | Time: 12:39 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	4/29/01

Ref. Number: 171763 | Site: MW-4 | Date Sampled: April 13, 2001 | Time: 12:18 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	4/29/01

160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

Special Reporting Instructions:

43013

Project Name: J+M 00069	Reporting Address: 414 Roosevelt Highway Colchester VT 05446	Billing Address: Same
Endyne Order ID: (Lab Use Only) 11995 (S-O / -I / -S)	Company: TSE Contact Name/Phone #: Brian Wagner 654-8663	Sampler Name: B. Wagner Phone #: Same

Ref # (Lab Use Only)	Sample Identification	Matrix	GRAB	COMP	Date/Time 4/13/01	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
171760	MW-1	AQ	✓		1225	~~2~~ 4	40mL VOA		602 BT+ 8100 TPH	HCL	N
761	MW-2				1233	4					
762	MW-3				1239	4					
763	MW-4				1218	4					
764	Supply well				1255	2			524.2		

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
Brian Wagner	4/16/01 1700		4/16/01 5:00		

New York State Project: Yes _____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	PP13 Metals
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	RCRA8 Metals
4	Nitrite N	9	BOD	14	Turbidity	19	8021B	24	8260/8260B	29	
5	Nitrate N	10	Alkalinity	15	Conductivity	20	8010/8020	25	8270 B/N or Acid	30	
31	Metals (As Is, Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn										
32	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)					33					
34	Other										

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ENDYNE, INC.

Laboratory Services

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

JUL 13 2001

LABORATORY REPORT

Twin State Environmental Corp.
414 Roosevelt Highway
Colchester, VT 05446
Attn: Kasey Barette

PROJECT: J&M Store/00069
ORDER ID: 13126
RECEIVE DATE: June 26, 2001
REPORT DATE: July 11, 2001

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which include matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

CLIENT: Twin State Environmental Corp.
PROJECT: J&M Store/00069
REPORT DATE: July 11, 2001

ORDER ID: 13126
DATE RECEIVED: June 26, 2001
SAMPLER: BW

Site: MW-1
Ref. Number: 176538
Anal. Method: SW 8021B
Date Sampled: 6/26/01
Time Sampled: 12:00 PM
Analysis Date: 6/29/01
Analyst: 777

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	7.8
1,3,5 Trimethyl Benzene	9.3
1,2,4 Trimethyl Benzene	11.0
Naphthalene	6.6
UIP's	> 10.
Surrogate 1	98.%

Site: MW-3
Ref. Number: 176540
Anal. Method: SW 8021B
Date Sampled: 6/26/01
Time Sampled: 12:19 PM
Analysis Date: 6/29/01
Analyst: 777

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	0.
Surrogate 1	97.%

Site: F.B.
Ref. Number: 176542
Anal. Method: SW 8021B
Date Sampled: 6/26/01
Time Sampled: 11:50 AM
Analysis Date: 6/29/01
Analyst: 777

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	0.
Surrogate 1	98.%

Site: MW-2
Ref. Number: 176539
Anal. Method: SW 8021B
Date Sampled: 6/26/01
Time Sampled: 12:25 PM
Analysis Date: 6/29/01
Analyst: 777

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	0.
Surrogate 1	97.%

Site: Supply Well
Ref. Number: 176541
Anal. Method: SW 8021B
Date Sampled: 6/26/01
Time Sampled: 12:40 PM
Analysis Date: 6/29/01
Analyst: 777

Parameter	Results ug/L
MTBE	< 10.0
Benzene	< 1.0
Toluene	< 1.0
Ethylbenzene	< 1.0
Xylenes, Total	< 1.0
1,3,5 Trimethyl Benzene	< 1.0
1,2,4 Trimethyl Benzene	< 1.0
Naphthalene	< 1.0
UIP's	0.
Surrogate 1	98.%

160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

Special Reporting Instructions:

42763

Project Name: 00069 J+M	Reporting Address: 414 Roosevelt Highway Colchester, VT 05446	Billing Address: Same
Endyne Order ID: (Lab Use Only) 13126	Company: TSE Contact Name/Phone #: Kasey Barrette 654-8663	Sampler Name: BW Phone #: Same

2 -O
-I
-S

Ref # (Lab Use Only)	Sample Identification	Matrix	GRAB	COMP	Date/Time 6/26/01	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
538	MW-1	AQ	✓		1200	4	40ml VOA		8021B+ 8015 DRO	HCl	N
539	MW-2	↓	↓		1225	3			↓	↓	↓
540	MW-3				1219	4	↓				
541	~~but~~ Supply well				1240	4					
542	~~but~~ F.B.	↓	↓		1150	2	↓		8021B	↓	↓

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
[signature]	6/26/01 1430	[signature]	6-26-01 1535	[signature]	

New York State Project: Yes _____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	PP13 Metals
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	RCRA8 Metals
4	Nitrite N	9	BOD	14	Turbidity	19	8021B	24	8260/8260B	29	
5	Nitrate N	10	Alkalinity	15	Conductivity	20	8010/8020	25	8270 B/N or Acid	30	
31	Metals (As is, Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn										
32	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)					33					
34	Other										

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Laboratory Services

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JUL 13 2001

LABORATORY REPORT

Twin State Environmental Corp.
414 Roosevelt Highway
Colchester, VT 05446
Attn: Kasey Barette

PROJECT: J&M Store/00069
ORDER ID: 13126
RECEIVE DATE: June 26, 2001
REPORT DATE: July 11, 2001

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Different groups of analyses may be reported under separate cover.

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Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which include matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits, unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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LABORATORY REPORT

CLIENT: Twin State Environmental Corp.
PROJECT: J&M Store/00069
REPORT DATE: July 11, 2001

ORDER ID: 13126
DATE RECEIVED: June 26, 2001
SAMPLER: BW
ANALYST: 128

Ref. Number: 176538 | Site: MW-1 | Date Sampled: June 26, 2001 | Time: 12:00 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	6.27	mg/L	SW 8015B	7/9/01

Ref. Number: 176539 | Site: MW-2 | Date Sampled: June 26, 2001 | Time: 12:25 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	7/6/01

Ref. Number: 176540 | Site: MW-3 | Date Sampled: June 26, 2001 | Time: 12:19 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	7/9/01

Ref. Number: 176541 | Site: Supply Well | Date Sampled: June 26, 2001 | Time: 12:40 PM

Parameter	Result	Unit	Method	Analysis Date
TPH 8015 DRO	< 0.40	mg/L	SW 8015B	7/9/01

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42763

Special Reporting Instructions:

Project Name: 00069 J+M	Reporting Address: 414 Roosevelt Highway Colchester, VT 05446	Billing Address: SAME
Endyne Order ID: (Lab Use Only) 13126 — 2 -O / -I / -S	Company: TSE Contact Name/Phone #: Kasey Barrette 654-9663	Sampler Name: BW Phone #: SAME

Ref # (Lab Use Only)	Sample Identification	Matrix	GRAB	COMP	Date/Time 6/26/01	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
538	MW-1	AQ	✓		1200	4	40mL VOA		8021B+ 8015 DRO	HCl	N
539	MW-2	↓	↓		1225	3	↓		↓	↓	↓
540	MW-3	↓	↓		1219	4	↓		↓	↓	↓
541	Supply well	↓	↓		1240	4	↓		↓	↓	↓
542	~~Dup~~ F.B.	↓	↓		1150	2	↓		8021B	↓	↓

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
	6/26/01 1430		6-26-01 1555		

New York State Project: Yes _____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	PP13 Metals
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	RCRA8 Metals
4	Nitrite N	9	BOD	14	Turbidity	19	8021B	24	8260/8260B	29	
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31	Metals (As Is, Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn										
32	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)					33					
34	Other										

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