

Eastview Environmental

Consulting & Field Services



March 1, 2001

Linda Elliott
Waste Management Division
Agency of Natural Resources- VTDEC
103 South Main Street/West Office
Waterbury, VT 05671-0404

Re: Annual Summary 2000, March, 2001, Former Arms Store, Wardsboro, VT (Site #87-0106)

Dear Ms. Elliott:

Attached is the above-referenced report. Please call me if you have any questions.

Sincerely,
EASTVIEW ENVIRONMENTAL

A handwritten signature in cursive script that reads "Richard M. Pendleton".

Richard M. Pendleton
Hydrogeologist

cc: Arthur and Jan Chamberlain



Phase (check one)		Type	
<input 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 checked="" type="checkbox"/>	Operations & Monitoring Report	<input type="checkbox"/>	

**Annual Summary, 2000
 March, 2001**

Former Arms Store
 Rte 100
 Wardsboro, VT 05355
 SMS Site # 87-0106

A Facility Owned By/Report Prepared For:

Arthur (Kip) C. Chamberlain
 Box 78 South Hill Road
 Wardsboro, VT 05355
 (802) 896-6411

Prepared By:

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 Peterborough, NH 03458
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Contact: Richard M. Pendleton, Hydrogeologist

March 1, 2001

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1.0 INTRODUCTION

This is a summary of 5 rounds of quarterly groundwater monitoring at the former Arms Store.

1.1 Background Information

The site is located in Wardsboro, VT (Figure 1) and is the former location of the Arms Store (which was moved off the site). In November, 1986 a gasoline odor was noted in the basements of a church and Post Office (PO) building (a.k.a. former Good & Yummy Bakery or Capen building) that are across the street from the site. Two USTs were subsequently removed and replaced from the site, and reportedly had petroleum vapors in the soils. These USTs are believed to have been the contamination source that is the subject of this investigation. Site investigations by the VTDEC showed gasoline vapors and 1/16 in of product in the soil and groundwater of the church basement. Sampling of Wardsboro Brook and the PO drinking water well indicated that these had not been impacted. Remedial actions taken or directed by the VTDEC in the church basement included installation of an interceptor trench and separator drum with carbon canister for treatment of the groundwater, installation of soil gas probes, and monthly tilling of the soils and monitoring of the vapor points and ambient air in the church basement. Water samples were also collected from the PO well. The treatment system was monitored until August, 1989. Vapors in the church basement had subsided during this period.

On November 16, 1995, the two USTs installed in 1986 at the site were removed. A maximum of 1500 ppm soil headspace and xylene was detected in the excavation groundwater. A Site Investigation Report of April 18, 1996 documented the installation of soil borings and three monitoring wells (MW-1, 2, 3). Results indicated up to 500 ppm (headspace) detected in soil samples and violations of VT Groundwater Enforcement Standards (VGES) (e.g., 16,000 ppb benzene) at MW-1. One and a half inches of free phase gasoline (also known as light non-aqueous phase liquid or LNAPL) was noted in MW-1.

In May of 1996 ownership of the site was transferred to the Chamberlains, who also own the property to the north (the Wardsboro Country Store). The Chamberlains moved the former Arms Store building off the site, and installed a new 12,000 gallon split gasoline UST and pump island (see Figure 2) in September, 1996. In the process of this work, the monitoring wells (MW-1, 2 & 3) were destroyed/covered. On a related matter, 2, 1,000 gallon gasoline USTs were removed from the Wardsboro Country Store property (Figure 2).

A contractor working on the basement area of a house downgradient of the site (Dawson residence) (Figure 2) reported gas fumes in the Spring of 1996. The site owner (Nancy Dawson) indicated the fumes were worse after rainfall. This house, and the church next door (west) are located at a break in slope, probably an erosional terrace of Wardsboro Brook. Groundwater is close to the basement level at the Dawson Residence and breaks out in the Church basement. Sampling of the newly installed Dawson domestic well in the Spring of 1996 indicated benzene levels below the VGES.

Monitoring wells were installed at the site (2) and off-site (one at the Dawson residence) in September, 1996 (MW-4, 5 & 6 on Figure 2). Groundwater monitoring indicated a range of 50 (MW-6) to 24,200 (MW-4) ppb of total benzene, toluene, ethylbenzene, and xylenes (BTEX) in monitoring wells. No contaminants were detected in the Dawson or Holden drinking water wells.

A soil gas survey was conducted in May, 1997; detectable PID readings were noted only at a location upgradient of the church and downgradient of the site.

Due to the evidence that the plume had departed the site (and therefore not likely to respond well to low-scale on-site treatment) and no impact to area drinking water supplies had been detected, EASTVIEW recommended limited further actions, including sampling of the ambient air of the church and PO Building and quarterly groundwater monitoring. These actions were reported on in EASTVIEW's November, 1998 report.

Eastview's annual summary in November, 1999 reported:

- (1) Contaminant levels in on-site well MW-6 were generally declining.
- (2) Contaminant levels in MW-4 and MW-5 were not appreciably declining.
- (3) No contaminants had been detected in the Dawson well since December, 1997.
- (4) Contaminant levels in off-site monitoring wells (MW-4 and the church monitoring well) continued to exceed VGES.
- (5) The MW-Church may have been showing a decline in contaminant levels, but MW-4 showed no decrease. This pattern suggests the center of the contaminant plume had moved off-site and/or that MW-4 was most downgradient of the contaminant source, and that MW-5 was offset (northeast) of the plume flowpath.

Based on a conversation with Ms. Elliott of the VT DEC Waste Management Division, it appeared that the DEC would not support active remediation of the contamination on site. Since impact to drinking water wells had not been detected since March, 1998, and monitoring would likely occur for a long period, Eastview recommended a lessening of groundwater monitoring frequency to twice yearly for monitoring wells and quarterly for the Dawson drinking water supply. However, the DEC did not concur with those recommendations, and quarterly monitoring of all locations continued in 2000.

2.0 Quarterly Groundwater Monitoring

The monitoring wells were purged and sampled with disposable bailers. Samples were analyzed for gasoline components (including MTBE, trimethylbenzenes and naphthalene) via EPA Method 8021B.

In summary, maximum detected groundwater contaminant levels exist at off-site well MW-4. Levels have declined on-site while showing little significant change at MW-4. Each monitoring point is discussed in turn below.

Maximum contaminant levels and VGES exceedences have consistently been found at MW-4 which is located in the gravel driveway of the Dawson residence. As shown by the time series plot in Attachment A, little significant change has occurred since sampling began. The maximum concentration of benzene, 8800 ppb, was found in December, 1998, but 8400 and 8500 ppb were detected in June and September, 2000. The most recent concentration was 1800 ppb. There appears to be (see the plot in Attachment A) an inverse correlation between water table elevation and contaminant concentrations. This well appears to be downgradient of the source area.

The high contaminant concentrations may suggest the presence of LNAPL at the site upgradient of MW-4. A common principle is that dissolved concentrations at or above 1% to 10% of contaminant solubility indicates the potential presence of NAPL. Benzene water solubility is approximately 65 ppm when in gasoline (Bauman, 1997). The average MW-4 benzene concentration over the past 12 months is 5,575 ppb (Attachment A). One to 10 percent of 65 ppm is 0.65 to 6.5 ppm or 650 to 6,500 ppb. As noted above (Section 1), LNAPL was found in MW-1 in 1996. MW-1 was located closer to the former USTs than any of the current monitoring wells, as shown on Figure 2. Based on the 1-10% rule of thumb and the historical MW-1 evidence, there may be free phase product upgradient of MW-4.

MW-5, which is located on-site, showed a general decline in benzene and MTBE levels to the Spring of 1998 (to 40 ppb for benzene). In 1999 and early 2000 benzene concentrations showed a general increase (peaking at 530 ppb), and in 2000 they declined once again to the most recent result of 70 ppb. MTBE levels have been below the groundwater standard since September, 1999. Based on a comparison to levels in MW-4, this well appears to be located east and cross-gradient or downgradient of the source area. Average benzene concentrations are 206 ppb since December, 1999. This is less than 1% of the benzene solubility.

MW-6, also located on-site, has also shown a decline in contaminant levels, and has had no BTEX or naphthalene detections since September, 1999. However, trimethylbenzenes have been detected at levels exceeding the groundwater standards, although showing a general decline. Average total trimethylbenzenes levels are 41 ppb over the past 12 months, with 28 ppb detected most recently. MW-6 appears to be cross-gradient and slightly upgradient of the source area.

The culvert outfall has not been sampled since June of 1998 due to lack of flow in the culvert or mixing from the upper culvert.

The church monitoring well was installed in 1988 during remediation of soils in the basement. It is a shallow (approximately six inches) hand-slotted 4-inch PVC well intersecting groundwater emanating at the base of the church basement north foundation. It is basically an interior surface water sampling point. Although benzene levels are not as high as in December, 1997 (7200 ppb) the concentrations appear to be fluctuating (and not declining regularly) around 1,000 to 5,000 ppb. As in MW-4, these concentrations suggest possible LNAPL presence. MTBE concentration results are inconclusive as the lab detection limits (typically 100 ppb) have been greater than the applicable standard (40 ppb) since September, 1998.

The Dawson domestic well is a drilled bedrock well. No contaminants have been detected since the December, 1997 round when 3 ppb of toluene was detected. This water supply is located about 40 feet south of MW-4, but obviously taps the bedrock aquifer, while MW-4 is completed in the shallow overburden.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Eastview Environmental has the following **conclusions** based on the data collected to date for the former Arms site.

- (1) Contaminant levels in on-site well MW-6 continue a general decline.

- (2) Some contaminant levels in MW-5 may be declining (e.g., benzene). MTBE levels are below the groundwater standard.
- (3) Contaminant levels in MW-4 are fluctuating and exceeding the groundwater standards. The dissolved concentrations are close to 10% of benzene water solubility. A former monitoring well (MW-1) closer to former USTs, had free-phase product in 1996. This evidence suggests the potential presence of LNAPL on site.
- (4) No contaminants have been detected in the Dawson well since December, 1997.
- (5) Contaminant levels in the church monitoring well continue to exceed VGES, and also suggest possible LNAPL presence.

Eastview **recommends** the following:

- (1) If LNAPL is present on site, remediation of the contaminant plume by natural attenuation only is likely to be exceedingly long. Therefore, Eastview Environmental recommends investigating the former UST area to determine if free-phase product is present by installation of one or more monitoring wells. If free product is discovered, Eastview would likely suggest recovery and disposal of product from the well if possible. Active bailing and passive recovery of product are common recovery methods.
- (2) In the meantime, quarterly groundwater monitoring should continue of MW-4, MW-5 and MW-6, the church monitoring point, and the Dawson domestic supply. Analysis via EPA Method 8021B+MTBE, trimethylbenzenes, and naphthalene should continue. Eastview recommends the lower reportable limit Method 524.2 analysis for the Dawson supply.

The next sampling round is scheduled for March, 2001.

4.0 LIMITATIONS

This report and its findings were performed in accordance with the work scope and with generally accepted professional principles and practices existing as of the date of the report's preparation. Any exceptions are noted in the report. The findings summarized in the report are opinions based upon professional judgment of the observations and explorations stated herein and are not to be construed as representations of fact. No other warranty, expressed or implied, is included in or intended by the report.

5.0 REFERENCES

Bauman, Bruce, March 12, 1997. "MTBE and Groundwater Quality: Bioremediation Research" presentation given at the EPA OUST National Conference.

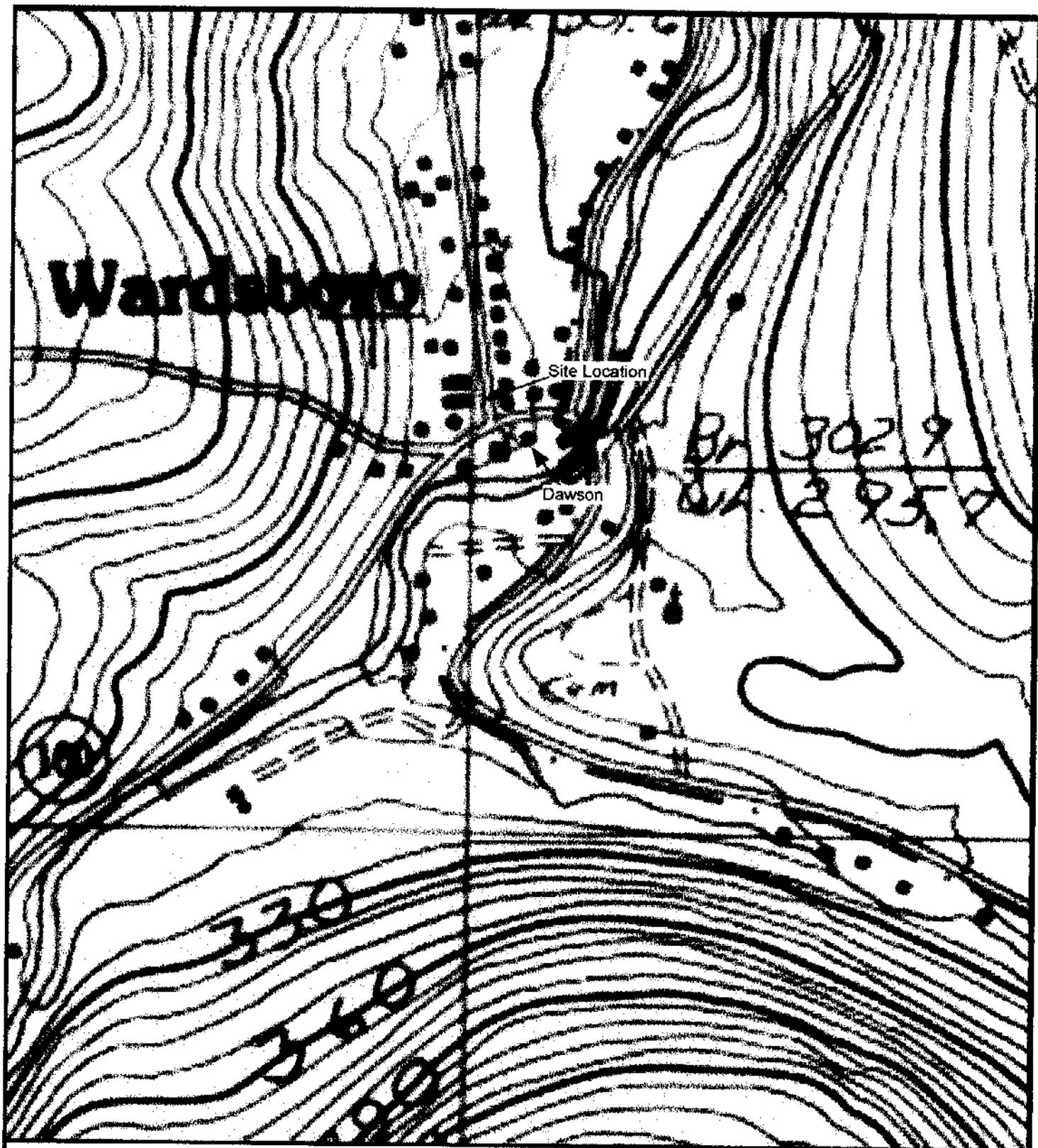
TABLE

Table 1. Monitoring Well/Water Table Data (12/18/00).

Well	Water Depth	Elevation	
		Top of PVC	Water
MW-4	9.11	100.00 ¹	90.89
MW-5	4.71	102.66	97.95
MW-6	4.59	102.71	98.12
Church MW	2.09	98.±	96. ±

Notes: 1. The top of the PVC of MW-4 has been assigned an arbitrary elevation of 100.00 feet.

FIGURES

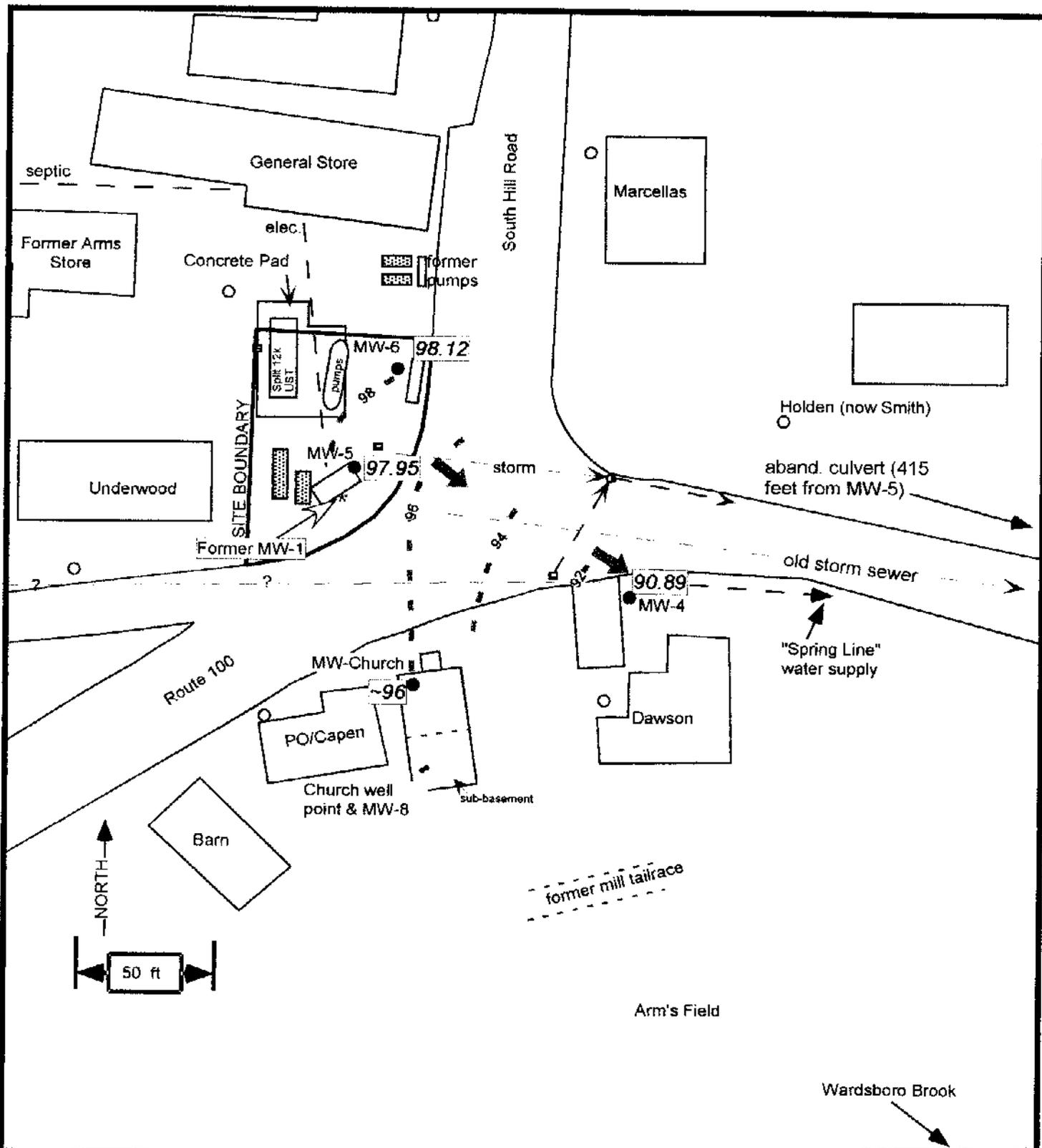


Portion of the USGS Jamaica, VT 1:24,000 scale topographic map, Provisional Edition, 1986

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Figure 1. Site Location.

Annual Summary, 2000, March, 2001,
 Former Arms Store, Wardsboro, VT

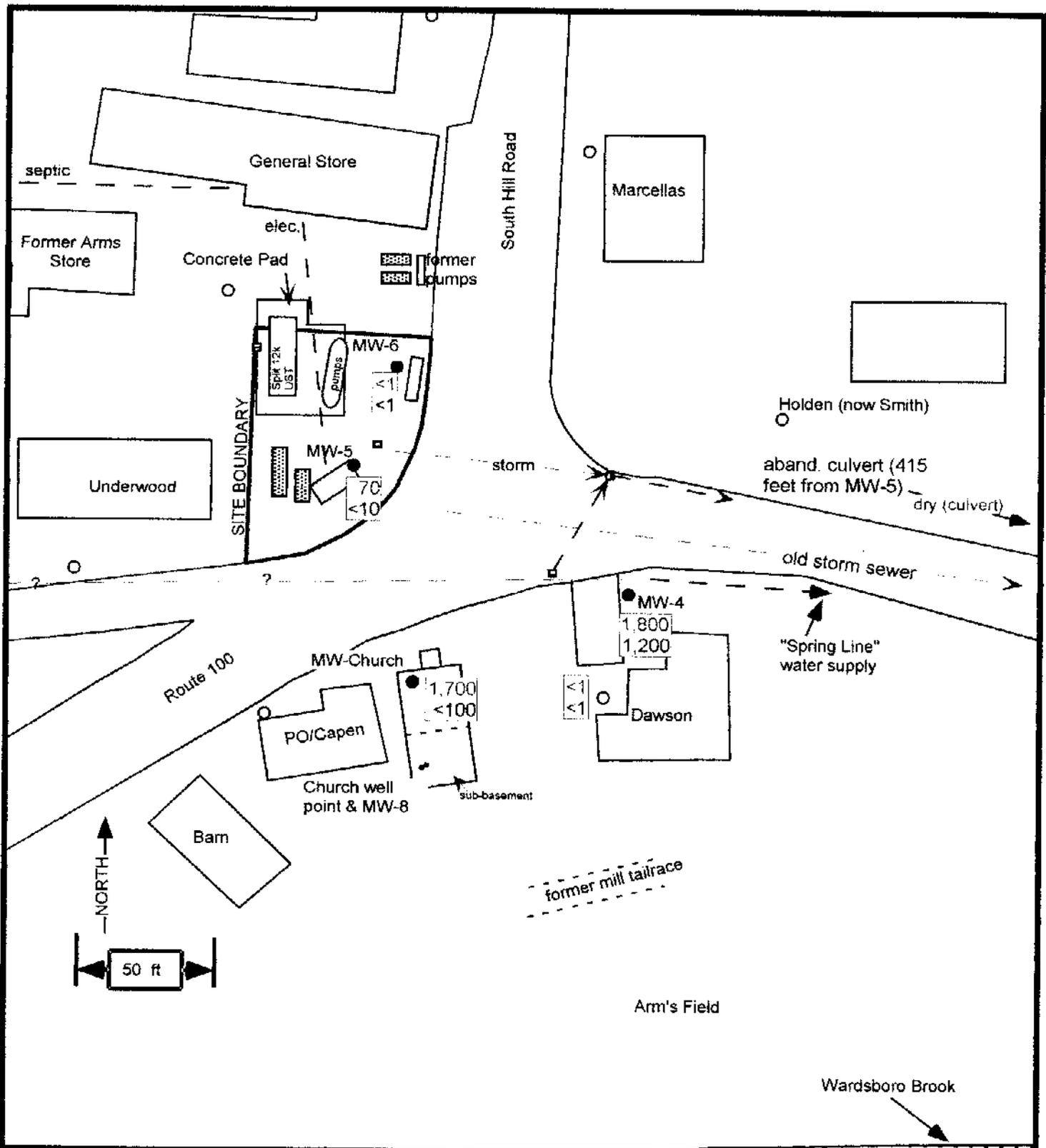


- Catch Basin/Storm Drain
- Monitoring Well
- Domestic Well
- ▤ Former UST
- - - 96 Water Table Contour (ft)

Notes: 1. Based on site survey 6/4/97 and base map by Dauchy Associates.
 2. Groundwater elevations: MW-4 (PVC) assigned an arbitrary elevation of 100.00 ft. 3. Groundwater data collected 12/18/00.

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Figure 2. Site Plan/Groundwater.
 Annual Summary, 2000, March, 2001,
 Former Arms Store, Wardsboro, VT



- Catch Basin/Storm Drain
 - Monitoring Well
 - Domestic Well
 - ▤ Former UST
- 3,200 Benzene
5,000 MTBE (ppb) at monitoring location.

Analytical data collected 12/18/00.

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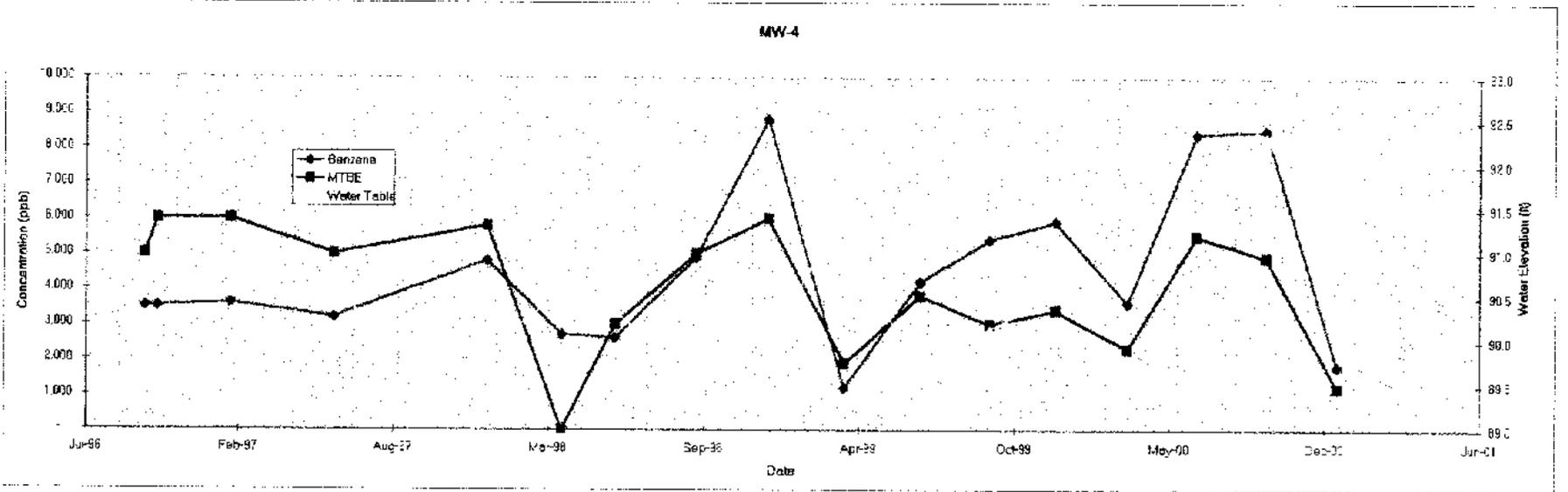
Figure 3. Analytical Results.
Annual Summary, 2000, March, 2001,
Former Arms Store, Wardsboro, VT

ATTACHMENT A:
TIME SERIES DATA AND PLOTS

MW-4

Parameter	Standard ¹	1996			1997			1998				1999				2000			
		2-Oct	18-Oct	21-Jan	4-Jun	19-Dec	25-Mar	2-Jun	14-Sep	16-Dec	24-Mar	30-Jun	27-Sep	21-Dec	23-Mar	20-Jun	18-Sep	18-Dec	
Benzene	5	1,900	3,500	3,600	3,200	4,900	2,700	2,900	4,500	2,800	1,200	4,200	5,400	5,900	3,800	3,400	8,500	1,500	
Toluene	1,000	11,700	5,100	12,000	5,800	11,000	6,900	4,500	9,300	14,000	7,100	5,400	7,900	2,900	3,400	8,400	7,800	1,400	
Ethylbenzene	700	1,500	500	1,800	400	1,700	700	900	500	3,200	160	500	1,000	1,900	900	2,600	2,700	600	
Total Xylenes	10,000	8,700	5,800	10,000	19,400	11,200	7,100	5,300	11,100	19,000	2,170	7,700	5,900	10,800	6,200	14,600	13,000	2,760	
Total BTEX	n/a	24,200	16,000	27,200	24,800	29,700	17,100	13,900	26,900	45,800	4,650	18,100	15,700	26,600	14,100	34,000	32,000	6,560	
MTBE	40 ²	5,000	3,000	3,000	5,000	5,800	<1	3,700	5,000	5,100	1,900	3,900	3,000	3,400	2,300	5,500	4,900	1,200	
1,2,4-Trimethyl	5 ¹																		
1,3,5-Trimethyl	4 ¹																		
Naphthalene	25 ¹																		
H2O Elev. (ft)	n/a				89.44	89.93	90.55	90.58	89.36	89.95	91.55	88.43	90.15	90.50	90.79	92.90	92.33	90.89	

NOTES: "ND" none detected above lab limit. Results in red indicate exceeds applicable standard. BTEX: Benzene, Toluene, Ethylbenzene, & Xylenes. 1. Maximum Contaminant Level (MCL) unless otherwise noted. 2. Vermont Health Advisory (no MCL). Well locations and elevations were re-surveyed June 4, 1997.



MW-5

Parameter	Standard	1996		1997		1998				1999				2000			
		2-Oct	18-Oct	4-Jun	20-Dec	28-Mar	3-Jun	15-Sep	16-Dec	24-Mar	30-Jun	27-Sep	21-Dec	23-Mar	20-Jun	18-Sep	18-Dec
Benzene	6	600	700	50	240	220	40	100	300	240	240	310	100	530	210	120	70
Toluene	1,000	1,900	2,400	790	1,900	1,400	540	750	900	3,100	1,100	1,400	860	3,200	1,900	650	460
Ethylbenzene	700	520	600	380	680	570	360	690	800	780	780	660	650	760	790	480	300
Total Xylenes	10,000	3,900	4,500	2,620	3,700	3,400	2,670	4,270	6,300	4,600	4,100	3,990	4,140	4,800	5,200	3,140	2,060
Total BTEX	n/a	6,320	8,200	3,870	6,520	5,570	3,610	5,730	7,300	9,500	6,170	6,580	5,770	9,290	6,100	4,390	2,590
MTBE	402	300	<100	<100	<10	100	90	<10	200	<10	120	<10	<10	<10	<10	10	<10
1,2,4-Trimethylbe	62												2,300	2,900	3,800	2,900	1,400
1,3,5-Trimethylbe	42												640	750	770	610	410
Naphthalene	202												80	160	620	200	130
H ₂ O Elev. (ft)	n/a															97.24	97.85

Depth to GW
Measuring Point

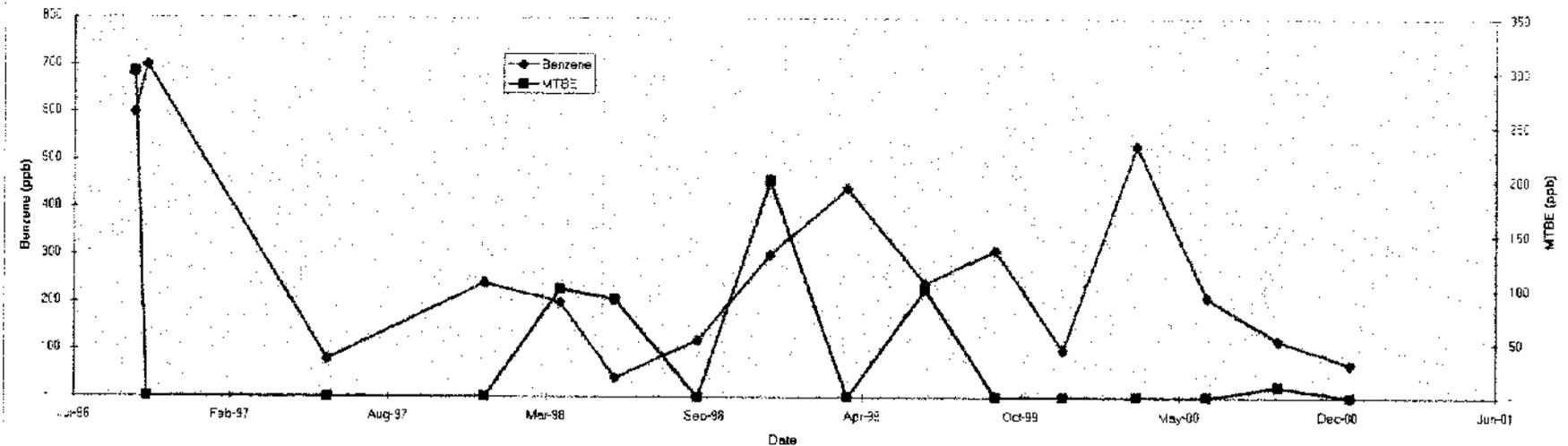
102.66

5.42 4.71

NOTES:

"ND": none detected above lab limit. Results in red indicate exceeds applicable standard. BTEX: Benzene, Toluene, Ethylbenzene, & Xylenes. MCL: Maximum Contaminant Level (MCL) unless otherwise noted. 2: Vermont Health Advisory (no MCL).
MW-5 had free product in January, 1997 and was not sampled for BTEX. TPH analysis on that date indicated 47,000 ppb TPH with a gasoline signature.

MW-5

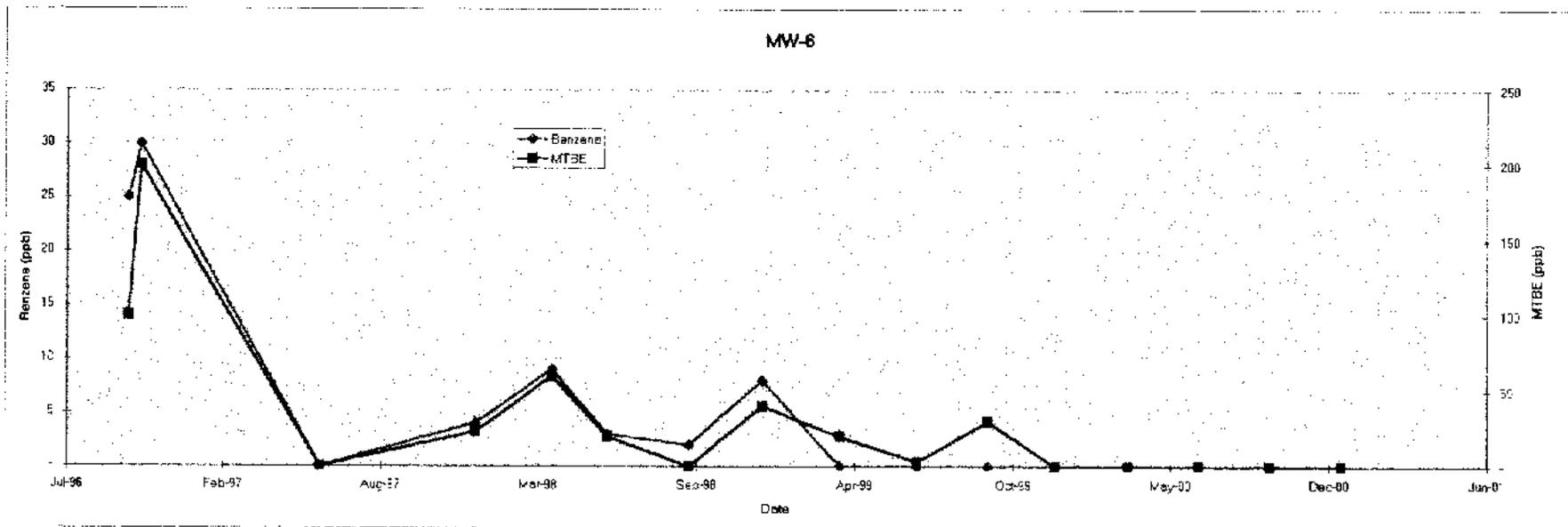


Note: For plotting purposes, concentration levels at detection limit (e.g. MTBE <100) are shown as zero values.

MW-6

Parameter	Standard	1996		1997		1998				1999				2000			
		3-Oct	18-Oct	4-Jun	19-Dec	25-Mar	2-Jun	14-Sep	16-Dec	24-Mar	30-Jun	27-Sep	21-Dec	23-Mar	20-Jun	18-Sep	18-Dec
Benzene	5	<1	<1	<5	4	9	3	2	5	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1000	<1	<10	3	4	4	4	4	5	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	700	<1	<10	6	4	3	2	2	2	1	<1	4	<1	<1	<1	<1	<1
Total Xylenes	10000	<1	20	9	4	7	6	2	4	3	<1	3	<1	<1	<1	<1	<1
Total BTEX	n/a	25	50	18	14	23	14	10	17	4	7	7	-	-	-	-	-
MTBE	40 ²	100	<10	<20	23	60	20	<1	<10	20	3	30	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	5 ²												70	30	20	10	10
1,3,5-Trimethylbenzene	4 ²												15	10	10	6	3
Naphthalene	28 ²												<5	<5	<5	<5	<5
H ₂ O Elev. (ft)	n/a			99.57	98.25	99.60	99.52	97.46	97.72	99.90	97.13	98.47	98.59	99.68	98.54	97.24	98.07

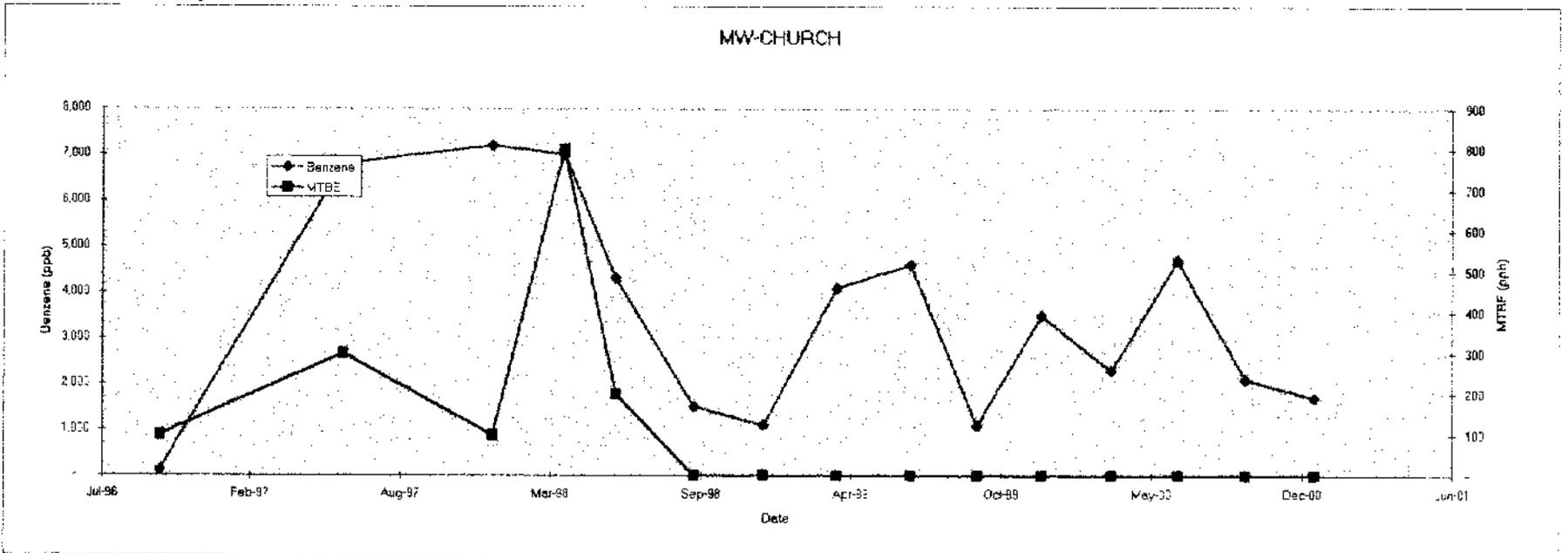
NOTES: ¹ND= none detected above lab limit. Results in red indicate exceeds applicable standard. BTEX= Benzene, Toluene, Ethylbenzene, Xylenes. ²Maximum Contaminant Level (MCL) unless otherwise noted. ³Vermont Health Advisory (no MCL). MW-6 was inaccessible in January, 1997.



MW-Church

Parameter	Standard	1996		1997		1998				1999				2000			
		2-Oct	5-Jun	20-Dec	26-Mar	3-Jun	15-Sep	16-Dec	24-Mar	30-Jun	27-Sep	21-Dec	23-Mar	20-Jun	18-Sep	18-Dec	
Benzene	5	120	18,800	7,200	7,000	4,200	1,500	1,100	4,100	4,600	1,100	3,500	2,300	4,700	2,100	1,700	
Toluene	1000	81	20,000	20,000	27,900	12,000	5,000	2,700	15,000	18,000	3,900	16,000	7,100	17,000	8,500	5,000	
Ethylbenzene	700	<1	1,400	1,300	1,500	800	300	100	1,300	1,900	350	1,100	200	1,900	1,000	300	
Total Xylenes	10000	230	13,200	15,400	13,900	8,200	5,400	3,700	10,700	15,900	6,500	15,400	7,700	16,200	10,100	8,700	
Total BTEX	n/a	431	41,400	41,900	44,400	25,100	12,200	7,800	31,100	40,400	11,850	33,000	17,300	38,800	21,700	14,700	
MTBE	40 ²	100	300	100	800	200	<100	<100	<100	<100	<10	<100	<100	<100	<100	<100	
1,2,4-Trimethylb	5 ²											1,600	1,300	2,000	1,500	1,100	
1,3,5-Trimethylb	4 ²											500	500	800	500	400	
Naphthalene	28 ²											<500	<500	<500	<500	<500	
H ₂ O Elev. (ft)	n/a		95	96	96	96	96	96	96	96	96	96	96	96	96	101	

NOTES: ¹ND: none detected above lab limit. Results in red indicate exceeds applicable standard. BTEX: Benzene, Toluene, Ethylbenzene, & Xylenes. 1. Maximum Contaminant Level (MCL) unless otherwise noted. 2. Vermont Health Advisory (inc. MCL).
 12/00. Depth to groundwater not noted.

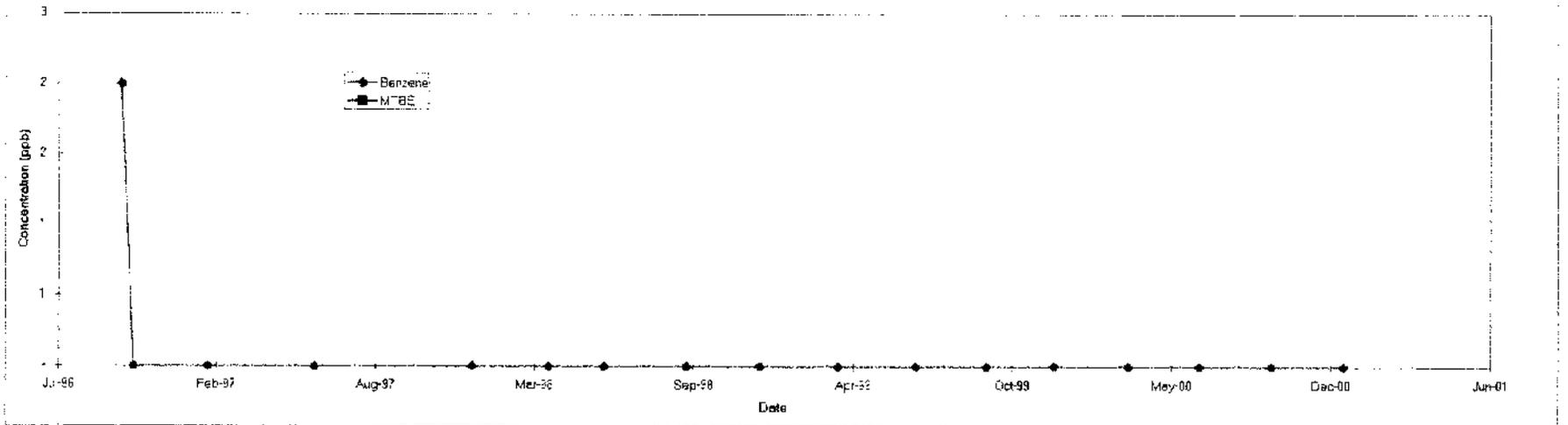


Dawson

Parameter	Standard	1996		1997			1998				1999			2000				
		3-Oct	19-Oct	22-Jan	5-Jun	28-Dec	26-Mar	3-Jun	15-Sep	16-Dec	24-Mar	30-Jun	27-Sep	21-Dec	23-Mar	23-Jun	18-Sep	18-Dec
Benzene	5	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1000	4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	700	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	10000	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total BTEX	n/a	6																
MTBE	40*	ND	<20	<20	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethyls	5*													<1	<1	<1	<1	<1
1,3,5-Trimethyls	4*													<1	<1	<1	<1	<1
Naphthalene	20*													<5	<5	<5	<5	<5

NOTES: *ND= none detected above lab limit. Results in red indicate exceed applicable standard. BTEX= Benzene, Toluene, Ethylbenzene, & Xylenes. 1. Maximum Contaminant Level (MCL), unless otherwise noted. 2. Vermont Health Advisory (no MCL) 102-66 102-92

Dawson



ATTACHMENT B:
LABORATORY REPORTS



eastern analytical

professional laboratory services

Richard Pendleton
Eastview Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 19773 EVE
Client Identification: ARMS
Date Received: 12/22/99

Dear Mr. Pendleton :

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< = "less than" followed by the reporting limit
TNR = Testing Not Requested
ND = None Detected, no established detection limit
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Susan C. Uhler, Lab Director

1/7/2000

Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 19773

Client: Eastview Environmental

Client Designation: ARMS

Sample ID:	MW-6	MW-5	DAWSON	MW-4	CHURCH	TRIP
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	12/21/99	12/21/99	12/21/99	12/21/99	12/21/99	12/21/99
Date Received:	12/22/99	12/22/99	12/22/99	12/22/99	12/22/99	12/22/99
Units:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Date of Analysis:	12/30/99	12/30/99	12/30/99	12/29/99	12/29/99	12/30/99
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod
Dilution Factor:	1	10	1	100	100	1
Methyl-t-butyl ether(MTBF)	< 1	< 10	< 1	3400	< 100	< 1
Benzene	< 1	100	< 1	5900	3500	< 1
Toluene	< 1	880	< 1	7000	15000	< 1
Ethylbenzene	< 1	650	< 1	1900	1100	< 1
m,p-Xylene	< 1	3200	< 1	8400	8900	< 1
o-Xylene	< 1	940	< 1	2400	4500	< 1
1,3,5-Trimethylbenzene	15	640	< 1	700	600	< 1
1,2,4-Trimethylbenzene	36	2500	< 1	2300	1600	< 1
Naphthalene	< 5	80	< 5	< 500	< 500	< 5

8021Bmod: The samples were analyzed by GCMS using method 8260B.

MW-5: Due to an instrument problem specific to naphthalene, the values reported are minimum concentrations. Results should be used with due consideration.



eastern analytical

professional laboratory services

Richard Pendleton
Eastview Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 20735
Client Identification: ARMS
Date Received: 3/24/2000

Dear Mr. Pendleton :

Enclosed please find the laboratory report for the above identified project. All analyses were subjected to rigorous quality control measures to assure data accuracy. Unless otherwise stated, all holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol.

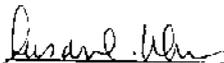
The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< = "less than" followed by the reporting limit
TNR = Testing Not Requested
ND = None Detected, no established detection limit
RL = Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me, the department supervisor, or the analytical chemist who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,



Susan C. Uhler, Lab Director

4/6/00

Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 20735

Client: Eastview Environmental

Client Designation: ARMS

Sample ID:	MW-4	MW-5	MW-6	MW-Church	Dawson	Trip Blank
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	3/23/00	3/23/00	3/23/00	3/23/00	3/23/00	3/23/00
Date Received:	3/24/00	3/24/00	3/24/00	3/24/00	3/24/00	3/24/00
Units:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Date of Analysis:	3/28/00	3/28/00	3/29/00	3/29/00	3/30/00	3/28/00
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod
Dilution Factor:	100	10	1	100	1	1
Methyl-t-butyl ether(MTBE)	2300	< 10	< 1	< 100	< 1	< 1
Benzene	3600	530	< 1	2300	< 1	< 1
Toluene	3400	3200	< 1	7100	< 1	< 1
Ethylbenzene	900	760	< 1	200	< 1	< 1
mp-Xylene	4600	3600	< 1	4900	< 1	< 1
o-Xylene	1600	1200	< 1	2800	< 1	< 1
1,2,4-Trimethylbenzene	1700	2500	39	1300	< 1	< 1
1,3,5-Trimethylbenzene	500	720	17	500	< 1	< 1
Naphthalene	< 500	160	< 5	< 500	< 5	< 5

8021Bmod: The samples were analyzed by GCMS using method 8260B.

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

20735

Sample ID	Date/Time	Matrix	Parameters	Sample Notes	# of containers
1 MW-4	3/23/00 1030	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
2 MW-5	0930	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
3 MW-6	0940	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Culvert	N/A	aqueous	AqTot/v8021aromatics-NaphthaleneV	No SAMPLE	0
4 MW-Church	3/23 1025	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
5 Dawson	1010	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
6 Trip Blank	LAB	aqueous	AqTot/v8021aromatics-NaphthaleneV		1

Project Name ARMS
Project # 5173
Client (Pro Mgr) Richard Pendleton
Customer Eastview Environmental
Address 28 Kaufmann Drive
City Peterborough NH 03458
Phone 924-7491
Fax 924-9174 (69)

Results Needed by: Preferred date STANDARD
Notes about project
Include TMBs, 1 ppb detection limit for MTBE
Special VT pricing

Reporting Options
 HC Partial Fax
 NO FAX EDD Disk
PONumber Verbal
Quote No VT Pricing
Cold? Y N

Samples Collected by: Richard Pendleton
Richard Pendleton 2000-03-24 10:55 AM
Relinquished by Date/Time Received by
R. Blood 2000-03-24 17:30 [Signature]
Relinquished by Date/Time Received by



eastern analytical

professional laboratory services

Richard Pendleton
Eastview Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 22051
Client Identification: ARMS
Date Received: 6/21/2000
Pages in Report: 3

Dear Mr. Pendleton:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with the EPA document "Practical Guide for Ground-Water Sampling."

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

TNR: Testing Not Requested

ND: None Detected, no established detection limit

RL: Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Susan C. Uhler, Lab Director

7/6/00

Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 22051

Client: Eastview Environmental

Client Designation: ARMS

Sample ID:	MW-4	MW-5	MW-6	MW-Church	Dawson	Trip Blank
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	6/20/00	6/20/00	6/20/00	6/20/00	6/20/00	6/20/00
Date Received:	6/21/00	6/21/00	6/21/00	6/21/00	6/21/00	6/21/00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	6/30/00	6/30/00	6/30/00	6/30/00	6/30/00	6/30/00
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8021B	8021B	8021B	8021B	8021B	8021B
Dilution Factor:	100	10	1	100	1	1
Methyl-t-butyl ether(MTBE)	5500	< 10	< 1	< 100	< 1	< 1
Benzene	8400	210	< 1	4700	< 1	< 1
Toluene	8400	1900	< 1	17000	< 1	< 1
Ethylbenzene	2600	790	< 1	1900	< 1	< 1
mp-Xylene	11000	3900	< 1	10000	< 1	< 1
o-Xylene	3600	1300	< 1	5200	< 1	< 1
1,2,4-Trimethylbenzene	3500	2800	30	2200	< 1	< 1
1,3,5-Trimethylbenzene	1100	770	10	800	< 1	< 1
Naphthalene	900	420	< 5	< 500	< 5	< 5

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

22051

Sample ID	Date/Time	Matrix	Parameters	Sample Notes	# of containers
V-4	6/20	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
V-5	0905	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
V-6	0915	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Invert		aqueous	AqTot/v8021aromatics-NaphthaleneV		2
V-Church	6/20 0950	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Wson	0935	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Blank		aqueous	AqTot/v8021aromatics-NaphthaleneV		1

Object Name ARMS
Project # 5173
Client (Proj Mgr) Richard Pendleton
Customer Eastview Environmental
Address 28 Kaufmann Drive
City Peterborough NH 03458
Phone 924-7491
Fax 924-9174 (69)

Results Needed by: Preferred date STANDARD

Notes about project

Include TMBs, 1 ppb detection limit for MTBE
Special VT pricing

CULVERT NOT SAMPLED - DRY

Reporting Options

HC Partial Fax
 NO FAX EDD Disk

PO Number **Verbal**

Quote No **VT Pricing**

Cold? ON

Samples Collected by: *Ralph M. Pelletier*

Relinquished by: *Ralph M. Pelletier* **Date/Time:** *6/21/00 9:45 AM* **Received by:** *[Signature]*

Relinquished by: *[Signature]* **Date/Time:** *6/21/00 11:00 AM* **Received by:** *[Signature]*

Eastern Analytical, Inc. 25 Chenell Drive, Concord, NH 03301 TEL: (603) 228-0525 FAX: (603) 228-1501 www.eanaly.com



Richard Pendleton
Eastview Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 23266
Client Identification: ARMS
Date Received: 9/19/2000
Pages in Report: 3

Dear Mr. Pendleton:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with the EPA document "Practical Guide for Ground-Water Sampling."

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

TNR: Testing Not Requested

ND: None Detected, no established detection limit

RL: Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Susan C. Uhler, Lab Director

10/4/00

Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 23266

Client: Eastview Environmental

Client Designation: ARMS

Sample ID:	MW-4	MW-5	MW-6	MW-Church	Dawson	Trip Blank
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	9/18/00	9/18/00	9/18/00	9/18/00	9/18/00	9/18/00
Date Received:	9/19/00	9/19/00	9/19/00	9/19/00	9/19/00	9/19/00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	9/23/00	9/23/00	9/23/00	9/23/00	9/23/00	9/23/00
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod
Dilution Factor:	100	10	1	100	1	1
Methyl-t-butyl ether(MTBE)	4900	10	< 1	< 100	< 1	< 1
Benzene	8500	120	< 1	2100	< 1	< 1
Toluene	7800	650	< 1	8500	< 1	< 1
Ethylbenzene	2700	480	< 1	1000	< 1	< 1
mp-Xylene	9900	2500	< 1	6700	< 1	< 1
o-Xylene	3100	640	< 1	3400	< 1	< 1
1,2,4-Trimethylbenzene	3700	2000	23	1500	< 1	< 1
1,3,5-Trimethylbenzene	1100	610	6	500	< 1	< 1
Napthalene	700	200	< 5	< 500	< 5	< 5

8021Bmod: The samples were analyzed by GCMS using method 8260B.

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

23266

Sample ID	Date/Time	Matrix	Parameters	Sample Notes	# of containers
N-4	9/18 1210	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
N-5	1135	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
N-6	1125	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
culvert		aqueous	AqTot/v8021aromatics-NaphthaleneV		2
N-Church	9/18 1200	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Dawson	1150	aqueous	AqTot/v8021aromatics-NaphthaleneV		2
Blank	LAB	aqueous	AqTot/v8021aromatics-NaphthaleneV		1

Project Name ARMS
 Project # 5173
 Contact (Proj Mgr) Richard Pendleton
 Customer Eastview Environmental
 Address 28 Kaufmann Drive
 City Peterborough NH 03458
 Phone 924-7491
 Fax 924-9174 (69)

Results Needed by: Preferred date STANDARD

Notes about project

Include TMBs, 1 ppb detection limit for MTBE
 Special VT pricing

CULVERT DRY.

TB has air bubble...
 air bubbles in both vials
 for MW-5 + Dawson
 9/19/00 1200 uz

Reporting Options

HC Partial Fax
 NO FAX EDD Disk

PO Number Verbal

Quote No VT Pricing

Cold? ON

Samples Collected by: Rich M. Pendleton

Relinquished by Rich M. Pendleton Date/Time 9/19/00 1530 Received by W. H. Clayton
 Relinquished by John Reynolds Date/Time 9/19/00 1600 Received by T. Zuber

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301



eastern analytical

professional laboratory services

Richard Pendleton
Eastview Environmental
28 Kaufmann Drive
Peterborough, NH 03458

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 24653
Client Identification: ARMS
Date Received: 12/20/2000

Dear Mr. Pendleton :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with the EPA document "Practical Guide for Ground-Water Sampling."

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

TNR: Testing Not Requested

ND: None Detected, no established detection limit

RL: Reporting Limits

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Will Brunkhorst, Lab Director

1/05/01
Date



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 24653

Client: Eastview Environmental

Client Designation: ARMS

Sample ID:	MW-4	MW-5	MW-6	MW-Church	Dawson	Trip Blank
Analytical Type:	Sample	Sample	Sample	Sample	Sample	Sample
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	12/18/00	12/18/00	12/18/00	12/18/00	12/18/00	12/18/00
Date Received:	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	12/28/00	12/28/00	12/28/00	12/29/00	12/29/00	12/28/00
Analyst:	JDS	JDS	JDS	JDS	JDS	JDS
Method:	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod	8021Bmod
Dilution Factor:	10	10	1	100	1	1
Methyl-t-butyl ether(MTBE)	1200	< 10	< 1	< 100	< 1	< 1
Benzene	1800	70	< 1	1700	< 1	< 1
Toluene	1400	460	< 1	6000	< 1	< 1
Ethylbenzene	600	300	< 1	300	< 1	< 1
mp-Xylene	2000	1600	< 1	4500	< 1	< 1
o-Xylene	760	460	< 1	2200	< 1	< 1
1,2,4-Trimethylbenzene	880	1400	20	1100	< 1	< 1
1,3,5-Trimethylbenzene	330	410	8	400	< 1	< 1
Naphthalene	230	130	< 5	< 500	< 5	< 5

8021Bmod: The samples were analyzed by GCMS using method 8260B.

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

24653

Sample ID	Date/Time	Matrix	Parameters	Sample Notes	# of containers
MW-4 []	12/18 1245	aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
MW-5 []	1150	aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
MW-6 []	1145	aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
Culvert []		aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
MW-Church []	12/18/233	aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
Dawson []	1225	aqueous	AqTot/v8021aromatics-NaphthaleneV		[]
Trip Blank []		aqueous	AqTot/v8021aromatics-NaphthaleneV		[]

Project Name ARMS
Project # 5173
Client (Pro Mgr) Richard Pendleton
Customer Eastview Environmental
Address 28 Kaufmann Drive
City Peterborough NH 03458
Phone 924-7491
Fax 924-9174 (69)

Results Needed by: Preferred date STANDARD
Notes about project
Include TMBs, 1 ppb detection limit for MTBE
Special VT pricing

Reporting Options
 HC Partial Fax
 NO FAX EDD Disk
PONumber Verbal
Quote No VT Pricing
Cold? Y N

Samples Collected by: RJ M. Pe...
R. M. Pe... 2000-12-20 12:00 R. Blood
Relinquished by Date/Time Received by
R. Blood 2000-12-20 14:00 Donna Ste...
Relinquished by Date/Time Received by