

**Bedrock Study and Long Range
Contaminant Migration Evaluation Report**

at

Whetstone Brook Petroleum Discharge
Elm & Canal Streets
Brattleboro, VT 05301
(DEC Site# 91-1059)

for

Town of Brattleboro, Vermont

prepared by

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EXECUTIVE SUMMARY

A limited bedrock study and evaluation of the possible long range migration of petroleum compounds via groundwater into the Whetstone Brook were conducted by ERD Environmental, Inc. (formerly known as ENSA Environmental, Inc.). This work was conducted pursuant to recommendations presented in ERD Environmental's (ERD) Additional Environmental Investigations Report, dated 6/16/95, and the February 22, 1996 proposal and work plan.

The bedrock study included the drilling of one double cased groundwater monitoring well near the retaining wall located east of the intersection of Elm and Canal Streets to assess the potential for petroleum related contamination migrating via the bedrock aquifer. Bedrock core samples consisted of dark gray phyllites formed by low-grade metamorphism of shales. Petroleum related volatile organic compounds (VOCs) were detected in split spoon soil samples collected 0.5 to 7 feet above bedrock. Soil and groundwater samples, collected for analysis of (VOCs) indicated the presence of several petroleum related VOCs.

To obtain additional information concerning the contaminant migration pathway (above or within bedrock), a surficial bedrock survey was conducted upgradient of the subject area. To supplement a limited number of bedrock outcroppings, four soil borings were advanced along a suspected migration pathway to determine depth to bedrock and screen split spoon soil samples for the presence of volatile organic compounds (VOCs) at the bedrock/overburden interface. VOCs were detected in overburden soil samples collected along the suspected migration pathway.

Petroleum related contamination was identified in soil samples collected from soil borings at depths well below the groundwater table. VOC levels were highest 10-20 feet below the groundwater table but diminished afterward with depth, indicating the presence of a downward trending contaminant migration pattern. A groundwater monitoring well was installed at the boring having a maximum VOC level of 131 ppm. Total VOCs detected in the well screened at the 49-59 foot depth range were 589.4 ppb (43 ppb from Benzene). A sample collected from a nearby shallow well (30 ft), previously installed by others (MW-110), contained 198.7 ppb Total VOCs with no Benzene detected. This well represented the

most downgradient well delineating a contaminant plume located in the vicinity of Wilson Woods Road.

Based on information obtained during the recent phase of investigations, evidence was obtained to suggest that the source of petroleum contamination discharging into the Whetstone Brook may originate from past releases identified in the vicinity of the junction of Fairview and Canal Streets. Contaminant migration does not appear to be passing through bedrock but may be influenced by nearby bedrock ridges that exist in the subject area. As groundwater flows towards the retaining wall, the underdrain intercepts a portion of the contaminants resulting in their direct discharge to the Whetstone Brook. Groundwater seeps along the southern bank of the brook also continue to contribute to the petroleum discharge.

Recommendations for a CAFI are provided which shall be directed at the abatement of petroleum VOCs discharging to the Whetstone Brook.

TABLE OF CONTENTS

1. INTRODUCTION	- 1 -
2. SAMPLING METHODOLOGY AND RESULTS	- 2 -
2.1 Bedrock Well Installation	- 2 -
2.2 Surficial Bedrock Survey	- 3 -
2.3 Groundwater Potentiometric Study	- 4 -
2.4 Additional Subsurface Investigations	- 5 -
2.5 Monitoring Well Sampling and Laboratory Analysis	- 8 -
3. CONCLUSIONS	- 12 -
4. RECOMMENDATIONS	- 15 -

APPENDICES

Appendix A	Site Locus Map
Appendix B	Soil Boring/Monitoring Well Logs
Appendix C	Groundwater Potentiometric Map
Appendix D	Analytical Results
Appendix E	Vertical Profile of Retaining Wall Area
Appendix F	Photographs

1. INTRODUCTION

The following report summarizes the findings of a limited bedrock study and evaluation of possible long range migration of petroleum compounds via groundwater and their discharge into the Whetstone Brook. The study was conducted as part of an ongoing project by ERD Environmental, Inc. (formerly known as ENSA Environmental, Inc.) of Brattleboro, VT, on behalf of the Town of Brattleboro, concerning the discharge of petroleum related compounds to the Whetstone Brook in the vicinity of a concrete retaining wall located near the junction of Elm and Canal Streets (see Site Locus Map in Appendix A).

Previous investigations detected the presence of petroleum related compounds in groundwater samples collected from a monitoring well (CE-8) installed at the bedrock/overburden interface. Volatile organic compounds (VOCs) were detected via head space screening in soil samples collected during this boring from the 30 to 37 foot depth range. This well, which is screened immediately above what was considered to be bedrock at 40 feet below the ground surface, is located in the vicinity of several shallow wells previously installed in Canal Street and near the concrete retaining wall and an underdrain which is located approximately 35 feet below the ground surface beneath the footing of the retaining wall. While petroleum compounds continue to be detected at groundwater seeps, the underdrain outfall, and monitoring wells screened near the bedrock/overburden interface (40 feet below grade), no petroleum related compounds have been recently detected in groundwater samples collected from shallower wells set at 20 feet below the ground surface.

In a previous report entitled, Additional Environmental Investigations Report, dated June 16, 1995, ERD recommended the installation of two double-cased groundwater monitoring wells set 10 feet into bedrock to assess the potential for petroleum related contamination migrating via the bedrock aquifer. One well was to be emplaced near monitoring well CE-8 while the second well was to be installed further upgradient in the direction of a known gasoline plume migrating in a northerly direction.

Installation of the bedrock well (BW-1) located near CE-8 proved to be very time consuming due to the presence of running sands and weather-related delays. The proposed location of the second well contained subsurface utility lines that could not be definitively located by town DPW personnel. Due to the lack of a more suitable drilling location and the potential for damaging water and/or sewer lines, installation of the second well was postponed until the results obtained from the first well could be evaluated.

Following the installation of the first bedrock well and conversations with personnel from the Vermont DEC, it was determined that a surficial bedrock survey should be performed to assist in evaluating the potential for the long range migration of petroleum compounds via groundwater from known release sites located approximately 3000 feet upgradient (south) of the retaining wall discharge area. A groundwater potentiometric map was also developed to assess the hydraulic head between the source and discharge areas. Existing monitoring wells located in subject area and a USGS benchmark were used to prepare the groundwater map. Soil borings were advanced to evaluate depth to bedrock and the level of VOCs in the vicinity of the bedrock/overburden interface. A proposal and work plan were approved by the DEC on February 29, 1996. In addition to the boring locations proposed in the work plan, the Town Manager of Brattleboro, Jerry Remillard, requested the advancement of a fifth boring. This was verbally approved by the DEC on August 21, 1996. Results from the above noted work along with the bedrock well installation findings are presented in this report.

2. SAMPLING METHODOLOGY AND RESULTS

2.1 Bedrock Well Installation

On November 29, 1995, a soil boring was advanced approximately 40 feet below the ground surface using hollow stem auger drilling methods by American Drilling Services, Inc. of Westminster, MA under the supervision of ERD personnel. Split spoon soil samples were collected and field screened for VOCs according to headspace analysis protocol using a Thermo Environmental Instruments Model 580B organic vapor meter PID calibrated with a 250 ppm Isobutylene span gas. ERD personnel also provided traffic protection with cones, signs and caution tape, as well as coordination of the shielding of overhead electrical lines via CVPS.

Due to previous information obtained during the installation of monitoring well CE-8, the collection of continuous split spoon soil samples began at the 35-37 foot depth range and continued until bedrock was encountered at 42.5 feet. Head space screening of these samples detected the presence of 7 ppm, 49 ppm, 22 ppm and 23 ppm of VOCs in the samples collected from the 35-37, 37-39, 39-41, and 41-42.5 foot depth ranges, respectively. A soil boring/monitoring well log is provided in Appendix B. The sample collected from the 37-39 foot depth range was analyzed for VOCs via EPA Method 8260 to assess the type of contamination present (petroleum vs solvent related). After sample collection was completed, the augers were removed from the bore hole and a four inch diameter steel casing was spun to bedrock using water to flush out the casing.

On November 30, 1995, a 4 inch diameter carbide roller bit was used to bore into the bedrock. The casing was advanced approximately 3.5 feet into bedrock before being raised approximately 4 inches to accommodate the injection of grout around the casing annulus. The grout was allowed to set for approximately 19 hours. During bedrock coring, petroleum odors were detected in the roller bit water used to flush out the well. A separate water tank was used to store potable water obtained from the local DPW garage. The water supply was free of petroleum odors. A sample of the well water containing the petroleum odors was collected at the well head for analysis of VOCs via EPA Method 8260. Results are provided in section 2.5 of this report.

On December 1, 1995, the carbide roller bit was used to drill through the grout which extended to the 11-12 foot depth range within the casing. Clean water was used to flush out the well once bedrock was encountered. A total of approximately 11.5 feet of bedrock was collected during the coring. The bedrock was identified as originating from the Devonian Littleton formation, consisting of dark gray phyllites with lustrous cleavage surfaces formed by low-grade metamorphism of shales with thin interlayers of white quartzite formed from sandstone (Roadside Geology of VT and NH, 1987). Iron pyrite was also present. Fractures were observed along various portions of the core sample. A sheen was observed in the recirculating trough during coring activities. It could not be determined if this sheen was due to bedrock dust or petroleum in nature. No distinct odors were noted. A 10 foot section of 2 inch diameter PVC well screen was set at the limit of the boring which was approximately 53 feet below the ground surface (11.5 feet into bedrock). A sand pack was backfilled around the well screen and a 1-2 foot bentonite seal was placed atop the sand pack. The remainder of the PVC riser annulus was backfilled with grout. A protective well box was cemented in place and the well head was provided with a locking gripper cap.

2.2 Surficial Bedrock Survey

Following a limited visual search for bedrock outcroppings, a telephone survey was conducted in the subject area. Inquiry was made into the presence of bedrock at residential properties and in the basement of these structures. No reports of the presence of bedrock were received and most basements in the subject area had poured concrete floors.

Bruce Wilson, a local geologist having special knowledge of the bedrock and surficial geology of Brattleboro, examined those outcrops that were found in the subject area for lithology, amount of quartz veining, foliation orientation, evidence and general orientation of any kink folds or prominent fracture zones, and direction of outcrop elongation by glacial abrasion and gouging.

Based on the observation of five surficial bedrock outcroppings, it was inferred that a bedrock ridge extends from the junction of Canal Street and Main Street south along the direction of South Main Street past the buried bedrock ridge encountered in borings (advanced during the delineation of the Canal Street Mobil gasoline plume) west of Wilson Woods Road. A second ridge (oriented north-south) also appears to exist in the vicinity of Canal Street and Interstate 91.

Examination of the outcrop lithology indicated that the rock type was of the Littleton Formation composed of silty and micaceous layers resistant to weathering. Mr. Wilson reported the absence of till over bedrock, based on soil boring information obtained in the subject area. Alluvial deposits appear to dominate in the area. This observation is consistent with what was encountered during the soil borings advanced by ERD in this area of Brattleboro.

Details concerning Mr. Wilson's study, along with reference material, photographs, and maps are presented under separate cover as an addendum to this report.

2.3 Groundwater Potentiometric Study

The elevation of the PVC well head of area groundwater monitoring wells was determined by survey methods using local USGS elevational bench marks. All wells were gauged on the same day and a potentiometric map was generated to evaluate the average hydraulic gradient groundwater transport velocity between the retaining wall area and the most downgradient monitoring well of the plume originating from the Canal Street Mobil site. The Groundwater Potentiometric Map is included in Appendix C.

Based on this map it can be seen that at least two groundwater flow paths appear to exist in the subject area. Groundwater flow in the vicinity of the junction of Fairview and Canal Streets occurs in an easterly direction, while groundwater flow at the intersection of Birge Street and Canal Street is to the north. Groundwater flow continues in this direction past the A.L. Tyler & Sons site (DEC Site # 93-1429) to the Whetstone Brook. There does not appear to be a connection between groundwater located in the area of Fairview and Canal Streets and groundwater located in the vicinity of the intersection of Birge and Canal Streets. This is supported by the groundwater potentiometric map and the absence of petroleum contamination in groundwater samples previously collected from monitoring wells located at the intersection of Canal Street and Birge Street and the upgradient well at the A.L. Tyler & Sons site.

Based on soil borings previously advanced to the north of the A.L. Tyler & Sons site along Canal Street to the intersection of Elm Street and Canal Street (including borings near the Canal Street School), no groundwater was encountered within overburden.

Refusal was met at each of these borings, presumed to be bedrock at depths ranging from 10-18 feet. The shallow bedrock that extends along this section of Canal Street may influence the flow of groundwater originating from the south by directing it via unconsolidated soils towards the discharge point located downgradient of the retaining wall.

Previous investigations conducted by Griffin International, Inc. of Williston, VT, delineated the gasoline contaminant plume originating from the Canal Street Mobil site. Their investigations indicated that groundwater flow initially occurred to the east from the source area (former underground gasoline storage tanks) and then proceeded in a northerly direction after encountering what was considered to be a buried bedrock ridge in the vicinity of Wilsons Woods Road. Based on the groundwater elevations at the monitoring wells installed by Griffin International, Inc. and the wells installed by ERD along Canal Street and at the retaining wall, the potential does exist for groundwater flow to continue in a northerly direction, constrained to the east of Canal Street and west of South Main Street by bedrock ridges. ERD would like to thank Griffin International, Inc. and the site RP, Rice Oil Co. for their help in providing access to the monitoring wells associated with the Canal Street Mobil site and the PVC well head elevations for these wells.

Groundwater flow was also shown to be in an easterly direction at the Coastal gasoline station (DEC Site# 95-1913) during subsurface investigations at this Canal Street location. Groundwater remediation and/or UST replacement has occurred at both of these sites.

Based on the groundwater potentiometric map prepared during this study, a hydraulic gradient exists between potential contaminant sources and the Whetstone Brook of sufficient head to convey petroleum related contaminants via groundwater transport. The average hydraulic gradient between monitoring well MW-111 (341.68 ft above mean sea level) and CE-8 (283.28 ft above mean sea level) is 0.020 cm/cm or 2%. Based on a Hydraulic Conductivity estimate of 0.01 cm/second for the alluvial sandy soil encountered along the suspected migration pathway, and an effective porosity estimate of 0.3, the groundwater transport velocity was estimated to be 146 feet/year.

2.4 Additional Subsurface Investigations

Four soil borings were initially proposed to be advanced at accessible locations along the suspected groundwater transport path extending from Wilson Woods Road to the petroleum discharge point for the purpose of determining if an alluvial valley exists between the two bedrock ridges noted in sections 2.2 and 2.3. Access letters were submitted to site owners where the borings would be advanced during August of 1996. Final approval was obtained for all of the proposed borings except for the Portland Glass location (directly across from the retaining wall on Canal Street). After several telephone

$$2.02 \text{ cm/cm} \times 0.01 \text{ cm/sec} \times 0.3$$
$$= 6.06 \times 10^{-4} \text{ cm/sec}$$
$$= [5.9 \text{ cm/DAY} / 254 \text{ cm/YR}] / 12 \text{ mo}$$

$$= 57.6 \text{ cm/DAY} / 254 \text{ cm/YR}$$
$$= 22.67 \text{ IN/DAY} / 12 \text{ MONTHS}$$
$$= 1.99 \text{ FT/DAY} / 365 \text{ DAYS} = 694 \text{ FT/YR}$$

conversations with the site owner's environmental attorney, permission to advance a boring on this property was denied. An attempt was made to drill south of this property on Clark Street but the presence of subsurface and overhead utilities and a densely populated residential community prevented the completion of any borings.

A fifth soil boring location was selected by Brattleboro Town Manager, Jerry Remillard at the southeast end of Horton Place. In the past, substantial discharge of groundwater occurred in this area. According to Mr. Remillard, a state geologist performed a study which concluded that the groundwater discharge in this area flowed from the vicinity of the pond located near Wilson Woods Road. Permission to include this boring in the ERD study was obtained from Richard Spiese of the DEC on 8/21/96. Information regarding the date, location, maximum depth, and VOC levels of selected soil samples collected from the soil borings recently advanced is summarized in the table below. Soil boring/monitoring well logs are presented in Appendix B along with soil characterizations and a complete listing of VOC screening results.

**Data From Soil Borings Advanced During the Bedrock Mapping Study for
Whetstone Brook Petroleum Discharge Project
August, 1996**

	SB-2		SB-3		SB-4		SB-5	
Location	Pine Street Playground		20 Fuller Drive		end of Wilson Woods Road		end of Horton Place	
Drill Date	9/17/96		9/19/96		10/4/96		9/20/96	
Maximum Depth	87 ft		102 ft		59 ft		32 ft	
Approximate Depth to Groundwater	63 ft		38-80 ft		24 ft		6.5 ft	
VOC Levels (ppm) per Depth Interval (feet)	0.0 ppm	60-62 ft	0.0 ppm	15-17 ft	15-17 ft	1 ppm	0.0 ppm	5-7 ft
	47 ppm	70-72 ft	0.0 ppm	32-34 ft	22-24 ft	3.2 ppm	0.0 ppm	10-12 ft
	43 ppm	75-77 ft	76 ppm	34-36 ft	50-52 ft	131 ppm	0.0 ppm	15-17 ft
	19 ppm	80-82 ft	14 ppm	80-82 ft	55-57 ft	96 ppm	0.0 ppm	30-32 ft
	18 ppm	85-87	14 ppm	100-102 ft	58-59 ft	25 ppm	-	-

Based on information obtained during the drilling of the above noted soil borings, bedrock was only encountered at the boring located at the end of Wilson Woods Road (SB-4), at a depth of 59 feet. Bedrock was not encountered at borings SB-2, SB-3, or SB-5 which were drilled to a maximum depth of 87 feet, 102 feet and 32 feet, respectively. Running sands prevented further auger advancement.

Volatile organic compounds (VOCs) were detected in soil samples collected from SB-2, SB-3, and SB-4. In each case the maximum VOC level occurred well below the groundwater table elevation. Due to the presence of VOCs exceeding 100 ppm, a groundwater monitoring well was installed at SB-4 (pursuant to proposal). The soil sample with the highest VOC level (50-52 ft depth range) was submitted for VOC analysis via EPA Method 8260. The bedrock elevations encountered at SB-4 and CE-8 were approximately 310 feet and 260 feet above mean sea level. This corresponds to an average slope of the bedrock surface of 1.6%.

2.5 Monitoring Well Sampling and Laboratory Analysis

2.5.1 Bedrock Well

During the installation of the bedrock well, a soil sample was collected from the 37-39 foot depth range, which yielded the highest level of VOCs (49 ppm) upon field screening with the OVM. A water sample was also collected from the circulation tank due to the detection of petroleum odors during well flushing prior to bedrock coring. The samples were analyzed for VOCs by GC/MS via EPA Method 8260.

On December 5, 1995, the bedrock well was purged of roller bit water that had remained since completion of the well (water was present at 3.97 feet below the PVC well head). A total volume of 32 bailers was removed from the well. The recharge of groundwater did not immediately occur into the well. For comparison, the groundwater table elevation at the nearby monitoring well CE-8 was gauged to be 15.72 feet below the PVC well head. On December 8, 1995, the bedrock well was gauged and sampled for laboratory analysis of VOCs by GC/MS via EPA Method 8260. Groundwater was present at 34.24 feet below the PVC well head. The well was purged of approximately two well volumes before sample collection occurred. A two-foot water column remained in the well at the time of sample collection. No sheen or odors were noted during sample collection.

2.5.2 Underdrain Outfall and Monitoring Well Sample Analyses

On October 7, 1996, the newly installed monitoring well at the north end of Wilson Woods Road and monitoring well MW110, which was previously installed by others, was sampled for VOCs by GC/MS via EPA Method 8260. The depth of monitoring well MW110 is 30 feet and was sampled to compare groundwater conditions near the surface (approximately 24-30 feet at MW110) to those above bedrock (approximately 50-60 feet at SB-4).

On October 10, 1996, samples were collected from monitoring well CE-8 (screened above bedrock), the bedrock well BW-1 (which was inadvertently labeled CE-8a on the chain of custody), and from the underdrain outfall for analysis of VOCs by GC/MS via EPA Method 8260.

Analytical results are summarized in the table below with data sheets and chain of custody records provided in Appendix D. Laboratory designations on the data sheets and chain of custody statements presented as BW1-12895 and BW1-113095 refer to the groundwater sample collected following purging of BW-1 and the well water sample collected from the circulation tank during well coring, respectively. Results from the previous sampling of groundwater in CE-8 and the underdrain outfall are also included along with the most

recent results. Laboratory data sheets and chain of custody statements for these samples are also presented in Appendix D.

Groundwater and Soil Sample Results (in ppb) for Whetstone Brook Petroleum Discharge

Compound	BW-1 12/8/95 {10/10/96} {10/10/96 dup} <i>Fe</i>	tank water 11/30/95	BW-1 soil @ 37-39 ft 11/29/95 <i>PPM</i>	CE-8 4/25/95 {10/10/96}	underdrain outfall [7/28/94] (11/8/94) 4/25/95 {10/10/96}	SB-4 {10/7/96}	SB-4 soil @ 50-52 ft {10/7/96}	MW110 {10/7/96}	VT PGWQ Standards (ppb)
TOTAL VOCs	49.6 (8020) {80.8 (8260)} {31.8 (8260)}	1.7	7.8	18.4 {5.5}	[73.4 (8020)] (69.5 (8260)) 65.8 (8260) {24.3 (8260)}	{566.9}	{ND}	240.7	-
TOTAL BTEX	7.4 {5.2} {2.9}	1.7	7.8	3.0 {2.7}	[63.6 (8020)] (48.4 (8260)) 32.8 (8260) {15.5 (8020)}	{196.9}	{ND}	11.3	-
Chloroform	ND {ND} {ND}	ND	ND	ND {ND}	{ND} (ND) ND {ND}	{ND}	{ND}	{11}	NS
1,2-Dichloroethane	2.9 {2.0} (ND)	ND	ND	ND (ND)	{ND} (ND) ND {ND}	{ND}	ND	ND	5.0
Benzene	5.9 {5.2} {2.9}	ND	7.8	3.0 (2.7)	{55} (36) 25 {14}	{43}	ND	ND	5.0
Toluene	ND {ND} {ND}	1.7	ND	ND (ND)	[1.8] (2.3) 2.3 {ND}	{6.9}	ND	5.6	2,420
Ethylbenzene	ND {ND} {ND}	ND	ND	ND (ND)	[3.9] (5.1) 1.3 {1.5}	{130}	ND	3.3	680
Xylenes	1.5 {ND} {ND}	ND	ND	ND (ND)	[2.9] (5.0) 4.2 {ND}	{17}	ND	2.4	400

Compound	BW-1 12/8/95 {10/10/96} {10/10/96 dup}	tank water 11/30/95	BW-1 soil @ 37-39 ft 11/29/95	CE-8 4/25/95 {10/10/96}	underdrain outfall [7/28/94] (11/8/94) 4/25/95 {10/10/96}	SB-4 {10/7/96}	SB-4 soil @ 50-52 ft {10/7/96}	MW110 {10/7/96}	VT PGWQ Standards (ppb)
MTBE	33 {71} {27}	ND	ND	11 (ND)	[9.8] (ND) 10 {ND}	{ND}	ND	ND	VHAL = 40 ppb
2-Butanone	ND	ND	ND	ND	ND	ND	ND	31	NS
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	3.3	NS
sec-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	1.1	NS
Naphthalene	ND {ND} {ND}	ND	ND	ND (ND)	{NT} (7.1) 6.6 {1.9}	{120}	ND	68	NS
n-Propylbenzene	ND	ND	ND	ND	[NT] (ND) ND {1.5}	{100}	ND	10	NS
Isopropylbenzene	2.9 {2.6} {1.9}	ND	ND	4.4 (2.8)	[NT] (ND) ND {ND}	{33}	ND	10	NS
1,3,5 Trimethylbenzene	1.6 {ND} {ND}	ND	ND	ND (ND)	{NT} (6.4) 5.4 {1.2}	{67}	ND	36	NS
1,2,4 Trimethylbenzene	1.8 {ND} {ND}	ND	ND	ND (ND)	{NT} (7.6) 11 {4.2}	{50}	ND	59	NS

ND = not detected
PGWQ Standards = Vermont Primary Groundwater Quality Standards (ug/l or ppb)
VHAL = Vermont Health Advisory Limit

The location and vertical profile of the bedrock monitoring well BW-1 and overburden groundwater monitoring well CE-8 are presented in cross section in Appendix E. An earlier version of this diagram was previously submitted to the DEC on October 7, 1995.

It should be noted that during the most recent gauging and sampling of the bedrock and overburden well (BW-1 and CE-8), it was observed that the depth to groundwater measurements in these wells differed by only 1.27 feet. Due to the virtually equal groundwater table elevations in these wells, it may be possible that the seal on the bedrock casing may not be complete, allowing for groundwater to enter the bedrock well from the above unconfined aquifer. This is consistent with the very slow groundwater recharge rate noticed for the bedrock well.

3. CONCLUSIONS

- The bedrock sample collected during the coring of BW-1 was identified as dark gray phyllites (form of schist) with iron pyrite and thin interlayers of quartzite. Fractures were noted along various portions of the core sample (see photographs in Appendix E). This sample was consistent with the bedrock identification provided by Bruce Wilson and the text (*Roadside Geology of VT and NH, 1987*).
- Soil samples collected from the 30 to 37 foot depth range during the previous installation of CE-8 contained 18 to 27 ppm of VOCs. Soil samples collected from the 35 to 42 foot depth range during the recent installation of BW-1 contained VOCs ranging from 7 ppm to 49 ppm. The close proximity of the underdrain to monitoring wells CE-8 and BW-1 may explain the presence of the VOC contamination discharging via the underdrain outfall and the lower groundwater elevations observed at monitoring well CE-8 compared to the nearby shallower wells. In July of 1994, the flow rate of the underdrain outfall was measured to be approximately 16 gallons/minute (23,000 gallons/day). While the flow rate of this discharge has not been monitored on a frequent basis, the amount of groundwater discharging from this pipe appears to be relatively consistent (based on visual observation of discharge). It is possible that the groundwater withdrawal achieved by this underdrain is sufficient to draw groundwater from upgradient locations making this area of the Whetstone Brook the main discharge point for contaminated groundwater. Bedrock geology may also play a role in directing groundwater flow to this section of the Whetstone Brook.
- Information obtained previously from the VT DEC files concerning the Canal Street Mobil station, indicated that groundwater flow in the vicinity of this site occurred initially in an easterly direction and then shifted to the northeast. The environmental report for that site indicated that a subsurface bedrock ridge exists in the vicinity of the pond located at the end of Wilson Woods Road which may be influencing the flow direction of groundwater contamination. The surficial bedrock study conducted by ERD indicated that this buried

bedrock ridge extends to at least the intersection of Canal and Main Streets with outcroppings visible in the area immediately east of the retaining wall and at the Canal Street Elementary School. Soil borings advanced by ERD at the intersection of Elm and Canal Streets and further south within Canal Street (at Little Caesars) encountered bedrock approximately 10-20 feet below the ground surface with no indication of the presence of groundwater.

- Soil borings most recently advanced by ERD in the vicinity of Wilson Woods Road, Pine Street, Fuller Drive and Horton Place revealed information supporting the potential for gasoline transport via groundwater in the direction of the retaining wall area. A buried valley at least 100 feet in depth and consisting of alluvial deposits appears to exist between the buried bedrock ridge located east of Wilson Woods Road and a second ridge located between Canal Street and Interstate 91.
- Based on the groundwater potentiometric map prepared during this study, a hydraulic gradient exists between the potential source area of contamination and the discharge point to the Whetstone Brook of sufficient head to convey petroleum related contaminants via groundwater flow. The average hydraulic gradient established between monitoring wells SB-4 and CE-8 was determined to be 0.020 cm/cm or 2%. The slope of the bedrock surface was estimated to be 1.6%, trending in a northerly direction. The average groundwater transport velocity was estimated to be 146 feet/year. Using this rough approximation of groundwater transport velocity, the temporal interval for gasoline compounds to migrate from the northern end of Wilson Woods Road to the Whetstone Brook discharge area was estimated to be 20 years.
- Field screening of soil samples collected during the advancement of the soil borings revealed the presence of volatile organic compounds (VOCs) and weathered petroleum odors similar to gasoline. The levels increased from the boring located closest to the discharge point (Pine Street 47 ppm @ 70-72 ft) to the boring located at Wilson Woods Road (131 ppm @ 50-52 ft), closest to the source area. The maximum VOC levels were detected approximately 10-20 feet beneath the groundwater table elevation. The VOCs detected in soil samples collected from CE-8 and BW-1 ranged from 18 to 49 ppm, were also approximately 15-20 feet below the groundwater table elevation.
- Analytical results indicated the presence of higher levels of petroleum related volatile organic compounds (VOCs) in samples collected from bedrock well BW-1 than the nearby overburden groundwater monitoring well CE-8. However, due to what appears to be entry of groundwater from the overburden aquifer into the bedrock well, it would appear that the main source of contaminated groundwater at the retaining wall area appears to be migrating within the overburden aquifer rather than through the bedrock. This is supported by observations of VOC levels in soil samples collected from SB-2, 3 and 4. The bedrock well may primarily receive groundwater migrating at or above the

bedrock/overburden interface while the groundwater source for CE-8 would extend ten feet above this interface zone, into areas exhibiting less contamination.

- Analysis of the groundwater sample collected from the bedrock well detected the presence of petroleum related compounds in excess to that detected in CE-8 and similar in species and concentration to that previously detected discharging at the underdrain outfall. While the chlorinated VOC 1,2, Dichloroethane was detected (at very low levels) in the bedrock well sample, dense non-aqueous phase liquid (DNAPL) related VOCs were not detected in the soil sample collected for analysis from this well boring. Chlorinated VOCs have not been detected in previous soil or groundwater samples analyzed.
- The concentrations of petroleum related VOCs detected in the groundwater samples collected from the monitoring wells and the underdrain outfall suggest that the contamination appears to be present mainly in the dissolved form. Petroleum sheens, however, have been observed on several occasions at the pool area and from several groundwater seeps located along the section of the Whetstone Brook located downgradient of the retaining wall. While the level of contamination in the soil and groundwater samples analyzed to date do not constitute an immediate risk to human health or the environment, Benzene concentrations have exceeded the state and federal groundwater protection standard of 5.0 ug/l (ppb). Significant petroleum odors emanating from the groundwater seeps and underdrain outfall are the result of active biodegradation of the petroleum product by the microbial community. The appearance of a distinct sheen suggests that the level of contamination is higher than what has been identified in the samples collected to date. The groundwater contaminants most likely get diluted by the substantial flow of groundwater occurring at the discharge area. The sheen observed at seeps and on the pool surface may also be related to breakdown products produced by the microbial community as they degrade the petroleum compounds migrating via groundwater.
- Analytical results from groundwater samples collected from the underdrain outfall, monitoring well SB-4 (screened from 59 to 49 feet), and MW-110 (screened from 30 to 20 feet) indicated the presence of petroleum related VOCs very similar in type but different in concentration (see summary of analytical results on pages 10 and 11). The wells located closest to the suspected source area varied in concentration, with the deeper well (SB-4) having the highest level of Total VOCs and Total BTEX compounds. Analysis of the soil sample collected from the depth range exhibiting the maximum level of VOCs (131 ppm 50-52 feet) revealed the absence of the compounds tested for, indicating that the groundwater contaminants present at this depth were primarily in the dissolved form. These results are consistent with that detected at the discharge point. Comparison of analytical data from samples collected from MW110 over time indicates that a substantial decrease in petroleum VOC levels has occurred at least in the upper groundwater zone. Since petroleum constituents within their solubility limits tend not to be influenced greatly by their lower density values, the location of the contaminant plume

observed at borings SB-2, 3 and 4 appears to have been the result of a downward flow component in addition to a horizontal one. The elevational differences in the groundwater table and bedrock surface between the discharge and source areas may play a role in establishing the contaminant plume pattern observed.

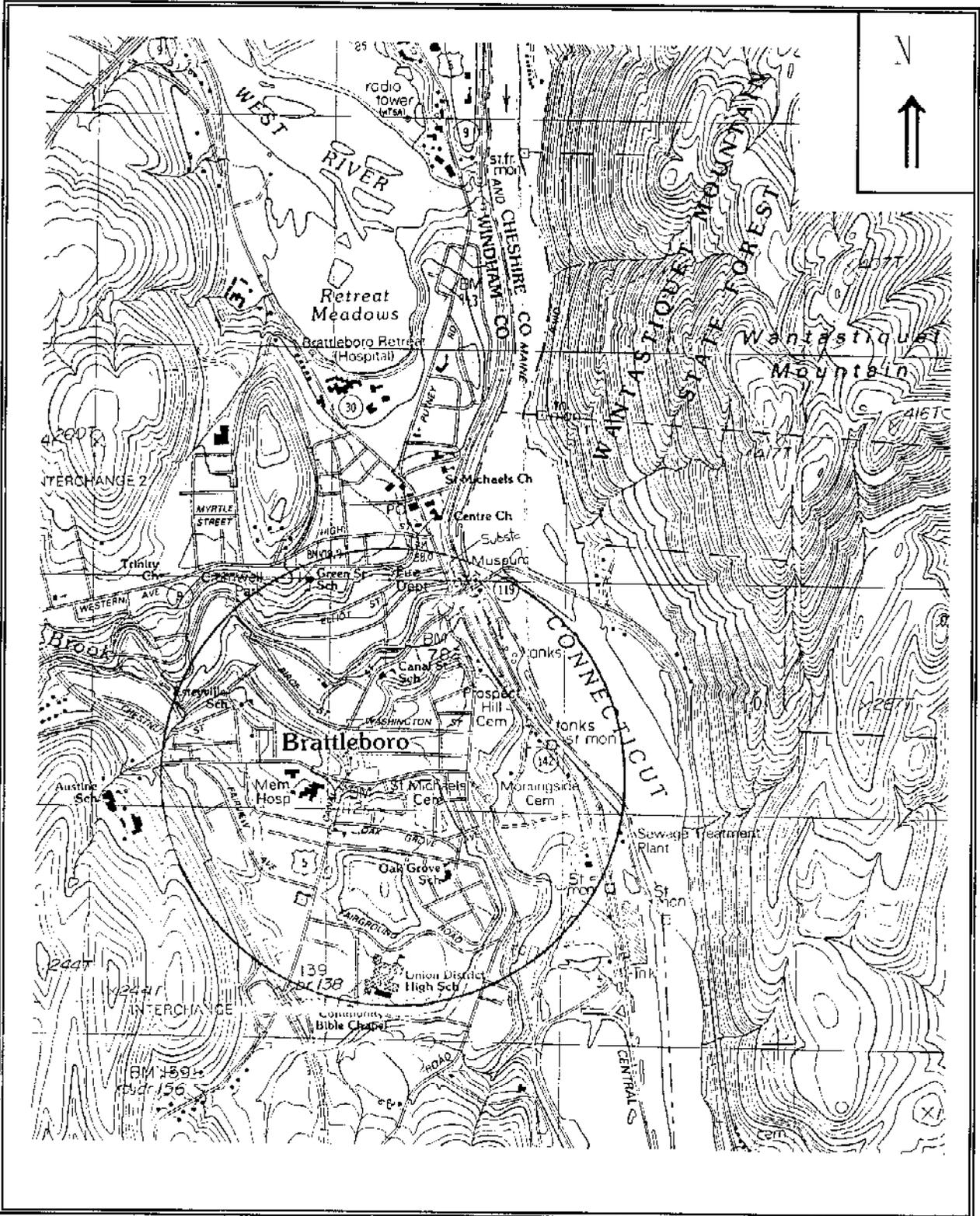
- The distance between SB-4 and the underdrain outfall was estimated to be approximately 3,180 feet. Over this distance, the level of Total VOC contamination in the groundwater was attenuated by a factor of 23. Total BTEX levels decreased by a factor of 13 and Benzene decreased by a factor of 3. Overall, the migration potential of the petroleum compounds detected was consistent with their water solubility values, with Benzene having the greatest water solubility and hence highest levels detected at the discharge point.

4. RECOMMENDATIONS

- ERD believes that the installation of additional bedrock wells is not warranted at this time. Based on previous reports, which concluded that a local source of contamination does not appear to be contributing significantly to the petroleum discharging at the retaining wall area of the Whetstone Brook, and the information presented in this report, it appears that petroleum contamination is migrating via groundwater transport from the previously documented gasoline plume terminus located at the end of Wilson Woods Road. Two known release sites are located upgradient of this area.
- Contaminant migration appears to be via groundwater transport through the overburden aquifer. Additional soil borings along the suspected migration pathway would be helpful in delineating the contaminant plume, but access to suitable drilling locations is limited, due to subsurface utilities and a densely developed residential community. Therefore, ERD does not recommend the advancement of additional soil borings for this purpose at this time.
- In order to abate the offensive petroleum odors and reduce the appearance of petroleum sheens in the vicinity of the Whetstone Brook discharge area, further investigations should be directed at contaminant reduction in this area. The underdrain located beneath the retaining wall is serving to convey groundwater contaminated with gasoline related VOCs. ERD proposes that a groundwater recovery system be developed incorporating the underdrain and a hand excavated trough in the vicinity of groundwater seeps to intercept contaminants prior to their entry into the Whetstone Brook. A fractionation tank would be used to collect contaminated groundwater that would be pumped through granular activated carbon (GAC) to remove the VOCs prior to effluent discharge to the Whetstone Brook. The treatment system could be designed to accommodate the construction of the nature path proposed by the Town of Brattleboro and minimize the strong odors impacting residents in this area.

- ERD recommends that a CAFI be performed to evaluate the feasibility and cost effectiveness of the above remedial action approach. Additional deep soil borings (to bedrock) would be utilized in delineating the contaminant plume in the vicinity of the breakout area.
- The underdrain outfall and monitoring well SB-4 and MW-110 should be sampled for VOCs by EPA Method 8020 on a monthly basis to monitor fluctuations in contaminant levels. Sampling events should be scheduled to evaluate effects from varied rainfall events and include flow rate monitoring of underdrain outfall and groundwater monitoring well gauging at SB-4, MW110, and CE-1, 2, 3, and 8. *TO OFFER QUANTILY*
- The well head at monitoring well SB-4 should be tied to the existing monitoring well elevations by survey methods so that it can be incorporated into the overall groundwater flow pattern. If gauging events can be coordinated at the various monitoring well sites that comprise the area Groundwater Potentiometric Map, updates of the overall groundwater flow pattern of the subject area can be obtained without substantial cost or duplication of already scheduled work.

Appendix A
Site Locus Map



Site Locus	Petroleum Discharge to Whetstone Brook Brattleboro, VT	USGS Topographic Quadrangle for Brattleboro VT-NH Provisional Edition 1984 Scale: 1:25,000
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Appendix B

Soil Boring/Monitoring Well Construction Log

ENSA ENVIRONMENTAL, INC.
SOIL BORING/MONITORING WELL LOG

Project #: <u>205.01</u> Date: <u>11/29/95</u> Project Name: <u>Elm & Canal</u> Location: <u>Brattleboro, VT</u> Driller: <u>American Drilling Services</u> ENSA Personnel: <u>STG & BET</u> Boring/Well #: <u>BW-1</u> Sheet <u>1</u> of <u>1</u>	SITE LOCUS
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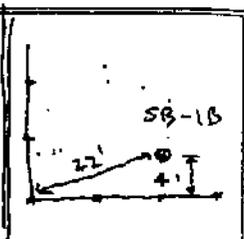
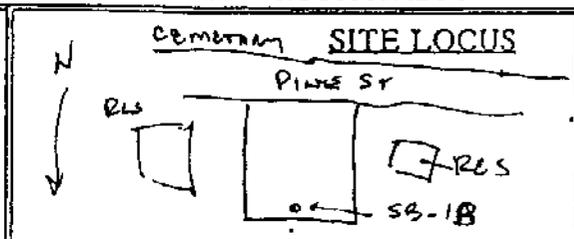
Depth	Blow Counts				Rec. (in.)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-6	6-12	12-18	18-24				
0-2							grass surface groundwater present around 13-15 ft depth range	
35-37	4	4	4	5	11"	7.0	Dark brown fine to medium grained sand, some silt and gravel wet	
37-39	7	9	11	12	20"	49	dark brown fine to medium grained sand, some silt and gravel wet collected sample for VOC analysis	
39-41	13	6	6	8	9"	22	olive gray fine to medium grained sand wet running sands	
41-42.5	13	12	9	120/2"	20"	23	olive gray medium to coarse grained sand, some silt, and gravel wet running sands	
42.5-50							Bedrock consisting of schist with quartz veins and iron pyrite Set well @ 53 ft	
50-53								

Drilling Method: <u>HSA & Roller bit</u> Total Well Depth: <u>53 ft</u> Groundwater Depth: _____ PVC Elevation: _____	Screen Diameter: <u>2"</u> Length: <u>10 ft</u> Riser Diameter: <u>2"</u> Length: <u>42.8 ft</u> Slot Size: <u>0.10</u> Ground Elevation: _____
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- Notes:
1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 580B.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA = Hollow Stem Auger, AR = Air Rotary

ENSA ENVIRONMENTAL, INC.
SOIL BORING/MONITORING WELL CONSTRUCTION LOG

Project #: 205 Date: 9/17/06
 Project Name: Whetstone Brook
 Location: PINE ST. PLAYGROUND
 Driller: RJK
 ENSA Personnel: STG
 Boring/Well # SB-18 Sheet 1 of 2



Depth	Blow Counts				Rec. (ft.)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-5	6-12	12-18	18-24				
5-7	4	9	11	13	20	0.0	WELL SORTED F.M SAND SUGGY MUD Some Fines	
10-12	3	6	9	10	22	0.0	SAME AS ↑	
15-17	6	9	10	13	24	0.0	SAME AS ↑	
20-22	5	8	9	15	18	0.0	SAME	
25-27	4	7	11	12	16	0.0	SAME WITH RUST COLORED LAYERS - 1/2" THICK 1/2" APART LOWER 8" of spoon	

Drilling Method: _____
 Total Well Depth: _____
 Groundwater Depth: _____
 PVC Elevation: _____

Screen Diameter: _____ Length: _____
 Riser Diameter: _____ Length: _____
 Slot Size: _____
 Ground Elevation: _____

- Notes:
1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 5908.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA - Hollow Stem Auger, AR - Air Rotary

ENSA ENVIRONMENTAL, INC.
SOIL BORING/MONITORING WELL CONSTRUCTION LOG

Project #: _____ Date: _____ Project Name: _____ Location: _____ Driller: _____ ENSA Personnel: <u>BSB-2</u> Boring/Well #: <u>SB-1B</u> Sheet ___ of ___	SITE LOCUS
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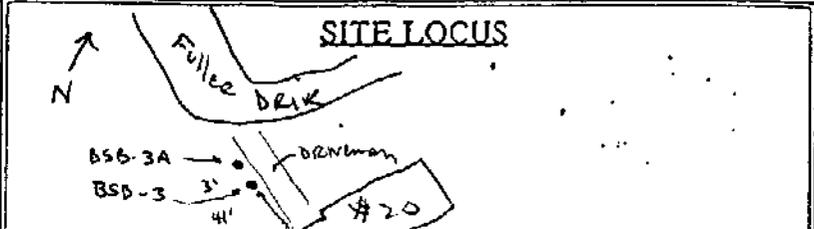
Depth	Blow Counts				Rec. (ft.)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-6	6-12	12-18	18-24				
30.37	16	20	19	24	14	0.0	WELL MOTTLED M.F. SAND WET LAYER 3" THICK ABOVE ROCKY LAYER 2" BELOW * SPOON - BOTTOM SAND DRY	
35.37	11	17	27	24	20	0.0	WELL MOTTLED M.F. SAND SOME FINE GRAVEL DRY	
60.62	19	35	51	69	18	0.0	WELL MOTTLED SALT? PAPER M.F. SAND - LAYERS OF DK BROWN & SAND EXAM TO DRY	
70.72	8	15	23	37	22	47	OLIVE GRAY F-M SAND AND SILT TRUCK CLAY WET	
75.77	8	16	22	25	24	43	OLIVE GRAY SILT SOME FINE SAND WET	
80.82	—	5	12	19	24	19	OLIVE-GRAY SILT SOME FINE SAND SOME CLAY WET	
85.87	NO BLOWS	SPOON SAND		24	18		SAME AS ↑	

Drilling Method: <u>ON WEIGHT OF CENTRIFUGES</u> Total Well Depth: <u>HSA</u> Groundwater Depth: <u>63'</u> PVC Elevation: _____	Screen Diameter: _____ Length: _____ Riser Diameter: _____ Length: _____ Slot Size: _____ Ground Elevation: _____
---	--

- Notes:
1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 5803.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA - Hollow Stem Auger, AR - Air Rotary

ENSA ENVIRONMENTAL, INC.
SOIL BORING/MONITORING WELL CONSTRUCTION LOG

Project #: 205.01 Date: 9/19/96
 Project Name: WHEATSTONE BROOK
 Location: 20 FULLER DRIVE
 Driller: T.K.
 ENSA Personnel: STG
 Boring/Well #: B5B-3 Sheet 1 of 1



Depth	Blow Counts				Rec (ft)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-6	6-12	12-18	18-24				
0-5	OFF	FLIGHTS				0.0	DK BROWN C-F SAND SOME C-F GRAVEL MOIST	
5-7	8	12	17	1A	24	0.0	SALT & PEPPER M-F SAND DRY	
10-12	3	5	10	11	20	0.0	TOP 4" SALT & PEPPER M-F SAND MOIST LOWER 16" OLIVE GRAY SILT - WET	
15-17	5	10	14	16	18	0.0	OLIVE GRAY SILT WET	
35'	REFUSAL NO SPOON TO SCREEN							
32-34	11	17	27	34	16	0.0	DK BROWN C-F SAND AND C-F GRAVEL DRY	
34-36	19	28	32	34	14	0.0	DK BROWN C-F SAND AND C-F GRAVEL SOME FLAKES OF SHALE - DRY	
36-38	37	48	63	SPOON	REFUSAL			
	AUGERS W/ THRU							
80-82	5	11	31	38	22	76	DK BROWN C SAND SOME FINE SAND, LITTLE SOME F GRAVEL WET	
100-102	DETERMINED BY WEIGH DROPS SPOON		16	28	12	19	DK BROWN C SAND SOME FINE SAND WET	

Drilling Method: HSA
 Total Well Depth: _____
 Groundwater Depth: _____
 PVC Elevation: _____

Screen Diameter: _____ Length: _____
 Riser Diameter: _____ Length: _____
 Slot Size: _____
 Ground Elevation: _____

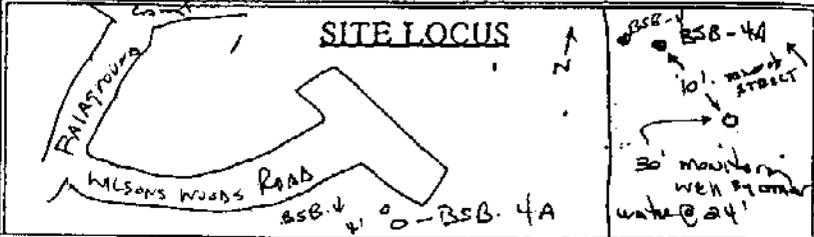
- Notes:
1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 5803.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA - Hollow Stem Auger, AR - Air Rotary

ENSA ENVIRONMENTAL, INC.

1-443-772-0642

SOIL BORING/MONITORING WELL CONSTRUCTION LOG

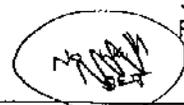
Project #: 205.01 Date: 11/4/96
 Project Name: WHEATSTONE Brook
 Location: Wilsons Woods Road
 Driller: J.K.
 ENSA Personnel: STG
 Boring/Well #: BSB-4 Sheet 1 of 1



Depth	Blow Counts				Rec. (in.)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-5	6-12	12-18	18-24				
0-2	Grab sample one flights					1.8	DL BROWN M-F SAND, LITTLE SILT ROOTS, DATE TUS, DRY	
3-7	7	12	28	34	16"	1.3	BROWN M-F SAND, M-L-F GRAVEL DRY	
BSB-4A	REFUSAL @ 7.5 FT							
10-12	20	28	17	19	18"	1.0	BROWN B-F SAND - C-F GRAVEL DRY	
15-17	35	9	10	16	18"	1.0	BROWN AND S+P C-F SAND SOME F GRAVEL DRY	
22-24	42	17	17	20	18"	3.2	BROWN C-F SAND, LITTLE SILT, LITTLE LOWER 9" WET F GRAVEL - WET	
50-52	MATERIAL BLEW UP INSIDE FLIGHTS FROM THE BOTTOM. Spilled it from this material. Total of 50 blows				24"	131	SALT & PEPPER C SAND, SOME F SAND WET	
55-57	30	20	53	DO Refusal	18"	96	SALT & PEPPER C SAND SOME C-F GRAVEL WET	
59-61	REFUSAL WITH SPLIT SPOON AND AUGERS WILL LIFT AUGERS TO 5 FT							
	sample to flow in if possible - DID NOT FLOW							
@ 58.5-59'					6"	25	DL BROWN F SAND AND SILT LITTLE CLAY - C GRAVEL (COULD BE FRACTURED LEASE)	

Drilling Method: HSA
 Total Well Depth: 59'
 Groundwater Depth: 24'
 PVC Elevation: _____

Screen Diameter: 2" Length: 10'
 Riser Diameter: 2" Length: 49'
 Slot Size: .10
 Ground Elevation: _____

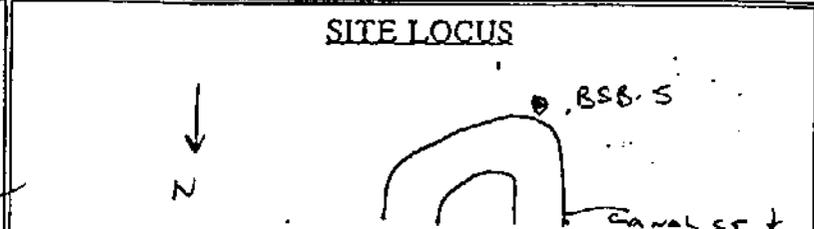


- Notes:
1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 580B.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA - Hollow Stem Auger, AR - Air Rotary

Arrive site 8:30
 Leave site 5:00

ENSA ENVIRONMENTAL, INC.
SOIL BORING/MONITORING WELL CONSTRUCTION LOG

Project #: 205.01 Date: 9-20-96
 Project Name: WATERSTONE Brook
 Location: HOLTON PLACE, BRATT.
 Driller: T.H.K.
 ENSA Personnel: PSL + STG
 Boring/Well #: ~~XXX~~ Sheet 1 of 2 BSB-5



Depth	Blow Counts				Rec. (in.)	OVM (ppm)	Soil Characterization	As Built Diagram
	0-6	6-12	12-18	18-24				
	GRAB					0.0 NO OVM	BROWN SILT w/ M/F SAND	
5-7	10	17	12	20	13	0.0 NO OVM	14" M to C SAND TIGHT GRAY - DRY	
							4" TIGHT GRAY SILT TRACE M SAND - DRY	
10-12	FAIL N + CAS	15	16	36	6	0.0	WET COARSE TO M SAND	● GW @ 6.5' MULTISULEN BY T.H.K.
							SOME FINE SAND	
15-17	2	6	12	18	20	0.0 NO OVM	10" M to F SAND - WET	
							10" M to F SAND TIGHT SILT - WET	
30-32	0	6	10	16	22	0.0 NO OVM	DARK GRAY F SAND + SILT WET ..	

Drilling Method: _____ Screen Diameter: _____ Length: _____
 Total Well Depth: _____ Riser Diameter: _____ Length: _____
 Groundwater Depth: _____ Slot Size: _____
 PVC Elevation: _____ Ground Elevation: _____

Notes:
 1. Split spoon soil samples are screened for organic vapors via headspace method using a Thermo Environmental Instruments Inc. Organic Vapor Meter Model 580B.
 2. ND indicates nondetectable contaminant concentrations as read by the OVM.
 3. Samples are collected using a Split Spoon Sampler unless otherwise indicated.
 4. Split Spoon Sampler has a 2" diameter and is driven using a 140 lb. hammer falling 30 inches.
 5. HSA - Hollow Stem Auger, AR - Air Rotary

IF YOU HIT SOMETHING DO ANOTHER

- SURFACE OFF FLIGHTS
 - 5, 10, 15'
 - STRIKE TO BEDROCK

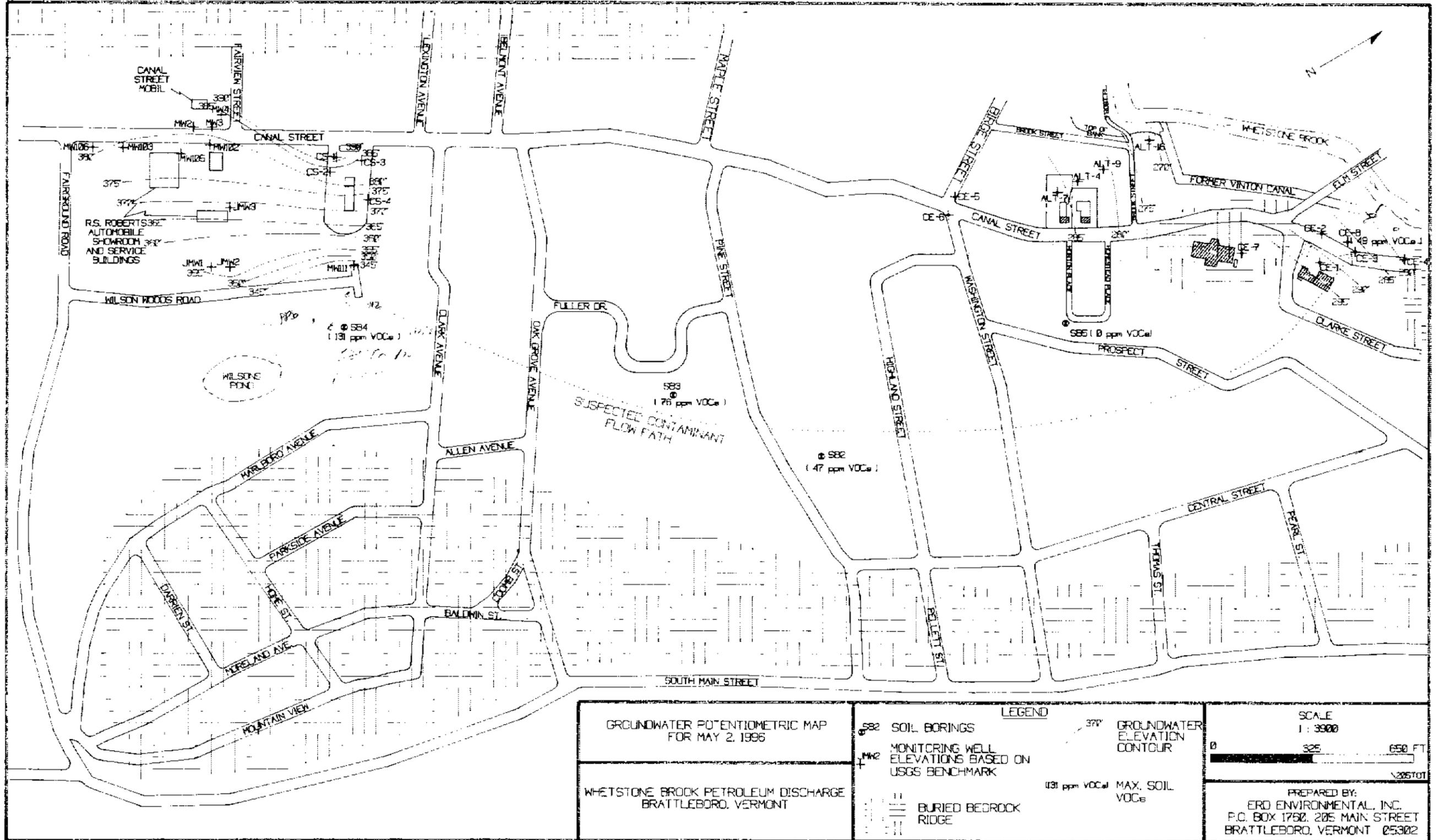
TAKE ONE AT GW
 THEN ONE EVERY 5 FOOT DOWN
 TO SEE IF PROVISIONARY

TRU TO GET OAB ON BOTTOM

Appendix C

Groundwater Potentiometric Map

2.15-037: SB
 3/24/96



Appendix D

Analytical Laboratory Reports

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

RECEIVED OCT 18 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: ERD Environmental, Inc.

Laboratory Job Number: L9607377

Address: 205 Main Street
PO Box 1760
Brattleboro, VT 05302

Invoice Number: 87667

Date Received: 08-OCT-96

Attn: Bruce Tease

Date Reported: 16-OCT-96

Project Number: 205-01

Delivery Method: Alpha

Site: Whetstone Brook

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9607377-01	BSB-4A-10796-205	Wilson Woods
L9607377-02	MW110-10796-205	Wilson Woods
L9607377-03	BSB-01-10796-205	Wilson Woods
L9607377-04	BSB-4A-10796-205	Wilson Woods

Authorized by


Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607377-01 Date Collected: 07-OCT-96
 BSB-4A-10796-205 Date Received : 08-OCT-96
 Sample Matrix: WATER Date Reported : 16-OCT-96
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	09-Oct	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	43.	ug/l	1.0				
Toluene	6.9	ug/l	1.5				
Ethylbenzene	130	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	17.	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1998

Laboratory Sample Number: L9607377-01
 BSB-4A-10796-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES	ID
							PREP ANALYSIS
Volatile Organics by GC/MS continued							09-Oct DB
				1	8260		
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	16.	ug/l	1.0				
sec-Butylbenzene	3.4	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	33.	ug/l	1.0				
p-Isopropyltoluene	3.1	ug/l	1.0				
Naphthalene	120	ug/l	1.0				
n-Propylbenzene	100	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	67.	ug/l	1.0				
1,2,4-Trimethylbenzene	50.	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	90.0	%					
4-Bromofluorobenzene	104.	%					
Dibromofluoromethane	81.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607377-02 Date Collected: 07-OCT-96
 MW110-10796-205 Date Received : 08-OCT-96
 Sample Matrix: WATER Date Reported : 16-OCT-96
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES	ID
						PREP ANALYSIS	
Volatile Organics by GC/MS				1	8260	11-Oct	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	11.	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	5.6	ug/l	1.5				
Ethylbenzene	3.3	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	2.4	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

Laboratory Sample Number: L9607377-02
MW110-10796-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	11-Oct	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	31.	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	3.3	ug/l	1.0				
sec-Butylbenzene	1.1	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	10.	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	68.	ug/l	1.0				
n-Propylbenzene	10.	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	36.	ug/l	1.0				
1,2,4-Trimethylbenzene	59.	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	102.	%					
4-Bromofluorobenzene	104.	%					
Dibromofluoromethane	97.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607377-03 Date Collected: 07-OCT-96
 BSB-01-10796-205 Date Received : 08-OCT-96
 Sample Matrix: WATER Date Reported : 16-OCT-96
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	09-Oct	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

Laboratory Sample Number: L9607377-03
 BSB-01-10796-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES	ID
						PREP ANALYSIS	

Volatile Organics by GC/MS continued 1 8260 09-Oct DB

1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				

SURROGATE RECOVERY

Toluene-d8	88.0	%					
4-Bromofluorobenzene	102.	%					
Dibromofluoromethane	84.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607377-04 Date Collected: 07-OCT-96
 BSB-4A-10796-205 Date Received : 08-OCT-96
 Sample Matrix: SOIL Date Reported : 16-OCT-96
 Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Solids, Total	87.	%	0.10	3	2540B	15-Oct	ST
Volatile Organics by GC/MS				1	8260	10-Oct	10-Oct DB
Methylene chloride	ND	ug/kg	25.				
1,1-Dichloroethane	ND	ug/kg	7.5				
Chloroform	ND	ug/kg	7.5				
Carbon tetrachloride	ND	ug/kg	5.0				
1,2-Dichloropropane	ND	ug/kg	18.				
Dibromochloromethane	ND	ug/kg	5.0				
1,1,2-Trichloroethane	ND	ug/kg	7.5				
2-Chloroethylvinyl ether	ND	ug/kg	50.				
Tetrachloroethene	ND	ug/kg	7.5				
Chlorobenzene	ND	ug/kg	18.				
Trichlorofluoromethane	ND	ug/kg	25.				
1,2-Dichloroethane	ND	ug/kg	7.5				
1,1,1-Trichloroethane	ND	ug/kg	5.0				
Bromodichloromethane	ND	ug/kg	5.0				
trans-1,3-Dichloropropene	ND	ug/kg	7.5				
cis-1,3-Dichloropropene	ND	ug/kg	5.0				
Bromoform	ND	ug/kg	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0				
Benzene	ND	ug/kg	5.0				
Toluene	ND	ug/kg	7.5				
Ethylbenzene	ND	ug/kg	5.0				
Chloromethane	ND	ug/kg	50.				
Bromomethane	ND	ug/kg	10.				
Vinyl chloride	ND	ug/kg	18.				
Chloroethane	ND	ug/kg	10.				
1,1-Dichloroethene	ND	ug/kg	7.5				
trans-1,2-Dichloroethene	ND	ug/kg	7.5				
Trichloroethene	ND	ug/kg	5.0				
1,2-Dichlorobenzene	ND	ug/kg	50.				
1,3-Dichlorobenzene	ND	ug/kg	50.				
1,4-Dichlorobenzene	ND	ug/kg	50.				
Methyl tert butyl ether	ND	ug/kg	50.				
Xylenes	ND	ug/kg	5.0				
cis-1,2-Dichloroethene	ND	ug/kg	5.0				
Dibromomethane	ND	ug/kg	50.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 18 1996

Laboratory Sample Number: L9607377-04
 BSB-4A-10796-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	10-Oct 10-Oct	DB
1,4-Dichlorobutane	ND	ug/kg	50.				
Iodomethane	ND	ug/kg	50.				
1,2,3-Trichloropropane	ND	ug/kg	50.				
Styrene	ND	ug/kg	5.0				
Dichlorodifluoromethane	ND	ug/kg	50.				
Acetone	ND	ug/kg	50.				
Carbon Disulfide	ND	ug/kg	50.				
2-Butanone	ND	ug/kg	23.				
Vinyl Acetate	ND	ug/kg	50.				
4-Methyl-2-pentanone	ND	ug/kg	50.				
2-Hexanone	ND	ug/kg	50.				
Ethyl methacrylate	ND	ug/kg	50.				
Acrolein	ND	ug/kg	130				
Acrylonitrile	ND	ug/kg	50.				
Bromochloromethane	ND	ug/kg	25.				
2,2-Dichloropropane	ND	ug/kg	25.				
1,2-Dibromoethane	ND	ug/kg	25.				
1,3-Dichloropropane	ND	ug/kg	25.				
1,1,1,2-Tetrachloroethane	ND	ug/kg	25.				
Bromobenzene	ND	ug/kg	25.				
n-Butylbenzene	ND	ug/kg	25.				
sec-Butylbenzene	ND	ug/kg	25.				
tert-Butylbenzene	ND	ug/kg	25.				
o-Chlorotoluene	ND	ug/kg	25.				
p-Chlorotoluene	ND	ug/kg	25.				
1,2-Dibromo-3-chloropropane	ND	ug/kg	25.				
Hexachlorobutadiene	ND	ug/kg	25.				
Isopropylbenzene	ND	ug/kg	25.				
p-Isopropyltoluene	ND	ug/kg	25.				
Naphthalene	ND	ug/kg	25.				
n-Propylbenzene	ND	ug/kg	25.				
1,2,3-Trichlorobenzene	ND	ug/kg	25.				
1,2,4-Trichlorobenzene	ND	ug/kg	25.				
1,3,5-Trimethylbenzene	ND	ug/kg	25.				
1,2,4-Trimethylbenzene	ND	ug/kg	25.				
trans-1,4-Dichloro-2-butene	ND	ug/kg	25.				
Ethyl ether	ND	ug/kg	130				

SURROGATE RECOVERY

Toluene-d8	99.0	%	
4-Bromofluorobenzene	84.0	%	
Dibromofluoromethane	99.0	%	

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

RECEIVED OCT 18 1996

Laboratory Job Number: L9607377

Parameter	Value 1	Value 2	RPD	Units
Solids, Total	DUPLICATE for sample(s) 04			
	93.	93.	0	%

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

RECEIVED OCT 18 1996

Laboratory Job Number: L9607377

Parameter	MS %	MSD %	RPD
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Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 01-03

1,1-Dichloroethene	99	93	6
Trichloroethene	99	93	6
Benzene	96	91	5
Toluene	97	92	5
Chlorobenzene	96	91	5

Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 04

1,1-Dichloroethene	83	88	6
Trichloroethene	97	86	12
Benzene	93	85	9
Toluene	93	89	4
Chlorobenzene	99	90	10

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

RECEIVED OCT 18 1996

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.
3. Standard Methods for Examination of Water and Waste Water. APHA-AWWA-WPCF. 17th Edition. 1989.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA

Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 1661
Sheet 1 of 1

Company Name:
ERD ENVIRONMENTAL, INC.

Project Number: 205.01
P.O. Number: 1604

Project Name/Location:
WHEATSTONE BROOK
WILSONS WOODS

Date Received in Lab: 10/8
Date Due: 10/16

Company Address:
205 MAIN ST., P.O. Box 1760
BRATTLEBORO, VT. 05302

Phone Number:
802 254-3677
FAX No.: 254-7630

Project Manager:
B. TEASE

Alpha Job Number: (Lab use only)
9607377

ALPHA Lab # (Lab Use Only)	Sample I.D.	Containers (number/type)	Matrix / Source	Method Preserve. (number of containers)						Solubles - F.F.	Sampling		MATRIX / SOURCE CODES				
				Unpres.	Ice	Nitric	Sulfuric	HCl	Other		Date	Time	MW	RO	O	W	LF
				Analysis Requested													
7377.1	BSB-4A-10796-205	2/v	MW					X			10/7/96	3:15	8260 - VOC				
2	MW40-10796-205	2/v	MW					X				3:05	8260 "				
3	BSB01-10796-205	1/v	MW					X				4:00	8260 " n/c				
4	BSB 4A-10496-205	1/v	S	X							10/7/96	4:00	8260 " (B)				

Sample's Signature:
Affiliation: ERD
Date: 10/7/96
Time: 3:31

ADDITIONAL COMMENTS:
INCLUDES 1 Trip Blank

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1			10/7/96	3:15
2			10/7/96	17:15
3				
4				

RECEIVED OCT 23 1996

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: ERD Environmental, Inc.

Laboratory Job Number: L9607544

Address: 205 Main Street
PO Box 1760
Brattleboro, VT 05302

Invoice Number: 87789

Date Received: 11-OCT-96

Attn: Bruce Tease

Date Reported: 21-OCT-96

Project Number: 205-01

Delivery Method: Alpha

Site: Whetstone Brook

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9607544-01	CE8-101096-205	
L9607544-02	CE8A-101096-205	
L9607544-03	CE02-101096-205	
L9607544-04	CE01-101096-205	
L9607544-05	OUTFALL-101096-205	

Authorized by:



Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607544-01 Date Collected: 10-OCT-96
 CE8-101096-205 Date Received : 11-OCT-96
 Sample Matrix: WATER Date Reported : 21-OCT-96
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS							16-Oct DB
Methylene chloride	ND	ug/l	5.0	1	8260		
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	2.7	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

Laboratory Sample Number: L9607544-01
 CE8-101096-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	16-Oct	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	2.8	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	93.0	%					
4-Bromofluorobenzene	85.0	%					
Dibromofluoromethane	101.	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

RECEIVED OCT 23 1996

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607544-02 Date Collected: 10-OCT-96
 CE8A-101096-205 Date Received : 11-OCT-96
 Sample Matrix: WATER Date Reported : 21-OCT-96
 Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS							17-Oct DB
				1	8260		
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	2.0	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	5.2	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	71.	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

Laboratory Sample Number: L9607544-02
 CEBA-101096-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	17-Oct	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	2.6	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	88.0	%					
4-Bromofluorobenzene	102.	%					
Dibromofluoromethane	88.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

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ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607544-03 Date Collected: 10-OCT-96
CE02-101096-205 Date Received: 11-OCT-96
Sample Matrix: WATER Date Reported: 21-OCT-96
Condition of Sample: Satisfactory Field Prep: None
Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	16-Oct	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	2.9	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	2.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	27.	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

Laboratory Sample Number: L9607544-03
 CE02-101096-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS-continued				10	8260	16-Oct	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	1.9	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	95.0	%					
4-Bromofluorobenzene	84.0	%					
Dibromofluoromethane	104.	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607544-04
 CE01-101096-205
 Sample Matrix: WATER
 Condition of Sample: Satisfactory
 Number & Type of Containers: 1 Vial

Date Collected: 10-OCT-96
 Date Received : 11-OCT-96
 Date Reported : 21-OCT-96

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	16-Oct	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

Laboratory Sample Number: L9607544-04
 CE01-101096-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID	
Volatile Organics by GC/MS continued							16-Oct	DB
1, 2, 3-Trichloropropane	ND	ug/l	10.		8260			
Styrene	ND	ug/l	1.0					
Dichlorodifluoromethane	ND	ug/l	10.					
Acetone	ND	ug/l	10.					
Carbon Disulfide	ND	ug/l	10.					
2-Butanone	ND	ug/l	4.5					
Vinyl Acetate	ND	ug/l	10.					
4-Methyl-2-pentanone	ND	ug/l	10.					
2-Hexanone	ND	ug/l	10.					
Ethyl methacrylate	ND	ug/l	10.					
Acrolein	ND	ug/l	25.					
Acrylonitrile	ND	ug/l	10.					
Bromochloromethane	ND	ug/l	1.0					
2, 2-Dichloropropane	ND	ug/l	1.0					
1, 2-Dibromoethane	ND	ug/l	1.0					
1, 3-Dichloropropane	ND	ug/l	1.0					
1, 1, 1, 2-Tetrachloroethane	ND	ug/l	1.0					
Bromobenzene	ND	ug/l	1.0					
n-Butylbenzene	ND	ug/l	1.0					
sec-Butylbenzene	ND	ug/l	1.0					
tert-Butylbenzene	ND	ug/l	1.0					
o-Chlorotoluene	ND	ug/l	1.0					
p-Chlorotoluene	ND	ug/l	1.0					
1, 2-Dibromo-3-chloropropane	ND	ug/l	1.0					
Hexachlorobutadiene	ND	ug/l	1.0					
Isopropylbenzene	ND	ug/l	1.0					
p-Isopropyltoluene	ND	ug/l	1.0					
Naphthalene	ND	ug/l	1.0					
n-Propylbenzene	ND	ug/l	1.0					
1, 2, 3-Trichlorobenzene	ND	ug/l	1.0					
1, 2, 4-Trichlorobenzene	ND	ug/l	1.0					
1, 3, 5-Trimethylbenzene	ND	ug/l	1.0					
1, 2, 4-Trimethylbenzene	ND	ug/l	1.0					
trans-1, 4-Dichloro-2-butene	ND	ug/l	1.0					
Ethyl ether	ND	ug/l	25.					
SURROGATE RECOVERY								
Toluene-d8	94.0	%						
4-Bromofluorobenzene	90.0	%						
Dibromofluoromethane	87.0	%						

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9607544-05 Date Collected: 10-OCT-96
 Sample Matrix: WATER Date Received : 11-OCT-96
 Condition of Sample: Satisfactory Date Reported : 21-OCT-96
 Field Prep: None
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260		16-Oct DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	14.	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	1.5	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED OCT 23 1996

Laboratory Sample Number: L9607544-05
 OUTFALL-101096-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued							16-Oct DB
				1	8260		
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	1.9	ug/l	1.0				
n-Propylbenzene	1.5	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	1.2	ug/l	1.0				
1,2,4-Trimethylbenzene	4.2	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	100.	%					
4-Bromofluorobenzene	92.0	%					
Dibromofluoromethane	106.	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

RECEIVED OCT 23 1996

Laboratory Job Number: L9607544

Parameter	MS %	MSD %	RPD
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Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 01-05

1,1-Dichloroethene	90	87	3
Trichloroethene	92	97	5
Benzene	97	101	4
Toluene	96	99	3
Chlorobenzene	94	100	6

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

RECEIVED OCT 23 1986

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA

Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 3007
Sheet 1 of 1

Company Name: ERD ENVIRONMENTAL, INC.	Project Number: 205.01	Project Name/Location: WHIGSTONE Brook	Date Received in Lab: 10/11	Date Due: 10/21
Company Address: 205 MAIN ST., P.O. Box 1760 BRATTLEBORO, VT 05302	P.O. Number: 4226	Project Manager: B. TRASE	Alpha Job Number: (Lab use only) 9607544	
Phone Number: 802 254-3677	FAX No.: 254-7630			

ALPHA Lab (Lab Use Only)	Sample I.D.	Containers (number/type)	Matrix/Source	Method Preserve. (number of containers)						Solubles - F.F.	Sampling		Analysis Requested
				Unpres.	Ice	Nitric	Sulfuric	HCl	Other		Date	Time	
7544.1	CE8-101096-205	2/V	MW					X		10/10/96	3:30	8260 VOC	
2	CE8A-101096-205	2/V									3:48	"	
3	CE02-101096-205	2/V									3:59	"	
4	CE01-101096-205	1/V									9:00	"	
5	OUTFALL-101096-205	2/L	O					X		10/10/96	4:00	8260 "	

Signature:	Affiliation: ERD	Date: 10/10/96	Time: 4:30	NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
ADDITIONAL COMMENTS: Trip blank: Duplicate included BT				1			10/10/96	2:30
				2		WWS	10/11/96	1:30
				3				
				4				

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
 Westborough, Massachusetts 01581-1019
 (508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: ENSA Environmental, Inc. Laboratory Job Number: L9509181
 Address: 205 Main Street; 3rd Floor Invoice Number: 79672
 Brattleboro, VT 05301 Date Received: 30-NOV-95
 Attn: B. Tease Date Reported: 14-DEC-95
 Project Number: 205 Delivery Method: Alpha
 Site: Whetstone Brook

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9509181-01	BW1-112995-205	Brattleboro, VT
L9509181-02	BW1-113095-205	Brattleboro, VT
L9509181-03	BW-01-113095-205	Brattleboro, VT

Authorized by: James R. Roth

James R. Roth, PhD - Laboratory Manager

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9509181-01 Date Collected: 29-NOV-95
 Sample Matrix: BW1-112995-205 SOIL Date Received : 30-NOV-95
 Date Reported : 14-DEC-95
 Condition of Sample: Satisfactory Field Prep: None

Number & Type of Containers: 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Solids, Total	79.	%	0.10	3	2540B	14-Dec	ST
Volatile Organics by GC/MS				1	8260	01-Dec	DB
Methylene chloride	ND	ug/kg	32.				
1,1-Dichloroethane	ND	ug/kg	9.5				
Chloroform	ND	ug/kg	440				
Carbon tetrachloride	ND	ug/kg	6.3				
1,2-Dichloropropane	ND	ug/kg	22.				
Dibromochloromethane	ND	ug/kg	6.3				
1,1,2-Trichloroethane	ND	ug/kg	9.5				
2-Chloroethylvinyl ether	ND	ug/kg	63.				
Tetrachloroethene	ND	ug/kg	9.5				
Chlorobenzene	ND	ug/kg	22.				
Trichlorofluoromethane	ND	ug/kg	32.				
1,2-Dichloroethane	ND	ug/kg	9.5				
1,1,1-Trichloroethane	ND	ug/kg	6.3				
Bromodichloromethane	ND	ug/kg	6.3				
trans-1,3-Dichloropropene	ND	ug/kg	9.5				
cis-1,3-Dichloropropene	ND	ug/kg	6.3				
Bromoform	ND	ug/kg	6.3				
1,1,2,2-Tetrachloroethane	ND	ug/kg	6.3				
Benzene	7.8	ug/kg	6.3				
Toluene	ND	ug/kg	9.5				
Ethylbenzene	ND	ug/kg	6.3				
Chloromethane	ND	ug/kg	63.				
Bromomethane	ND	ug/kg	13.				
Vinyl chloride	ND	ug/kg	22.				
Chloroethane	ND	ug/kg	13.				
1,1-Dichloroethene	ND	ug/kg	9.5				
trans-1,2-Dichloroethene	ND	ug/kg	9.5				
Trichloroethene	ND	ug/kg	6.3				
1,2-Dichlorobenzene	ND	ug/kg	63.				
1,3-Dichlorobenzene	ND	ug/kg	63.				
1,4-Dichlorobenzene	ND	ug/kg	63.				
Methyl tert butyl ether	ND	ug/kg	63.				
Xylenes	ND	ug/kg	6.3				
cis-1,2-Dichloroethene	ND	ug/kg	6.3				
Dibromomethane	ND	ug/kg	63.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSISLaboratory Sample Number: L9509181-01
BW1-112995-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	01-Dec 01-Dec	DB
1,4-Dichlorobutane	ND	ug/kg	63.				
Iodomethane	ND	ug/kg	63.				
1,2,3-Trichloropropane	ND	ug/kg	63.				
Styrene	ND	ug/kg	6.3				
Dichlorodifluoromethane	ND	ug/kg	63.				
Acetone	ND	ug/kg	63.				
Carbon Disulfide	ND	ug/kg	63.				
2-Butanone	ND	ug/kg	28.				
Vinyl Acetate	ND	ug/kg	63.				
4-Methyl-2-pentanone	ND	ug/kg	63.				
2-Hexanone	ND	ug/kg	63.				
Ethyl methacrylate	ND	ug/kg	63.				
Acrolein	ND	ug/kg	160				
Acrylonitrile	ND	ug/kg	63.				
Bromochloromethane	ND	ug/kg	32.				
2,2-Dichloropropane	ND	ug/kg	32.				
1,2-Dibromoethane	ND	ug/kg	32.				
1,3-Dichloropropane	ND	ug/kg	32.				
1,1,1,2-Tetrachloroethane	ND	ug/kg	32.				
Bromobenzene	ND	ug/kg	32.				
n-Butylbenzene	ND	ug/kg	32.				
sec-Butylbenzene	ND	ug/kg	32.				
tert-Butylbenzene	ND	ug/kg	32.				
o-Chlorotoluene	ND	ug/kg	32.				
p-Chlorotoluene	ND	ug/kg	32.				
1,2-Dibromo-3-chloropropane	ND	ug/kg	32.				
Hexachlorobutadiene	ND	ug/kg	32.				
Isopropylbenzene	ND	ug/kg	32.				
p-Isopropyltoluene	ND	ug/kg	32.				
Naphthalene	ND	ug/kg	32.				
n-Propylbenzene	ND	ug/kg	32.				
1,2,3-Trichlorobenzene	ND	ug/kg	32.				
1,2,4-Trichlorobenzene	ND	ug/kg	32.				
1,3,5-Trimethylbenzene	ND	ug/kg	32.				
1,2,4-Trimethylbenzene	ND	ug/kg	32.				
trans-1,4-Dichloro-2-butene	ND	ug/kg	32.				
Ethyl ether	ND	ug/kg	160				
SURROGATE RECOVERY							
Toluene-d8	95.0	%					
4-Bromofluorobenzene	99.0	%					
Dibromofluoromethane	95.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9509181-02 Date Collected: 30-NOV-95
 Sample Matrix: WATER Date Received: 30-NOV-95
 Condition of Sample: Satisfactory Date Reported: 14-DEC-95
 Field Prep: None
 Number & Type of Containers: 2 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	04-Dec	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	1.7	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	3.5				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.5				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSISLaboratory Sample Number: L9509181-02
BW1-113095-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued				1	8260	04-Dec	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	104.	%					
4-Bromofluorobenzene	102.	%					
Dibromofluoromethane	103.	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

RECEIVED DEC 10 1995

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9509181-03 Date Collected: 07-NOV-95
 Sample Matrix: BW-01-113095-205 WATER Date Received : 30-NOV-95
 Condition of Sample: Satisfactory Date Reported : 14-DEC-95
 Field Prep: None
 Number & Type of Containers: 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS				1	8260	01-Dec	DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	3.5				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.5				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

RECEIVED 01-10-1997

Laboratory Sample Number: L9509181-03
BW-01-113095-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS continued							
				1	8260	01-Dec	DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	95.0	%					
4-Bromofluorobenzene	101.	%					
Dibromofluoromethane	99.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

RECEIVED DEC 18 1995

Laboratory Job Number: L9509181

Parameter	MS %	MSD %	RPD
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Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 02-03

1,1-Dichloroethene	97	98	1
Trichloroethene	98	101	3
Benzene	99	101	2
Toluene	100	102	2
Chlorobenzene	98	100	2

Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 01

1,1-Dichloroethene	98	97	1
Trichloroethene	93	90	3
Benzene	110	104	6
Toluene	96	99	3
Chlorobenzene	103	99	4

ALPHA ANALYTICAL LABS
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.
3. Standard Methods for Examination of Water and Waste Water. APHA-AWWA-WPCF. 17th Edition. 1989.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

19612

ALPHA

Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 50377
Sheet 1 of 1

Company Name:
ENSA Environmental, Inc.

Project Number: 205
P.O. Number: 3535

Project Name/Location:
WHETSTONE BROOK
BRATTLEBORO VT.

Date Received in Lab:
11/30

Date Due:
12/14

Company Address:
205 MAIN ST, P.O. Box 1760
BRATTLEBORO, VT - 05302

Phone Number:
802 254-3677
FAX No.: 802 254 7630

Project Manager:
B. TEASE

Alpha Job Number: (Lab use only)
9509181

ALPHA Lab# (Lab Use Only)	Sample I.D.	Container Codes: P=Plastic V=Vial C=Cube G=Glass A=Amber Glass B=Bacteria Container O=Other	Containers (number/type)	Matrix / Source	Method Preserve. (number of containers)						Solubles - F.F.	Sampling		MATRIX / SOURCE CODES				
					Unpres.	Ice	Nitric	Sulfuric	HCl	Other		Date	Time	Analysis Requested				
9181-1	BW1-112945-205	1/G	1/G	UP	X						11/29/95	13:00	VOC 8260	(TS)				
2	BW-1-113045-205	2/V	2/V	MW					X		11/30/95	10:25	VOC 8260					
3	BW-01-113045-205	1/V	1/V	UP					X		11/30/95	9:00	VOC 8260					

RECEIVED DEC 18 1995

Sampler's Signature: *[Signature]*
Affiliation: ENSA
Date: 11/29/95
Time: 3:30

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	<i>[Signature]</i>	<i>[Signature]</i>	11-30-95	1:00
2	<i>[Signature]</i>	<i>[Signature]</i>	11/30	19:35
3				
4				

ADDITIONAL COMMENTS:
1 trip blank.
OK BET

ALPHA ANALYTICAL LABORATORIES

RECEIVED 12/21/95

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

CERTIFICATE OF ANALYSIS

Client: ENSA Environmental, Inc.

Laboratory Job Number: L9509489

Address: 205 Main Street; 3rd Floor
Brattleboro, VT 05301

Invoice Number: 79831

Date Received: 11-DEC-95

Attn: Bruce Tease

Date Reported: 21-DEC-95

Project Number: 205

Delivery Method: Alpha

Site: Whetstone Brook

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9509489-01	BW1-12895-205	Brattleboro, VT
L9509489-02	BW01-12895-205	Brattleboro, VT

Authorized by: 

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED DEC 26 1995

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9509489-01
 Sample Matrix: BW1-12895-205 WATER
 Condition of Sample: Satisfactory
 Number & Type of Containers: 2 Vial

Date Collected: 08-DEC-95
 Date Received : 11-DEC-95
 Date Reported : 21-DEC-95

Field Prep: None

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES	ID
						PREP ANALYSIS	
Volatile Organics by GC/MS				1	8260		19-Dec DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	2.9	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	5.9	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	3.5				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.5				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	33.	ug/l	10.				
Xylenes	1.5	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

RECEIVED DEC 28 1995

Laboratory Sample Number: L9509489-01
 BW1-12895-205

PARAMETER	RESULT	UNITS	SDL	REF	METHOD	DATES	ID
						PREP ANALYSIS	
Volatile Organics by GC/MS continued							
				1	B260		19-Dec DB
1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	4.5				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	2.9	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	1.6	ug/l	1.0				
1,2,4-Trimethylbenzene	1.8	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				
SURROGATE RECOVERY							
Toluene-d8	90.0	%					
4-Bromofluorobenzene	96.0	%					
Dibromofluoromethane	87.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

300 2 6 1995

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA 086 NH 198958-A CT PH-0574 NY 11148 NC 320 SC 88006 RI A65

Laboratory Sample Number: L9509489-02 Date Collected: 08-DEC-95
BW01-12895-205 Date Received : 11-DEC-95
Sample Matrix: WATER Date Reported : 21-DEC-95
Condition of Sample: Satisfactory Field Prep: None
Number & Type of Containers: 1 Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP ANALYSIS	ID
Volatile Organics by GC/MS							
				1	8260		19-Dec DB
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	2.4				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	1.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	ND	ug/l	1.5				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	2.0				
Vinyl chloride	ND	ug/l	3.5				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.5				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	10.				
Xylenes	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Dibromomethane	ND	ug/l	10.				
1,4-Dichlorobutane	ND	ug/l	10.				
Iodomethane	ND	ug/l	10.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSISLaboratory Sample Number: L9509489-02
BW01-12895-205

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES	ID
						PREP ANALYSIS	

Volatile Organics by GC/MS continued				1	8260	19-Dec	DB
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1,2,3-Trichloropropane	ND	ug/l	10.				
Styrene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
Acetone	ND	ug/l	10.				
Carbon Disulfide	ND	ug/l	10.				
2-Butanone	ND	ug/l	56.				
Vinyl Acetate	ND	ug/l	10.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Ethyl methacrylate	ND	ug/l	10.				
Acrolein	ND	ug/l	25.				
Acrylonitrile	ND	ug/l	10.				
Bromochloromethane	ND	ug/l	1.0				
2,2-Dichloropropane	ND	ug/l	1.0				
1,2-Dibromoethane	ND	ug/l	1.0				
1,3-Dichloropropane	ND	ug/l	1.0				
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0				
Bromobenzene	ND	ug/l	1.0				
n-Butylbenzene	ND	ug/l	1.0				
sec-Butylbenzene	ND	ug/l	1.0				
tert-Butylbenzene	ND	ug/l	1.0				
o-Chlorotoluene	ND	ug/l	1.0				
p-Chlorotoluene	ND	ug/l	1.0				
1,2-Dibromo-3-chloropropane	ND	ug/l	1.0				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	1.0				
p-Isopropyltoluene	ND	ug/l	1.0				
Naphthalene	ND	ug/l	1.0				
n-Propylbenzene	ND	ug/l	1.0				
1,2,3-Trichlorobenzene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	1.0				
1,3,5-Trimethylbenzene	ND	ug/l	1.0				
1,2,4-Trimethylbenzene	ND	ug/l	1.0				
trans-1,4-Dichloro-2-butene	ND	ug/l	1.0				
Ethyl ether	ND	ug/l	25.				

SURROGATE RECOVERY

Toluene-d8	92.0	%					
4-Bromofluorobenzene	98.0	%					
Dibromofluoromethane	91.0	%					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L9509489

Parameter	MS %	MSD %	RPD
-----------	------	-------	-----

Volatile Organics by GC/MS Spike Recovery MS/MSD for sample(s) 01-02

1,1-Dichloroethene	113	109	4
Trichloroethene	114	110	4
Benzene	116	111	4
Toluene	115	112	3
Chlorobenzene	113	107	5

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. 1986.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

19851

ALPHA

Analytical Laboratories, Inc.

Eight Walkup Drive
Westborough, MA 01581-1019
508-898-9220 FAX 508-898-9193

CHAIN OF CUSTODY RECORD and ANALYSIS REQUEST RECORD

No. 55884
Sheet 1 of 1

Company Name:
ENSA ENVIRONMENTAL, INC.

Project Number: 205
P.O. Number: 2558

Project Name/Location:
WHEATSTONE Brook
BRATTLEBORO VT.

Date Received in Lab: 12/11
Date Due: 12/25

Company Address:
205 MAIN STREET
BRATTLEBORO VT 05302

Phone Number: 802 254 3677
FAX No.:

Project Manager:
B. TEASE

Alpha Job Number: (Lab use only)
9509489

ALPHA Lab# (Lab Use Only)	Sample I.D.	Container Codes: P = Plastic V = Vial C = Cube G = Glass A = Amber Glass B = Bacteria Container O = Other	Containers (number/type)	Matrix / Source	Method Preserve. (number of containers)						Solubles - F.F.	Sampling		MATRIX / SOURCE CODES MW = Monitoring Well RO = Runoff O = Outfall W = Well LF = Landfill L = Lake/Pond/Ocean I = Influent E = Effluent DW = Drinking Water R = River Stream S = Soil SG = Sludge B = Bottom Sediment X1 = Other _____ X2 = Other _____	
					Unpres.	Ice	Nitric	Sulfuric	HCl	Other		Date	Time		Analysis Requested
9489.1	BW1-12895-205		2/v	MW								12/11/95	11:05	VOL 8760	
.2	BW01-12896-205		1/v									↓	9:00	.	

Sampler's Signature: *[Signature]* Affiliation: ENSA Date: 12/11/95 Time: 12:30

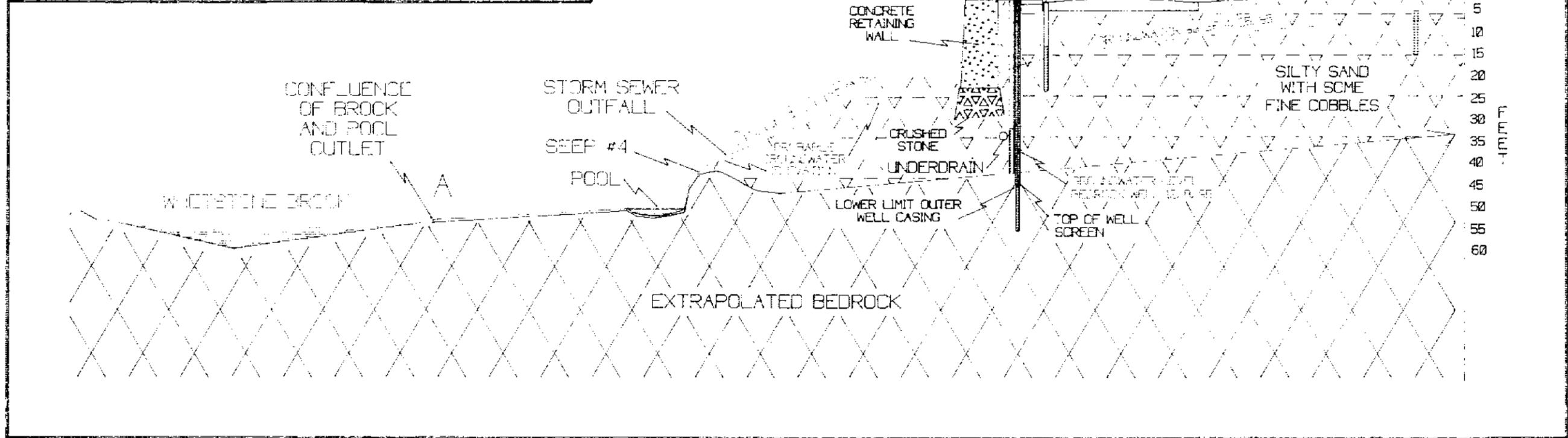
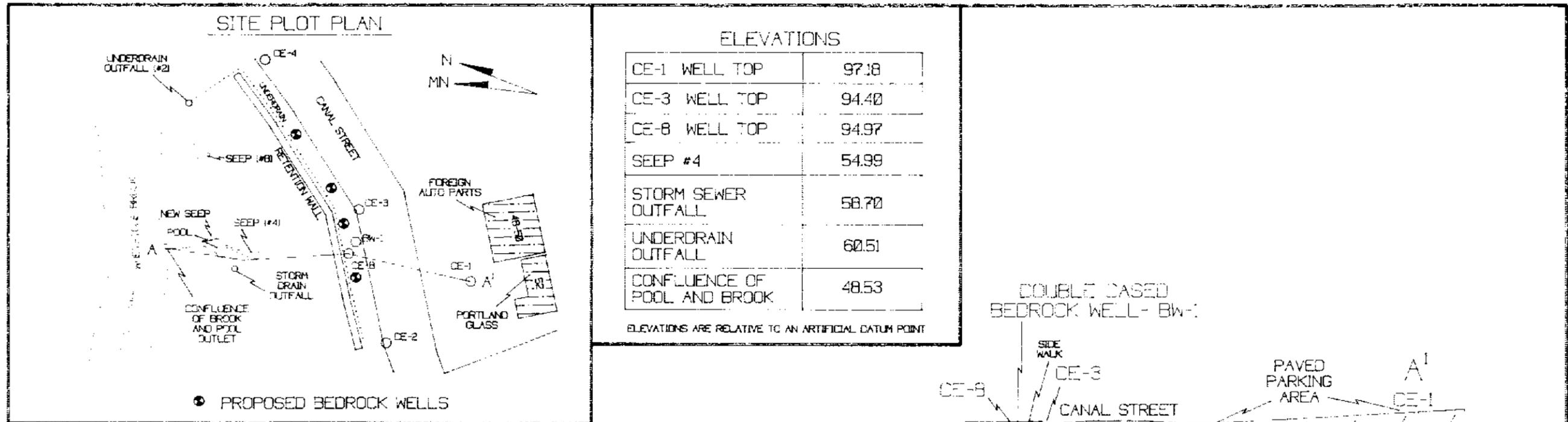
ADDITIONAL COMMENTS:
Trip blank included
[Signature]

NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	<i>[Signature]</i>	Denise B. Couffe	12-11-95	12:35
2	<i>[Signature]</i>	K. Bar	12/11	1930
3				
4				

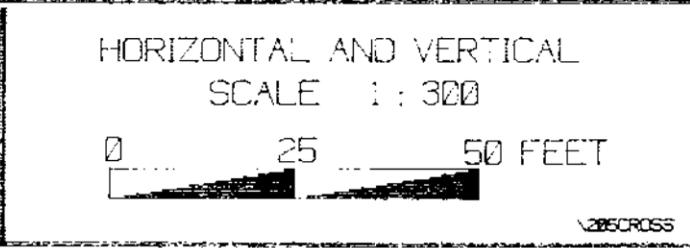
RECEIVED 12/11/95

Appendix E

Vertical Profile of Retaining Wall Area and Geological Profile



PREPARED BY:
 ENSA ENVIRONMENTAL, INC
 P.O. BOX 1760, 205 MAIN STREET
 BRATTLEBORO, VERMONT



GEOLOGIC CROSS SECTION
 Whetstone Brook Petroleum Discharge
 Brattleboro, Vermont

205CROSS