97-2136

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

11 13 AM '97

INITIAL SITE INVESTIGATION REPORT

Braintree Town Garage
Route 12A
Braintree, VT

DEC Site No.96-
SEI Project No. 97670

Client:
Braintree Select Board
Town of Braintree
RFD 2 Box 203
Randolph, VT 05060
Contact: George Kendall
(802) 728-9380

Prepared by:
Stone Environmental, Inc.
58 East State Street
Montpelier, VT 05602
(802) 229-4541
Contact: Jeff Kelley, Project Geoscientist

October 30, 1997

EXECUTIVE SUMMARY

The Braintree Town Garage is located on the north side of Route 12A approximately 600 feet west of the Braintree town line. The topography of the site is characterized by a steep southern sloping hill on the northern part of the property with the garage building and parking area located on a generally flat area adjacent to Route 12A. The property is not paved. The eastern flowing Third Branch of the White River is located about 800 feet to the south of Route 12A. According to George Kendall, Braintree Selectman, the site was part of a former dairy farm.

Three underground storage tanks (USTs) were removed on January 9, 1997 at the Braintree Town Garage. Based on the tank pull report submitted by Stone Environmental, Inc. (SEI) on January 16, 1997 the State of Vermont Waste Management Division required an initial site investigation be performed to delineate the magnitude and extent of contamination discovered during the tank removal. On March 17, 1997 SEI advanced four soil borings at the site, and installed temporary monitoring wells in two of these borings (SB-2 and SB-4).

Soils encountered at the site consisted of loamy sand and gravel in the upper few feet and then a gravelly sand to between 11 and 17 feet. Fine sands were present below the gravelly sands. VOC screening with the PID indicated that the coarse soils overlying the fine sands were not impacted with hydrocarbon contamination in any of the borings. Similarly, the finer grained layers did not have elevated VOC concentrations. A soil sample was collected from about 19 to 20 feet bgs in SB-3 for lab analysis using EPA Method 8100. The lab analysis indicates that the total petroleum hydrocarbon (TPH) concentrations in the sample were below the laboratory's practical quantitation limit.

The saturated intervals identified in each boring are considered to be groundwater in a perched condition, as soils from the bottom of each of these borings was dry. Analyses of the groundwater samples from SB-2 and SB-4 indicate that this perched groundwater was not impacted by any release associated with the USTs. As temporary wells were installed in only two locations, a definite groundwater flow direction can not be established. However, based on the area's topography and location of the Third Branch River, we assume the groundwater is flowing to the south.

The results of this investigation indicate that further investigation is not warranted at the Braintree Town Garage. The contamination detected at 14 feet bgs below the removed tanks has apparently not migrated from its location, as the fine sand layer at that depth in locations surrounding the tank pull area had very low PID readings. The laboratory analyses for these depths were also free of hydrocarbon contamination. A true water table was not encountered in any of the borings. However, the perched water table in SB-2 and SB-4 were both free of hydrocarbon contamination.

Based on the results obtained from this investigation, SEI recommends that this site be a candidate for site's management activities completed (SMAC) status.

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1.0 INTRODUCTION

Three underground storage tanks (USTs) were removed on January 9, 1997 at the Braintree Town Garage (see Figure 1). Based on the tank pull report submitted by Stone Environmental, Inc. (SEI) on January 16, 1997 the State of Vermont Waste Management Division (WMD) required an initial site investigation be performed to delineate the magnitude and extent of contamination outlined in the report. As discussed in SEI's January 16 report, the contamination was detected at the top of a layer of fine sand found at about 14 feet below ground surface (bgs). On March 17, 1997 SEI advanced four soil borings at the site, and installed temporary monitoring wells in two of these borings. This report describes the methods used in the investigation and presents all field and laboratory results.

2.0 SITE LAYOUT

The Braintree Town Garage is located on the north side of Route 12A approximately 600 feet west of the Braintree town line. The topography of the site is characterized by a steep southern sloping hill on the northern part of the property with the garage building and parking area located on a generally flat area adjacent to Route 12A. The property is not paved. The eastern flowing Third Branch of the White River is located about 800 feet to the south of Route 12A. According to George Kendall, Braintree Selectman, the site was part of a former dairy farm.

3.0 SUBSURFACE INVESTIGATION

On March 17, 1997 Adams Engineering of Underhill, Vermont advanced four soil borings at the site. Jeff Kelley of SEI supervised the field work, logged all soils, and installed temporary monitoring wells in two of the borings. The first boring, SB-1, was installed adjacent to the garage's stockpiled sand and salt mixture in response to a complaint of salt contamination in a nearby well. Borings SB-2, SB-3, and SB-4 were advanced around the tank pull area to at least the depth of the fine sand layer with elevated volatile organic compound (VOC) concentrations identified during the tank pull.

3.1 Soil Sampling

The initial 5 foot increment was augured with a solid stem due to a substantial frost present to about 4 feet below ground surface (bgs). Composite samples from the solid auger were collected for logging and headspace screening. Following the initial 5 feet, Adams' advanced each boring in 5 foot increments collecting continuous soil samples. Jeff Kelley logged each 5 foot spoon and collected soil samples at either textural changes or approximate 1 foot increments. Each sample was placed in a Ziplock® bag, sealed, and allowed to equilibrate in the SEI vehicle for a minimum of five minutes. The sample bag was then shaken briefly and the VOCs were measured from the sample headspace using a MiniRae® photoionization detector (PID) equipped with a 10.6eV lamp. Locations of the borings and monitoring wells are shown in Figure 2, while boring logs with PID screening results are presented in Attachment 1.SEI also collected a soil sample from the 19 to 20 foot bgs interval in SB-3 for laboratory analysis using EPA Method 8100-Modified.

3.2 Temporary Well Construction

SEI installed temporary monitoring wells in SB-2 and SB-4 to confirm the absence of groundwater contamination. SB-3, although wet at different intervals in the spoons, (see boring logs in Attachment 1) was dry after boring completion so no well was installed in that location. The two wells consisted of one 5 foot section of 1 inch diameter stainless steel screen, with solid stainless steel riser pipe to the surface. Adams' developed each well using a peristaltic pump, purging the well until the discharge was clear and relatively sediment free.

3.3 Groundwater Sampling

Disposable polyethylene bailers were used to collect groundwater samples f rom SB-2 and SB-4. Each sample was preserved with 4 drops of hydrochloric acid, placed on ice and delivered to SciTest Laboratories in Randolph, Vermont for EPA Methods 8020 and Modified 8100-TPH analyses. Copies of the original lab analyses are included in Attachment 2.

4.0 RESULTS AND DISCUSSION

Soils encountered at the site consisted of loamy sand and gravel in the upper few feet and then a gravelly sand to between 11 and 17 feet. Fine sands were present below the gravelly sands. A silt layer was encountered from about 13 to 15 feet bgs in SB-3. This layer was located between two fine sand layers, the upper part of which began at about 11 feet bgs. VOC screening with the PID indicated that the coarse soils overlying the fine sands were not impacted with hydrocarbon contamination in any of the borings. Similarly, the finer grained layers did not exhibit elevated VOC concentrations. A soil sample was collected from about 19 to 20 feet bgs in SB-3 for lab analysis using EPA Method 8100. The lab analysis indicates that the total petroleum hydrocarbon (TPH) concentrations in the sample were below the laboratory's practical quantitation limit. All soil and groundwater sampling results are included in Table 1.

The saturated intervals identified in each boring are considered to be groundwater in a perched condition, as soils from the bottom of each of these borings were dry. Analyses of the groundwater samples from SB-2 and SB-4 indicate that this perched groundwater was not impacted by any release associated with the USTs. SB-1, which was located far west of the tank pull area, also had a silt layer in between two fine sand layers. The silt layer encountered in SB-1 (at about 22 to 23.5 feet bgs) was wet, while the fine sands above and below it were dry. There was also a wet silt layer from about 26 to 27 feet bgs in SB-1 with a moist fine sand a dry sand layer below it. SB-1 was abandoned at 30 feet bgs as the boring was dry and there was no more drilling rod to go deeper.

As temporary wells were installed in only two locations, a definite groundwater flow direction can not be established. However, based on the area's topography and location of the Third Branch River, we assume the groundwater is flowing to the south.

5.0 CONCLUSIONS / RECOMMENDATIONS

The results of the investigation described above indicate that further investigation is not warranted at the Braintree Town Garage. The contamination detected at about 14 feet bgs below the removed tanks has apparently not migrated from its location, as the fine sand layer at that depth in locations surrounding the tank pull area had very low PID readings. The laboratory analyses for these depths were also free of hydrocarbon contamination. A true water table was not encountered in any of the borings. However, the perched water table sampled in SB-2 and SB-4 were both free of hydrocarbon contamination.

Based on the results obtained from this investigation, SEI recommends that this site be a candidate for site's management activities completed (SMAC) status.

- SOILS? (tank pull refers to 21 yd^3 removed)

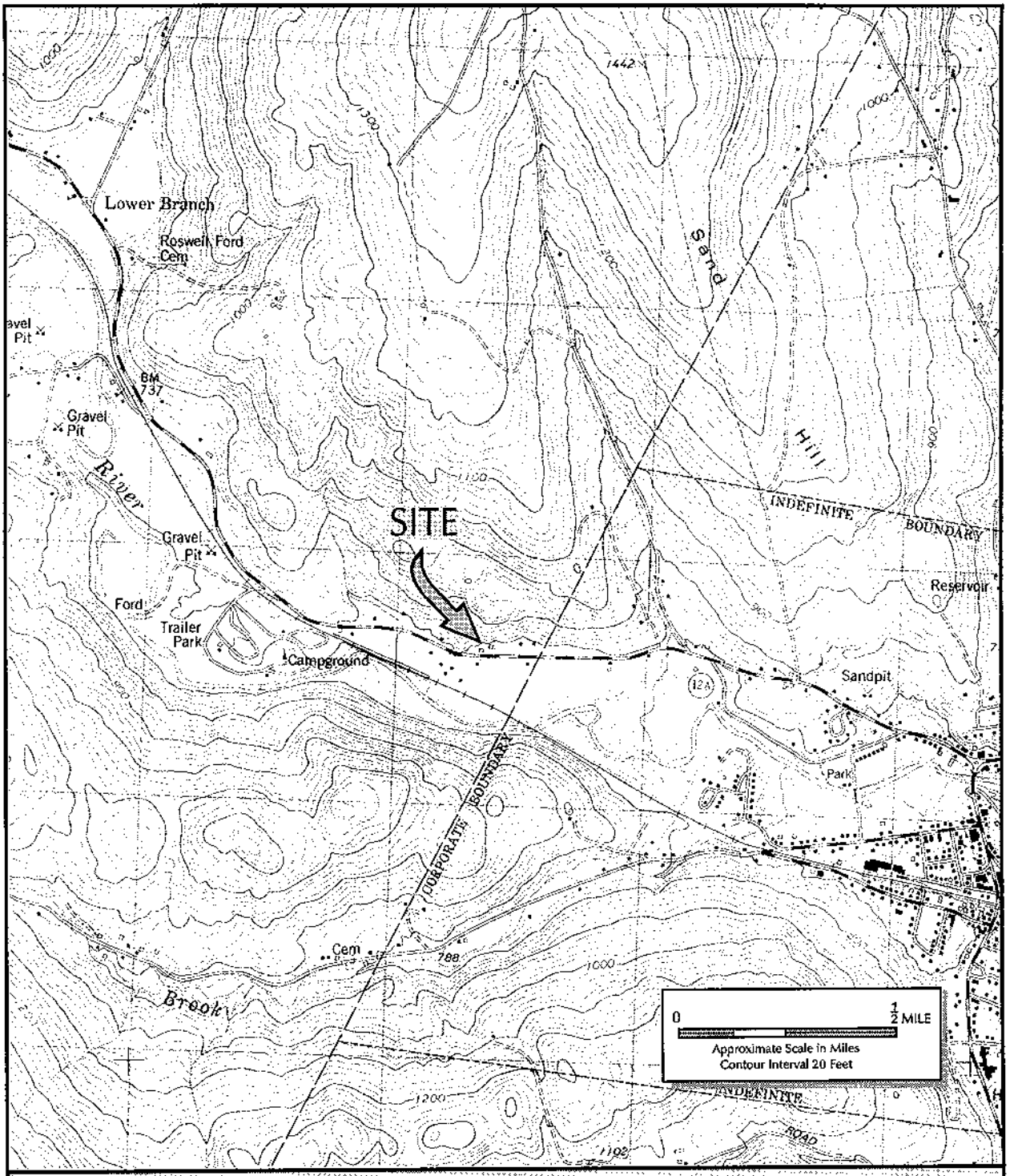

FIGURE 1: SITE LOCATION MAP
Braintree Town Garage
Braintree, Vermont

Source: Randolph, Vermont Quadrangle, 7.5 Minute Series, 1:24,000 Scale, USGS 1981;
g:\proj\97-668\locmap.cdr int:1-16-97 jph

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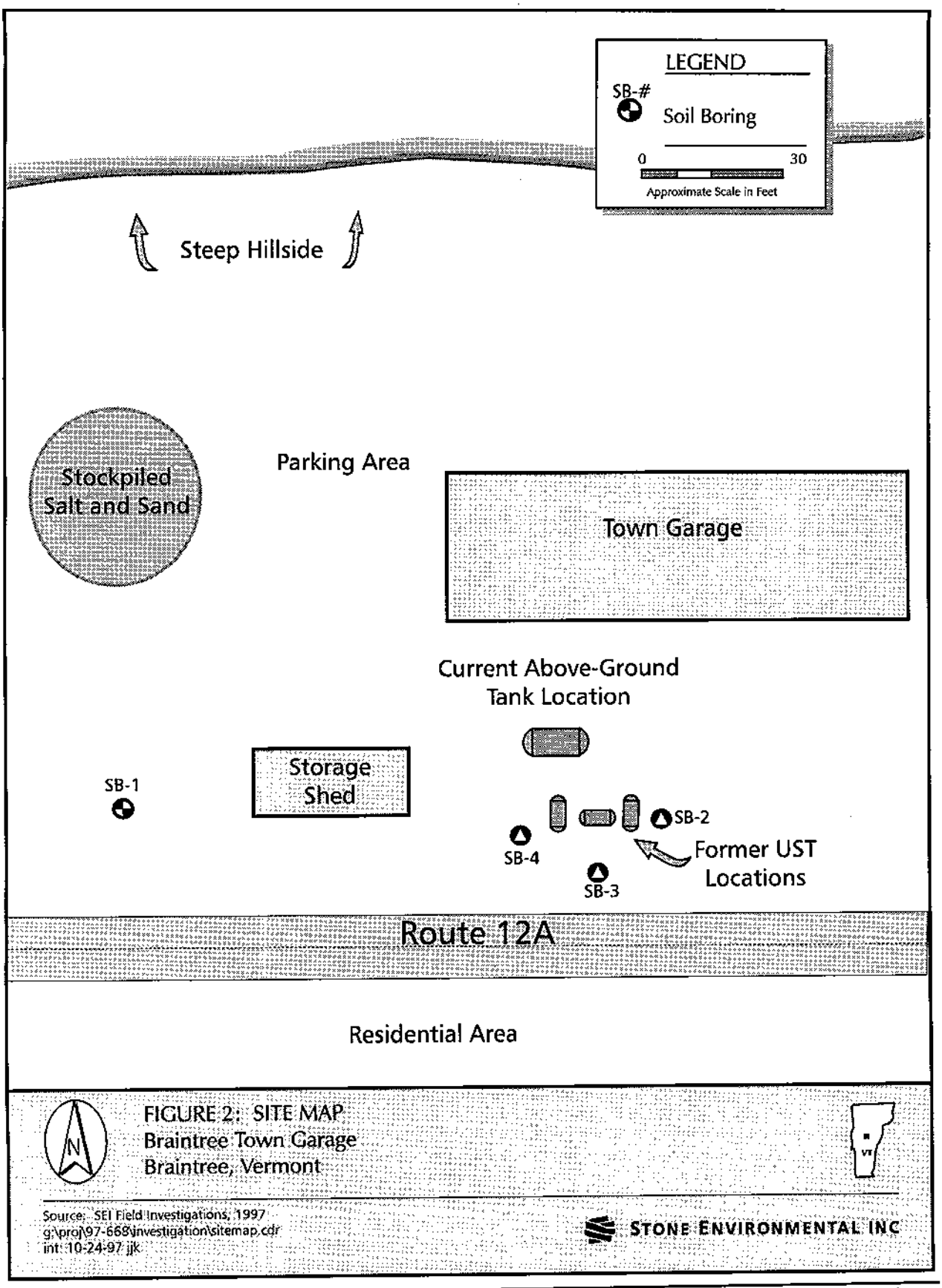

FIGURE 2: SITE MAP
Braintree Town Garage
Braintree, Vermont

Source: SEI Field Investigations, 1997
g:\proj\97-668\investigation\sitemap.cdr
int: 10-24-97 jjk

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TABLE 1: Summary of Laboratory Results
Braintree Town Garage, Braintree, Vermont

Location	Matrix	Method	PQL	BTEX	TPH
SB-2	water	8100	0.2 mg/L	na	BPQL
	water	8020	1 ug/L	BPQL	na
SB-3 19-20' bgs	soil	8100	5 mg/kg	na	BPQL
SB-4	water	8100	0.2 mg/L	na	BPQL
	water	8020	1 ug/L	BPQL	na

source: ScuTest Laboratories, Inc., Randolph, VT

g:\proj\97668\invewstigation\lab_results.wb3

ATTACHMENT 1

Well Construction Logs

SOIL BORING LOG

SB-1

Braintree, VT

Date of Construction: March 17, 1997

Logged by: Jeff Kelley

Field Notes (Jeff Kelley)
07-18-97 ttk
n:\proj-97\97-668\tankpull\sb1.dat

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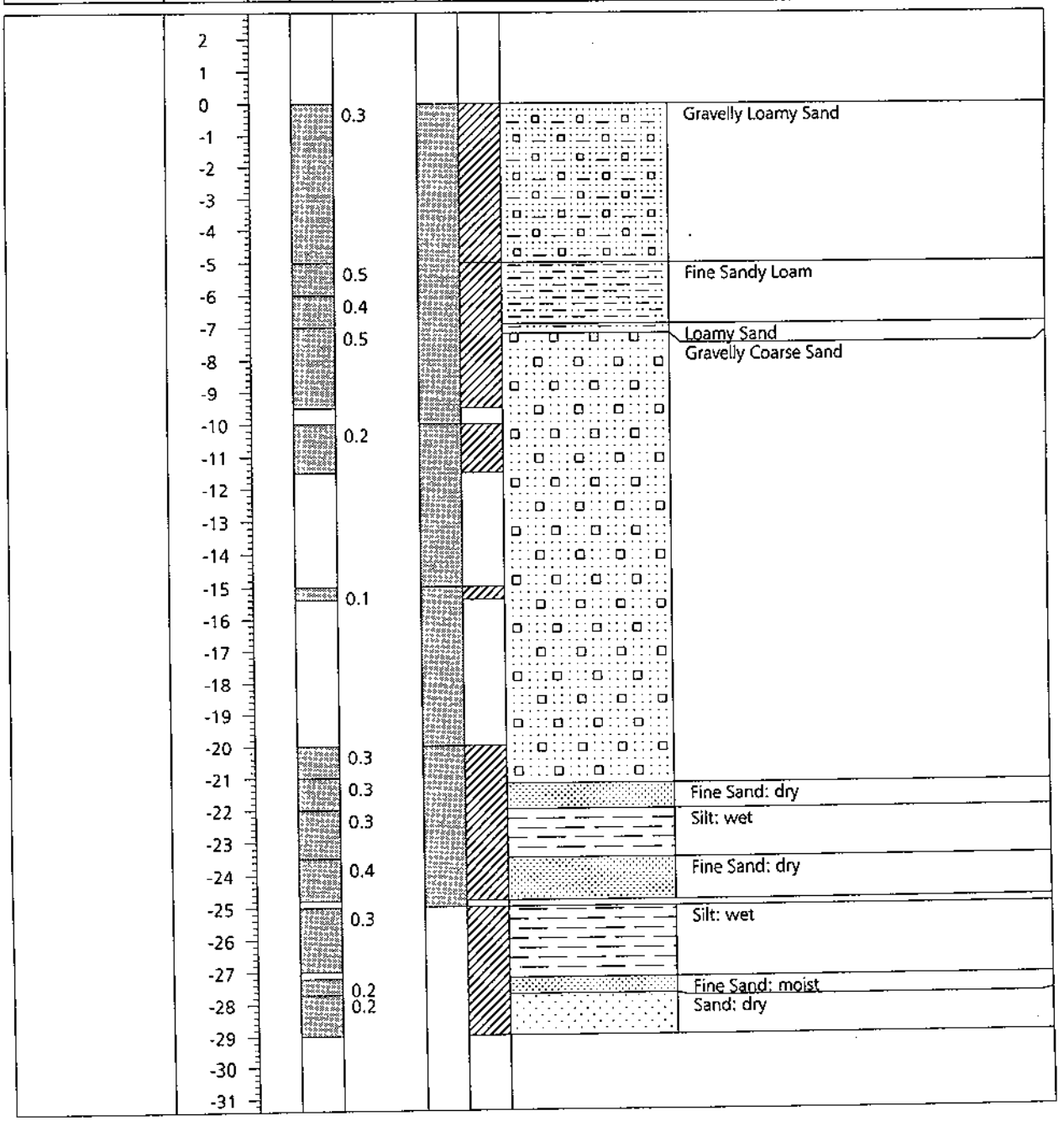


SOIL BORING LOG

SB-2

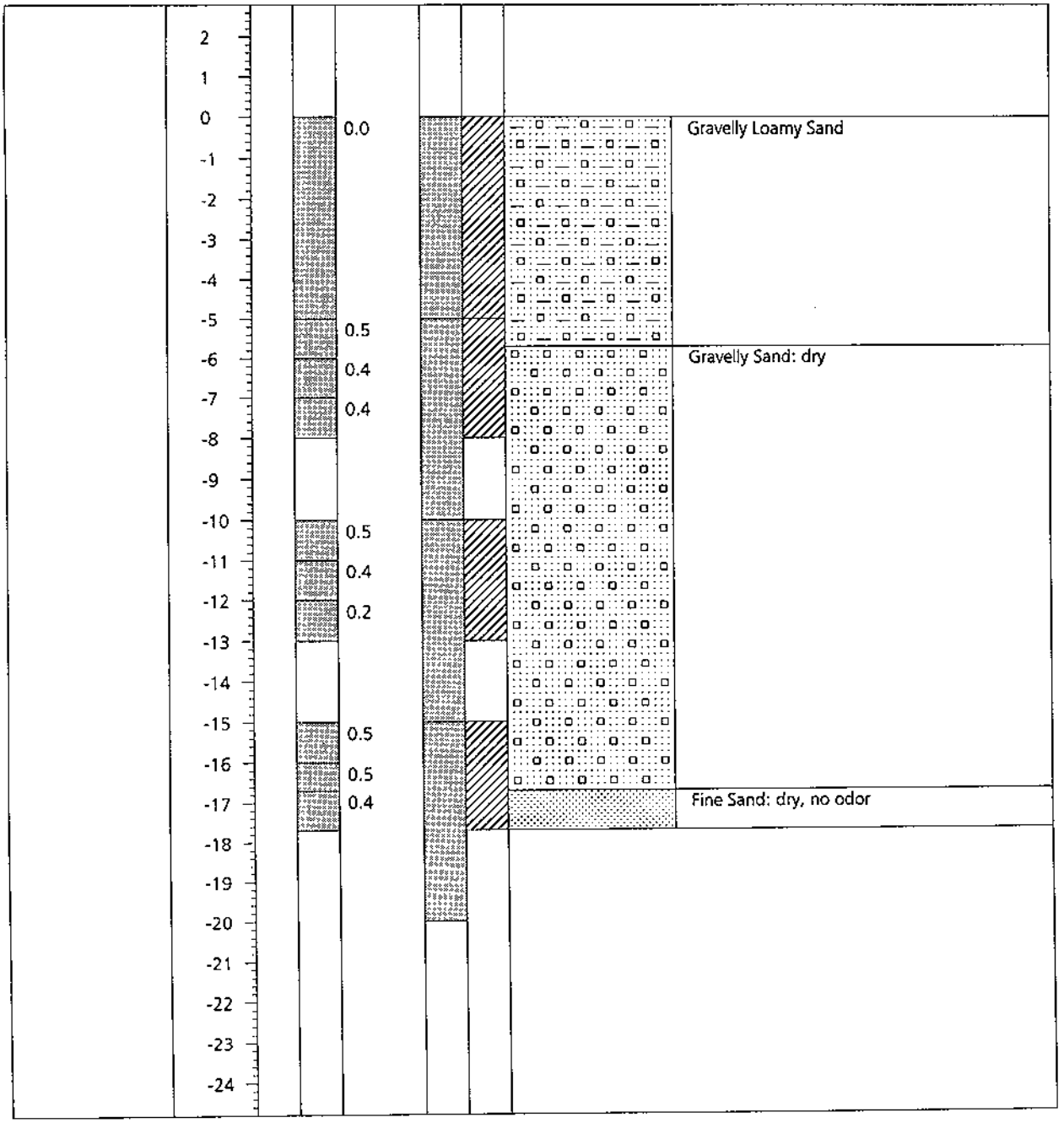
Braintree, VT

Date of Construction: March 17, 1997

Logged by: Jeff Kelley

Field Notes (Jeff Kelley)
07-18-97 ttk
n:\proj-97\97-668\tankpull\sb2.dat

STONE ENVIRONMENTAL INC



SOIL BORING LOG

SB-3

Braintree, VT

Date of Construction: March 17, 1997

Logged by: Jeff Kelley

Field Notes (Jeff Kelley)
07-18-97 ttk
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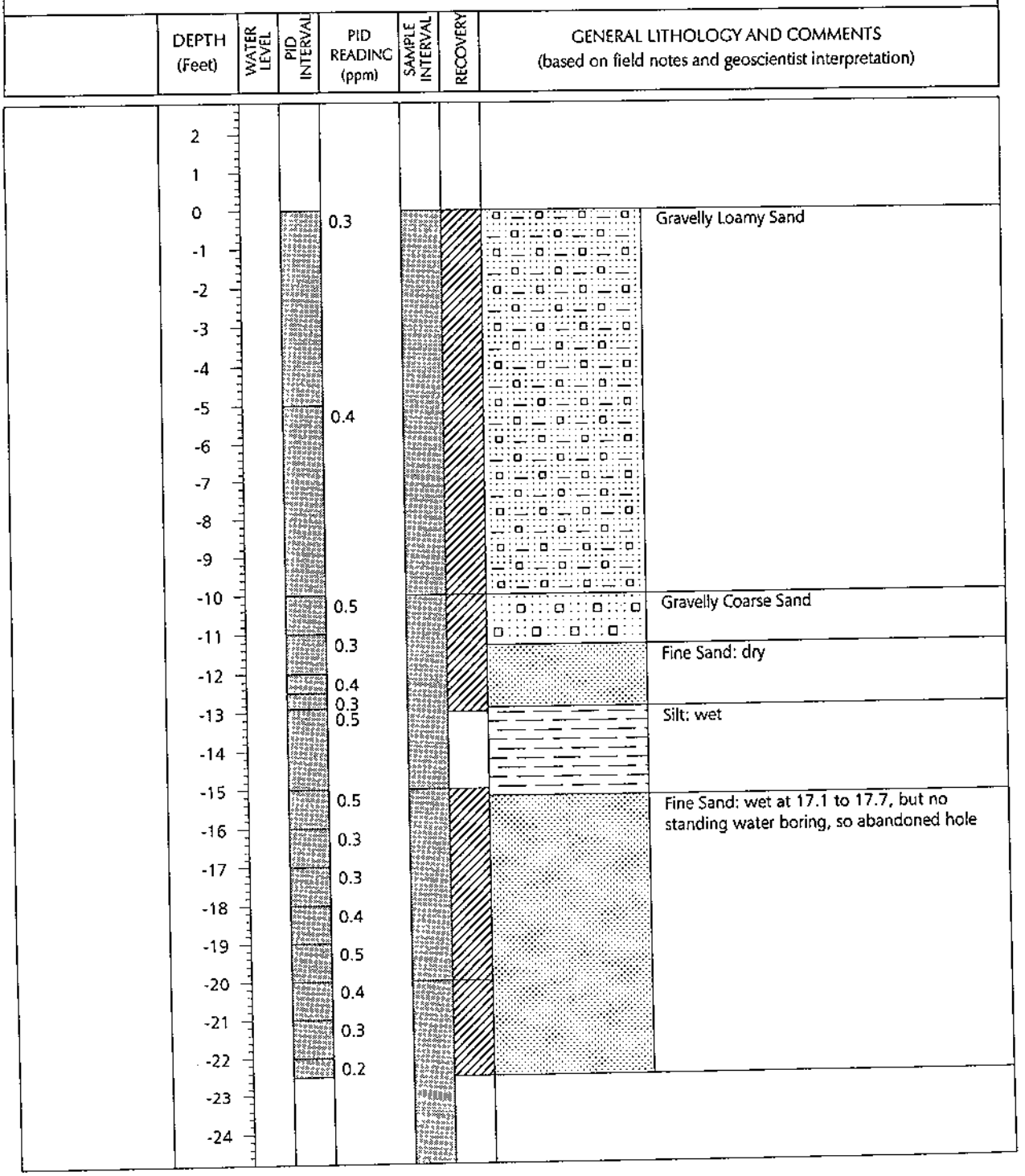
STONE ENVIRONMENTAL INC



SOIL BORING LOG

SB-4

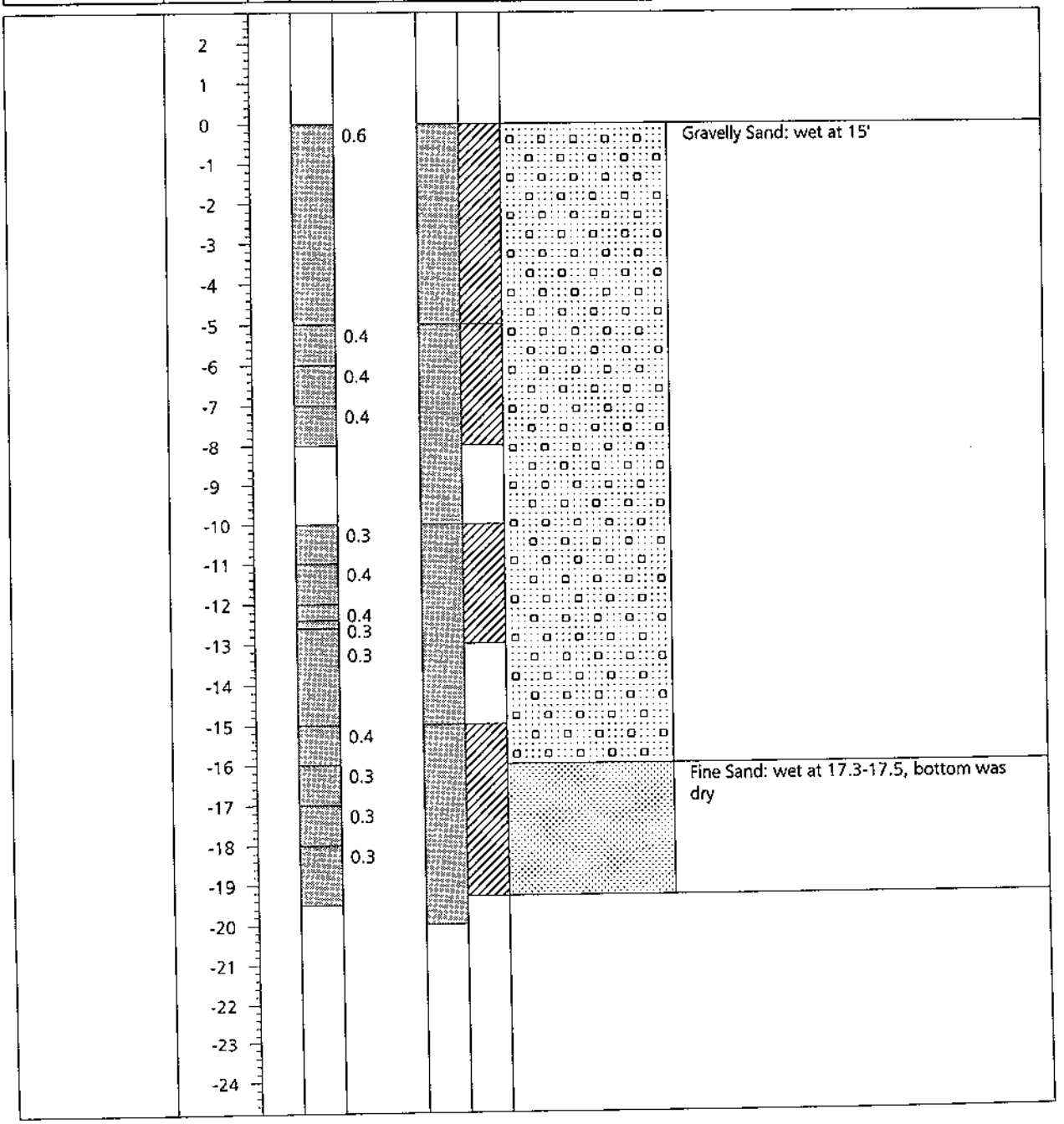
Braintree, VT

Date of Construction: March 17, 1997

Logged by: Jeff Kelley

Field Notes (Jeff Kelley)
07-18-97 ttk
n:\proj-97\97-668\tankpull\sb4.dat

STONE ENVIRONMENTAL INC



ATTACHMENT 2

Laboratory Results

Post-it® Fax Note 7671	Date	# of pages ▶
To Jeff Kelley	From Bobbi	
Co./Dept. Stone Env.	Co. Scitest	
Phone #	Phone #	
Fax # 229-5417	Fax #	

9703 00771

SCITEST LABORATORY SERVICES

AL REPORT

P.O. Box 339
Randolph, Vermont 05060-0339
(802) 728-6313

Stone Environmental, Inc.
58 E. State St.
Montpelier, VT 05602

Chris Stone

Work Order No.: 9703-00771

Project Name: Braintree 97668, Organics
Customer Nos.: 070233

Date Received: 3/18/97
Date Reported: 4/12/97

Sample Desc.: SB-3/15-20/4'-5'
Sample Nos: 1
Sample Date: 3/17/97
Collection Time: 0:00

Test Performed	Method	Results	Units	Analyst	Analysis Date
TPH 8100	EPA 8100			RJS	4/10/97
Gasoline	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Kerosene	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Diesel Fuel (Fuel Oil #2)	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Fuel Oil #4	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Jet Fuel	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Mineral Spirits	EPA 8100 TPH	< 5.0	mg/kg	RJS	4/10/97
Total Solids	SM18 2540B	77.9	%	RJS	4/11/97

Sample Desc.: Braintree SB-4
Sample Nos: 2
Sample Date: 3/17/97
Collection Time: 18:00

Test Performed	Method	Results	Units	Analyst	Analysis Date
TPH 8100	EPA 8100			RJS	4/10/97
Gasoline	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Kerosene	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Diesel Fuel (Fuel Oil #2)	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Fuel Oil #4	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Jet Fuel	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Mineral Spirits	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Aromatic Volatile Organics	EPA 8020/602			JPM	3/22/97
Methyl Tertiary Butyl Ether	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Benzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Toluene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Ethyl Benzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Total Xylenes	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Chlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,2-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,3-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,4-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Surrogate: 8020				JPM	3/22/97
***Bromofluorobenzene-8020		89	% Recovery	JPM	3/22/97

ANALYTICAL REPORT

Project Name: Braintree 97668, Organics
Project No.: 070233

Work Order No.: 9703-00771

Sample Desc.: Braintree SB-2
Sample Nos: 3

Sample Date: 3/17/97
Collection Time: 17:20

Test Performed	Method	Results	Units	Analyst	Analysis Date
TPH 8100	EPA 8100			RJS	4/10/97
Gasoline	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Kerosene	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Diesel Fuel (Fuel Oil #2)	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Fuel Oil #4	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Jet Fuel	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Mineral Spirits	EPA 8100 TPH	< 0.20	mg/L	RJS	4/10/97
Aromatic Volatile Organics	EPA 8020/602			JPM	3/22/97
Methyl Tertiary Butyl Ether	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Benzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Toluene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Ethyl Benzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Total Xylenes	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Chlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,2-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,3-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
1,4-Dichlorobenzene	EPA 602/8020	BPQL	ug/L	JPM	3/22/97
Surrogate: 8020				JPM	3/22/97
***Bromofluorobenzene-8020		91	% Recovery	JPM	3/22/97

BPQL = Below Practical Quantitation Limit; 1 ug/L

Authorized by: Jason A. Wood

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LABORATORY SERVICES