

Type of Submittal	Petroleum Reimbursement Fund Phase
<input type="checkbox"/> Workscope/Budget	<input type="checkbox"/> Initial Response Action
<input checked="" type="checkbox"/> Technical Report	<input type="checkbox"/> Free Product
<input type="checkbox"/> Reimbursement Request	<input checked="" type="checkbox"/> Site Investigation
<input type="checkbox"/> Monitoring Result	<input type="checkbox"/> Corrective Action Plan
	<input type="checkbox"/> Remedial Design Plan
	<input type="checkbox"/> Remedial Implementation/Operations/Monitoring

## Site Investigation Report

Recycled Auto Parts, Rt. 5 - Brattleboro, VT

(VT DEC Site # ~~97-2260~~)

Latitude 42 degrees, 50'

Longitude 72 degrees, 35'

USGS Brattleboro Quad

97-2215

**Prepared For:**

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*Steve Brackett*

*is not working  
than any more*

603-358-1532

*SLB*  
*3/19/99*

March 19, 1999

Recommended Risk Category		
<input type="checkbox"/> 1. Immediate Human Health Risk (Impacted Water Well, etc.)	<input type="checkbox"/> 4. Surface Water Impact (Actual Impact to Class B or potential Impact to Class B)	<input type="checkbox"/> 7. Alternate Water Available/Low level Groundwater Contamination (<1000 x VGES)
<input type="checkbox"/> 2. Potential Human Health Risk (Residential well within 1000' or site within wellhead area)	<input type="checkbox"/> 5. No Alternate Water Available/No Existing Wells in Area	<input checked="" type="checkbox"/> 8. No VGES Violation/No Source Remaining
<input type="checkbox"/> 3. Free Product or Source Hazard	<input type="checkbox"/> 6. Alternate Water Available/High Level Groundwater Contamination (>1000 x VGES)	

**STEVENS & ASSOCIATES**  
ENGINEERING

Civil, Environmental & Structural Engineering

**SITE INVESTIGATION REPORT**  
**Recycled Auto Parts**  
**Brattleboro, VT**

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## **1.0 INTRODUCTION**

The Recycled Auto Parts site (hereinafter referred to as the "site") is located in the southwest corner of the town of Brattleboro, VT on the Brattleboro-Guilford line. It is approximately 130 acres in size, being approximately 40% open land and 60% forested land, and is roughly rectangular in shape (approximately 3600' north south and approximately 2100' east west). Hills border the property on both the east and west and a small braided stream (a part of which is herein referred to as Bob's Brook) runs north-south through the center of the site. Access to the site is provided by a Class V town road known as Paul's Road.

Stevens and Associates Engineering ("SAE") was contracted to conduct an environmental assessment as a portion of a study which is considering the feasibility of industrial development on the site. This assessment consisted of conducting a historical review of the site's use and then investigating the impact that such uses may have had on the site's soil and water (both groundwater and surface water).

## **2.0 SITE HISTORY**

The only environmentally significant historical use of the site has been as the salvage yard of Recycled Auto Parts. This road is located in the south central portion of the site, bordering the stream and Paul's Rd. The area used has decreased in the last four years; currently approximately 2 acres of the Recycled Auto Parts site is used in this manner.

Interviews were conducted with numerous people including Brattleboro and Guilford municipal officers (both past and present), as well as previous owners and some local residents. Virtually all interviewees were of the opinion that the salvage yard had generally not been run with much concern for its environmental impact. However, none of the interviewees reported a personal knowledge of actual dumping or hazardous material releases, exclusive of an occasional release of gasoline or motor oil from salvaged vehicles. Based on this information, it was decided to conduct a Phase II Environmental Site Investigation of the developed portion of the site to assess the degree and extent of soil and/or groundwater contamination which may have occurred at the site as the result of petroleum or hazardous material releases over time.

## **3.0 DISCOVERY OF CONTAMINATION IN THE AREA OF BOB'S BROOK**

A portion of the Phase II ESA was a thorough visual inspection of the entire Recycled Auto Parts site. This work was conducted in early December of 1996. During this investigation a heavy petroleum sheen was noted in a small stream herein referred to as Bob's Brook. The location at which the petroleum contamination was found is noted on Figure 2. The sheen was traced upstream to a small seep on the eastern side of the brook and was followed downstream into an adjacent small wetland area.

#### **4.0 BOB'S BROOK CONTAMINATION**

The contamination discovered in the Bob's Brook area had a distinct gasoline odor but also contained a heavier dark colored component which had a motor oil smell. Although the source area was identified the origin of the contamination is not known. Other than the contaminated site soils, there were not currently any active sources in the contamination source area. Based on our visual inspection of the source area it appeared that the petroleum contained in the soil in the source area was migrating to the stream bank and was seeping into Bob's Brook. From this seep point, Bob's Brook was relatively steep (approx. 5% slope) for a distance of 45' at which point it flowed into a flat, marshy area of less than 1 acre in size (the "wetland"). A visual inspection of the area showed that the contamination, which had already made its way into Bob's Brook, had impacted an area as far downstream as the lower end of the wetland (approx. 90' from the source area).

Upon discovering the petroleum sheen on Bob's Brook and locating the source area, sorbent booms were placed at the base of the wetland area and sorbent pads were placed throughout the impacted area. The VT ANR was notified by phone and plans were made to investigate the source area through excavation.

#### **5.0 SOIL EXCAVATION/FREE PRODUCT RECOVERY**

During the second week of December 1996 petroleum contaminated soil in the source area was excavated. Soil was removed until soil samples had headspace readings of less than 10 ppm. This included a volume of soil to just below the water table (which was found at a depth of between 3' - 4') over an area of approximately 50' by 80' (approx. 40 cubic yards). The excavated soil was temporarily stockpiled and polyencapsulated on higher ground adjacent to the source area. A berm was constructed upgradient to divert surface runoff around the excavated source area and hay bales were placed within the excavated areas to act as sediment traps.

Concurrent with soil excavation, an effort was begun to remove the heavy, black, free phase product which had collected along the edges of Bob's Brook. This effort was twofold. First, as stated above, immediately upon discovering the release sets of booms were placed in the stream and numerous pads were placed throughout the wetland to contain and remove free product. The intent was to leave booms and pads until most of the free product had been removed from the wetland. While the booms and pads were very effective at removing free product, by late December that wetland had frozen hindering further cleanup efforts.

In May 1997 after the soil had thawed and mud season was over approximately 5 cubic yards of petroleum contaminated material was removed from the wetland area. This material was removed by hand to minimize disturbance of the wetland. The material removed consisted primarily of wetland grasses and reeds, and some sediment.

A letter describing this activity was forwarded to the VT ANR-SMS in September of 1997. Shortly thereafter SMS requested that a Site Investigation be conducted to determine the degree and extent of contamination.

## **6.0 INSTALLATION OF SOIL BORINGS AND FIELD SCREENING OF SOIL SAMPLES**

To assess the degree and extent of soil and groundwater contamination SAE contracted with Eastern Analytical to install soil borings and monitoring wells in the source area of the Bob's Brook contamination. 16 soil borings were installed in a semi-regular four by four grid (spaced at ten foot intervals) over the area of the release.

An Earth Probe push rig was used to collect continuous soil samples from each soil boring installed. In the Earth Probe system soil samples are collected in 24" long, 2" diameter clear PVC sleeves as the probe is advanced. This makes it possible to perform a very detailed inspection of the vertical soil character and condition.

In addition to a visual inspection, each soil sample was field screened for volatile organic compounds ("VOC's") using a Gastech OVM Model 1314 calibrated to 400 ppm hexane. 16 soil borings were installed; samples were collected from 2'-4' and from 4'-6' in each of these soil borings. Each of these samples consisted of a light brown, fine silty sand. Of the 32 soil samples collected, none contained detectable quantities of VOC's.

## **7.0 INSTALLATION OF MONITORING WELLS**

Based on the information collected during soil sample screening, three monitoring wells were installed in the area of the Bob's Brook contamination. Well construction details are contained in the monitoring well logs attached to the report. Once the monitoring wells were installed their location and relative elevations were surveyed.

## **8.0 COLLECTION AND ANALYSIS OF GROUNDWATER SAMPLES**

On Dec. 30, 1998 groundwater samples were collected from each of the three monitoring wells at the site. Sample collection, bottling and preservation were conducted according to EPA protocols. Each sample was analyzed for the presence of VOC's according to EPA Method 8021. Groundwater analysis was conducted by Eastern Analytical of Concord, NH. **No VOC's were detected in any of the four samples collected.** The laboratory reports are contained in Appendix VI of this report.

## **9.0 SITE HYDROGEOLOGY**

As stated above, the site consists of a stream valley bounded to the east and west by wooded ridges. Soils in the stream valley have been found to consist of sand and silt

varying in depth between 0' and 12'. Moving uphill from the valley toward the ridge tops, the soils transition from well sorted fluvial sediments into thin, poorly sorted glacial upland soils. The bedrock under the site is the Waits River formation, which is a Devonian phyllite with occasional quartzite and marble interbeds.

As the groundwater potentiometric map (Figure Three) shows groundwater flow in the overburden of the investigation area is to the west following site topography. Depth to groundwater in the investigation area varies from 1' adjacent to the stream to 4' in the source area. The rate of groundwater flow in the stream valley has been estimated to be 243 ft/year:

Hydraulic gradient of 9% (observed)

Hydraulic Conductivity ("K") of  $3 \times 10^{-4}$  ft/sec: silty fine sand; Freeze and Cherry, 1979, pg. 29

Porosity of 35%: silty fine sand; Freeze and Cherry, 1979, pg. 37

Groundwater Velocity ("S") = K x hydraulic gradient/porosity

S = 243 ft/yr

## **10.0 SEDIMENT AND SURFACE WATER SAMPLING AND ANALYSIS**

In addition to the field screening of soil samples and the collection and analysis of groundwater samples a **surface water sample and sediment sample** were collected from the previously impacted area of the adjacent wetland. These samples were collected on Dec. 30, 1998 and were forwarded to Eastern Analytical for VOC analysis according to EPA Method 8021. The results of these analyses are contained in Appendix VI of this report. **Neither sample contained VOC's in detectable quantities.**

## **11.0 DEGREE AND EXTENT OF SOIL AND GROUNDWATER CONTAMINATION: BOB'S BROOK AND IMPACT TO POTENTIAL RECEPTORS**

Based on the soil borings installed at the site, it appears that the extent of soil contamination in the area of Bob's Brook was limited to the top 3' of soil over an area of approximately 80' by 30' (see Figure Two). Field screening of soil samples from the remaining soil indicated VOC levels of less than 10 ppm.

No groundwater contamination was found in the three monitoring wells installed in the source area and no VOC's were detected in the surface water sample collected from the wetland area.

Additionally, it appears that there is no residual petroleum contamination in the sediments of the wetland area sampled.

Based on a visual review of the area, and conversations with the owner, the receptors identified include the site soil, groundwater, surface water, and adjacent wetland. There are two private drinking water wells within 1000': the on-site water supply for Recycled Auto Parts (located 800' upgradient - northwest), and the Holby residence, a 500' bedrock well (located 880' downgradient - south). The Holby residence well was sampled in Dec. 1996 and the sample was analyzed for VOC's according to EPA Method 8260. No VOC's were detected. The laboratory results for the Holby residence sample is attached to the report. The on-site well was not sampled since it was upgradient to Bob's Brook.

It does not appear that there are any receptors other than site soil, groundwater, surface water, and the adjacent wetland which have been impacted by this release.

## 12.0 CONCLUSIONS

In Dec. 1996 a release of petroleum was discovered in Bob's Brook at the Recycled Auto Parts site. Initially this contamination was contained with sorbent booms and pads. In May 1997, once the site's soil had thawed and mud season had passed, contaminated material was removed from the adjacent wetland area.

In Dec. 1998 groundwater samples were collected from monitoring wells installed in the source area, a sediment sample was collected from the wetland area, and a surface water sample was collected from the wetland area. All of these samples were analyzed for VOC's according to EPA Method 8021 and none were found to contain detectable levels of VOC's.

None of the soil samples which were field screened during the installation of soil borings and monitoring wells contained VOC's, according to headspace analysis, at levels greater than 10 ppm.

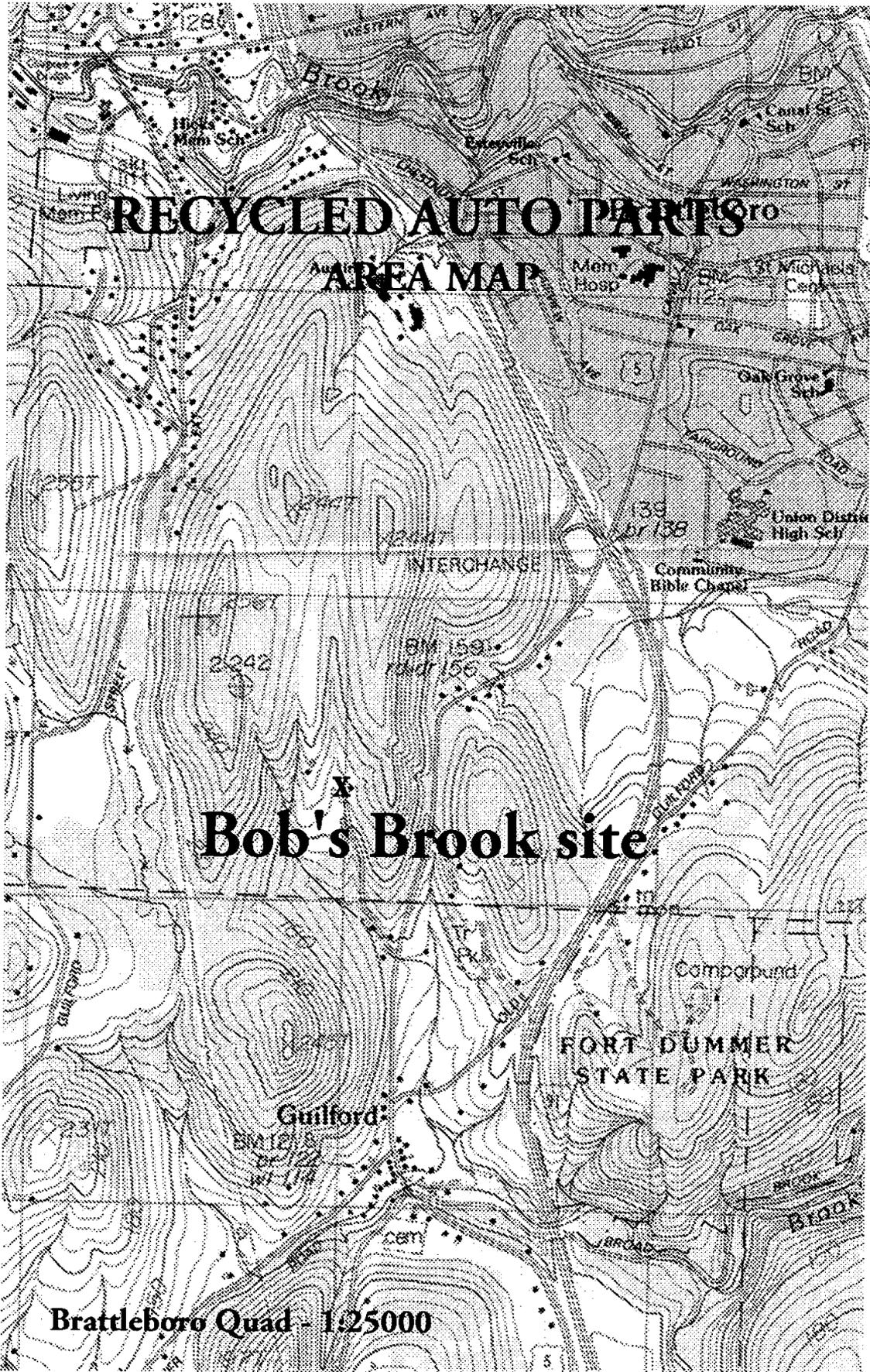
It is the Conclusion of Stevens and Associates Engineering that there is no remaining impact to potential receptors (site soil, groundwater, surface water, sediment) in the area of ob's Brook. The impact which may have occurred at the time of release has successfully been remediated by removing contaminated soil from the source area and removing petroleum contaminated material from the adjacent wetland area.

## 13.0 RECOMMENDATIONS

In Dec. 1998 the **40 cubic yards** of petroleum contaminated soil which was excavated in May of 1997 was moved to a permanent stockpiling location on the site (see Figure One - Site Plan).

5 or 40?

It is recommended that, upon acceptance of this Site Investigation Report that a stockpiled soil monitoring plan be prepared for submission to the VT ANR-SMS for approval. This plan should call for annual monitoring by field screening of the entire volume of petroleum contaminated soil which has been stockpiled.



# RECYCLED AUTO PARTS

## AREA MAP

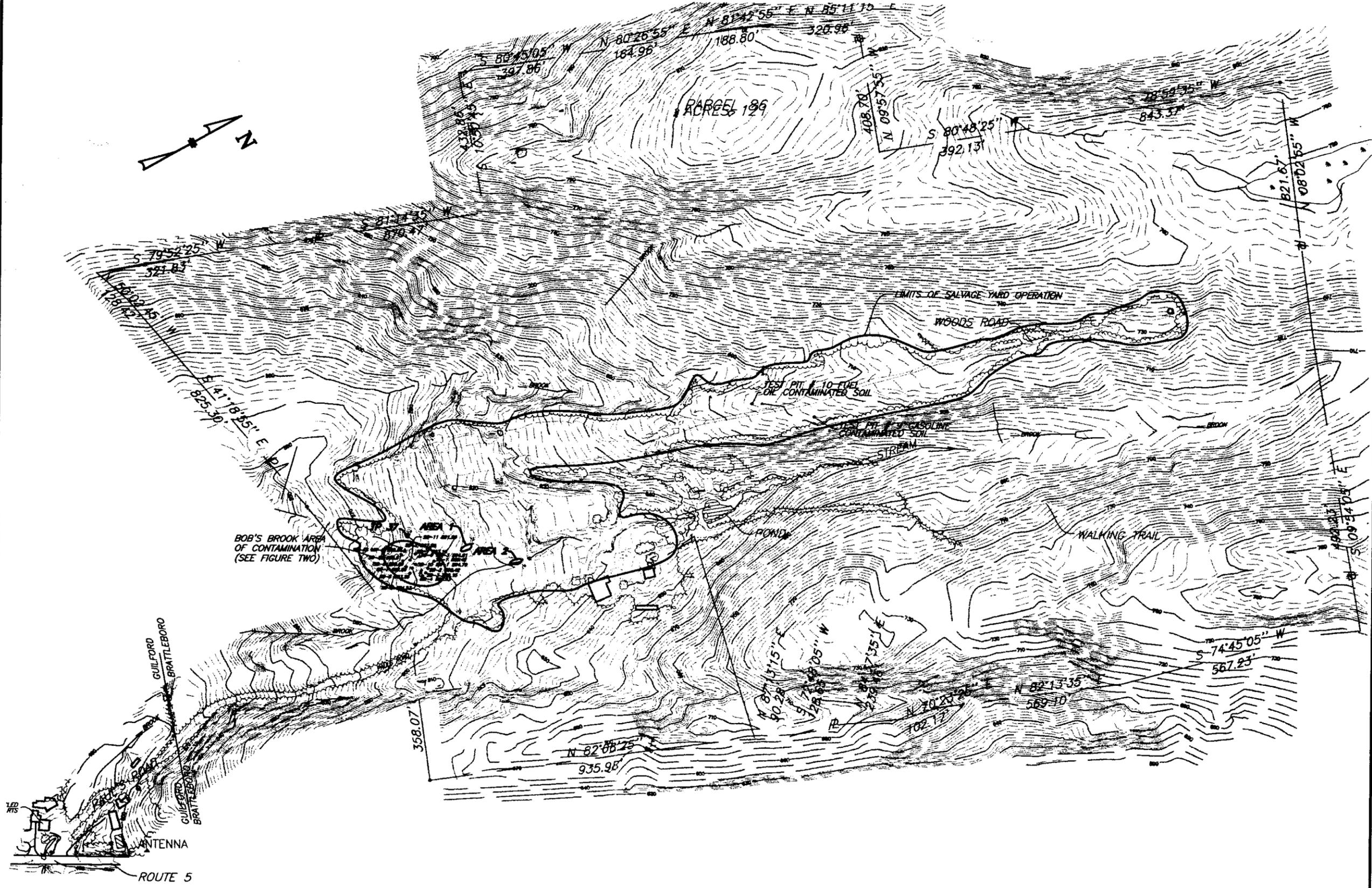
**Bob's Brook site**

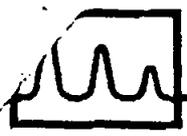
Brattleboro Quad - 1:25000

STEVENS & ASSOCIATES  
ENGINEERING

EXISTING SITE PLAN (FIGURE ONE)  
OLD BRATTLEBORO ROAD PROJECT

SITE PLAN  
4/2/97





# LABORATORY REPORT

1000

Eastern Analytical, Inc. ID#: 15340

Client: Stevens & Associates

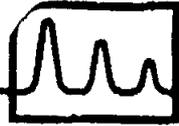
Client Designation: Recycle Auto

## Volatile Organic Compounds (Surface Water)

Client ID:	Omega MW1	Omega MW2	Omega MW3	Omega MW4	Omega TP1	Omega TP2	Omega TP3
Matrix:	aqueous	aqueous	aqueous	aqueous	soil	soil	soil
Date Received:	12/30/98	12/30/98	12/30/98	12/30/98	12/30/98	12/30/98	12/30/98
Date Analyzed:	1/7/99	1/7/99	1/7/99	1/7/99	1/5/99	1/5/99	1/5/99
Analyst:	VG						
Units:	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg
Method:	8021B						
Benzene	< 1	< 1	< 1	< 1	< 50	< 50	< 50
Toluene	< 1	< 1	< 1	< 1	< 50	< 50	< 50
Ethylbenzene	< 1	< 1	< 1	< 1	< 50	< 50	< 50
m,p-Xylene	< 1	< 1	< 1	< 1	< 50	< 50	< 50
o-Xylene	< 1	< 1	< 1	< 1	< 50	< 50	< 50

Approved By Clifford Chase, Volatile Organics Supervisor

*Clifford Chase* 1/11/99



# LABORATORY REPORT

Eastern Analytical, Inc. ID#: 15340

Client: Stevens & Associates

Client Designation: Recycle Auto

## Volatile Organic Compounds

(Sediment)

	Omega TP4	Omega SP1
Client ID:		
Matrix:	soil	soil
Date Received:	12/30/98	12/30/98
Date Analyzed:	1/5/99	1/7/99
Analyst:	VG	VG
Units:	ug/Kg	ug/Kg
Method:	8021B	8021B
Benzene	< 50	< 50
Toluene	< 50	< 50
Ethylbenzene	< 50	< 50
m,p-Xylene	< 50	< 50
o-Xylene	< 50	< 50

Reviewed By Clifford Chase, Volatile Organics Supervisor

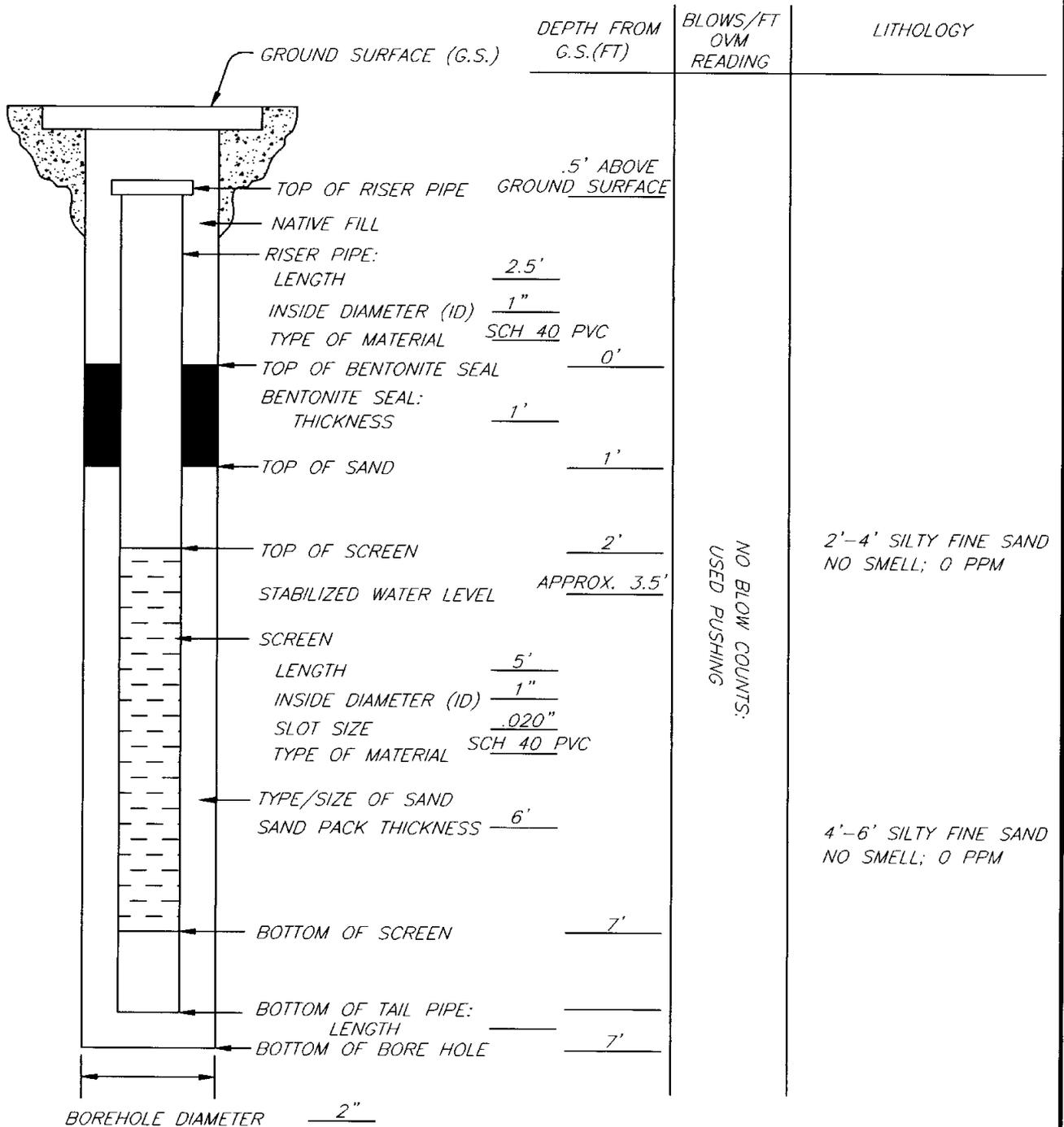
*Clifford Chase* 1/11/99

**STEVENS & ASSOCIATES**  
ENGINEERING

SITE: RECYCLED AUTO PARTS  
CLIENT: OMEGA OPTICAL  
CONTRACTOR: EASTERN ANALYTICAL

WELL NO: MW-1  
DATE INSTALLED: 11/11/97  
GEOL./ENG.: Brackett

MONITORING WELL CONSTRUCTION DETAIL

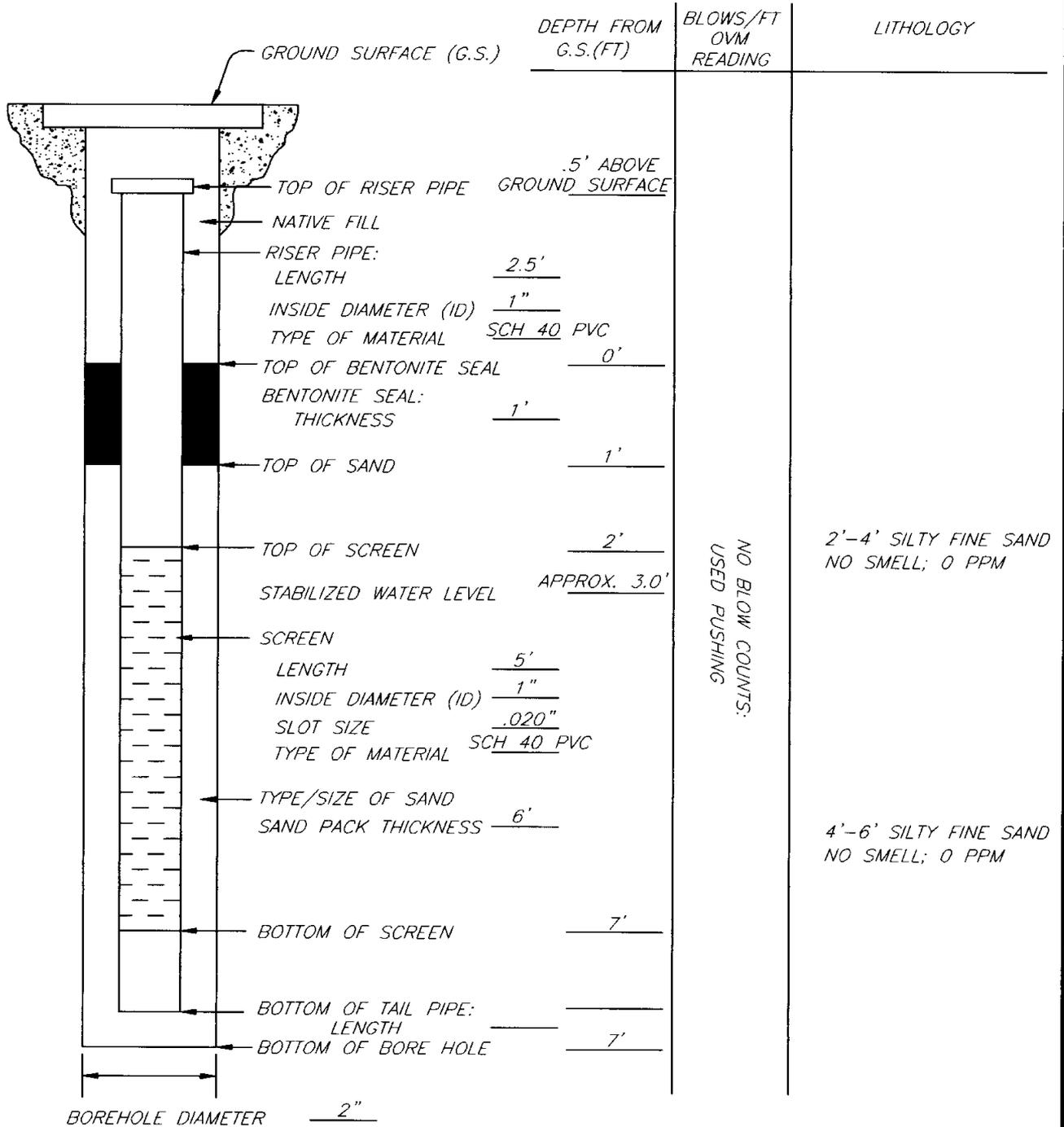


**STEVENS & ASSOCIATES**  
ENGINEERING

SITE: RECYCLED AUTO PARTS  
CLIENT: OMEGA OPTICAL  
CONTRACTOR: EASTERN ANALYTICAL

WELL NO: MW-2  
DATE INSTALLED: 11/11/97  
GEOL./ENG.: Brackett

MONITORING WELL CONSTRUCTION DETAIL

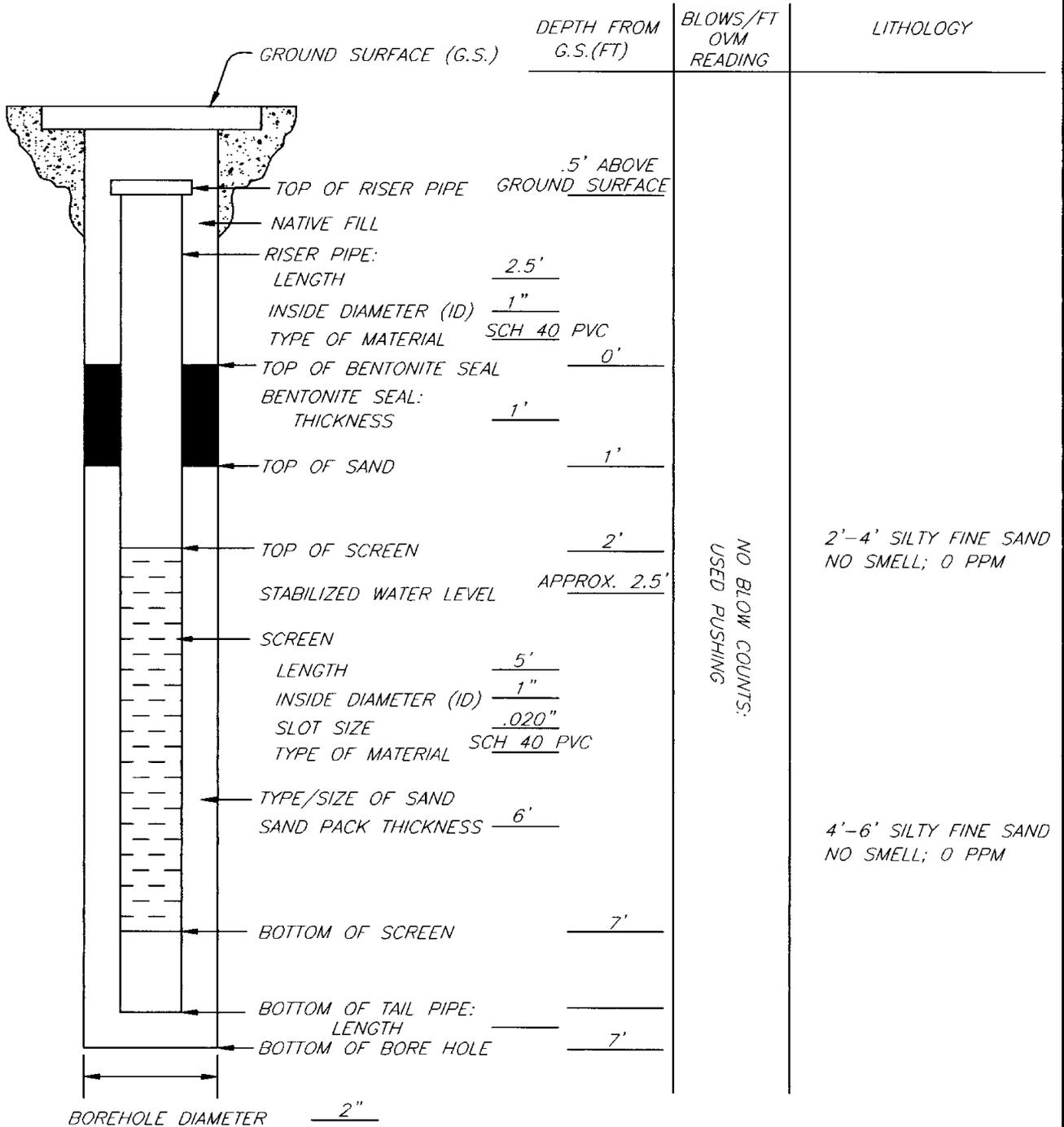


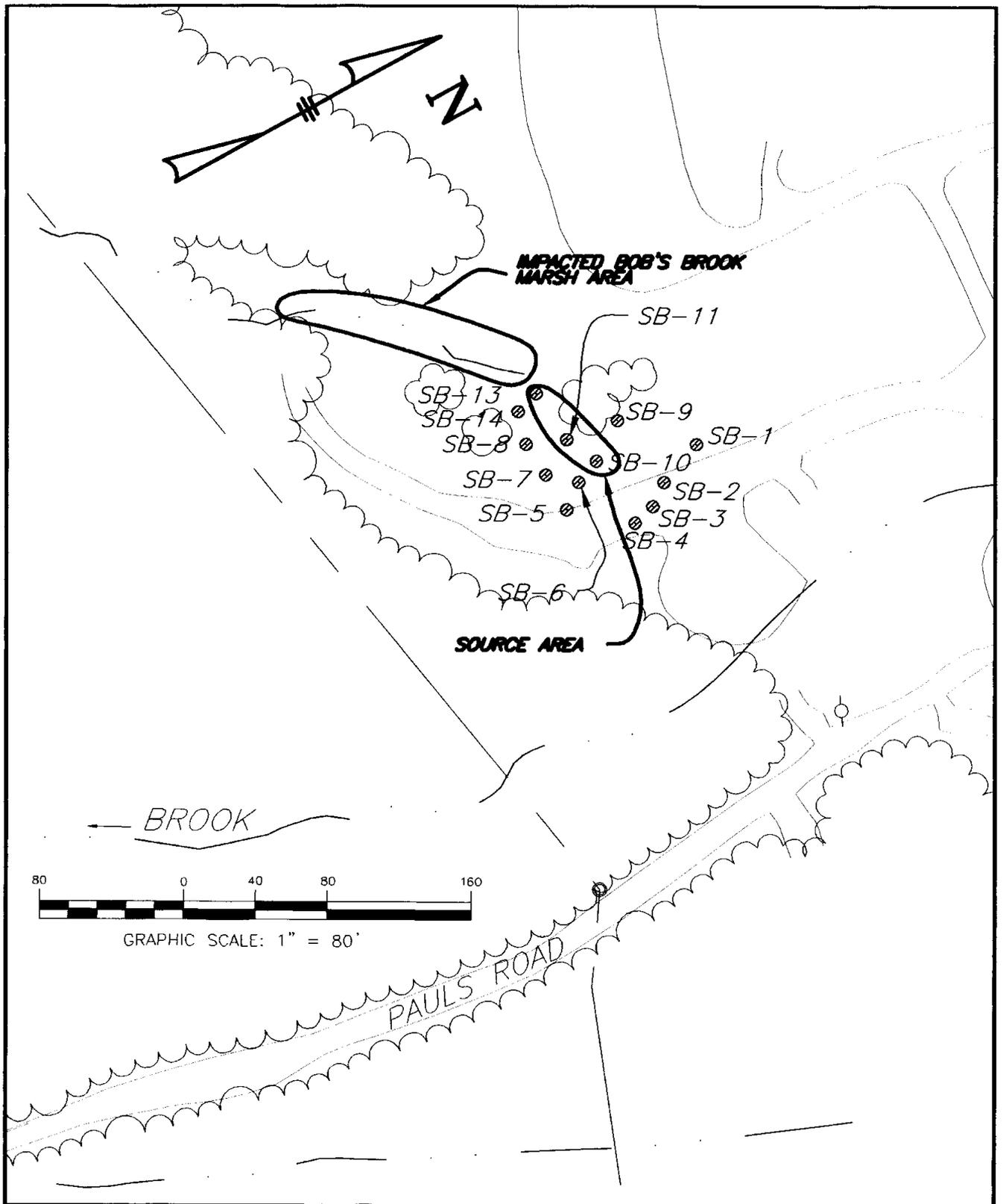
**STEVENS & ASSOCIATES**  
ENGINEERING

SITE: RECYCLED AUTO PARTS  
CLIENT: OMEGA OPTICAL  
CONTRACTOR: EASTERN ANALYTICAL

WELL NO: MW-3  
DATE INSTALLED: 11/11/97  
GEOL./ENG.: Brackett

MONITORING WELL CONSTRUCTION DETAIL

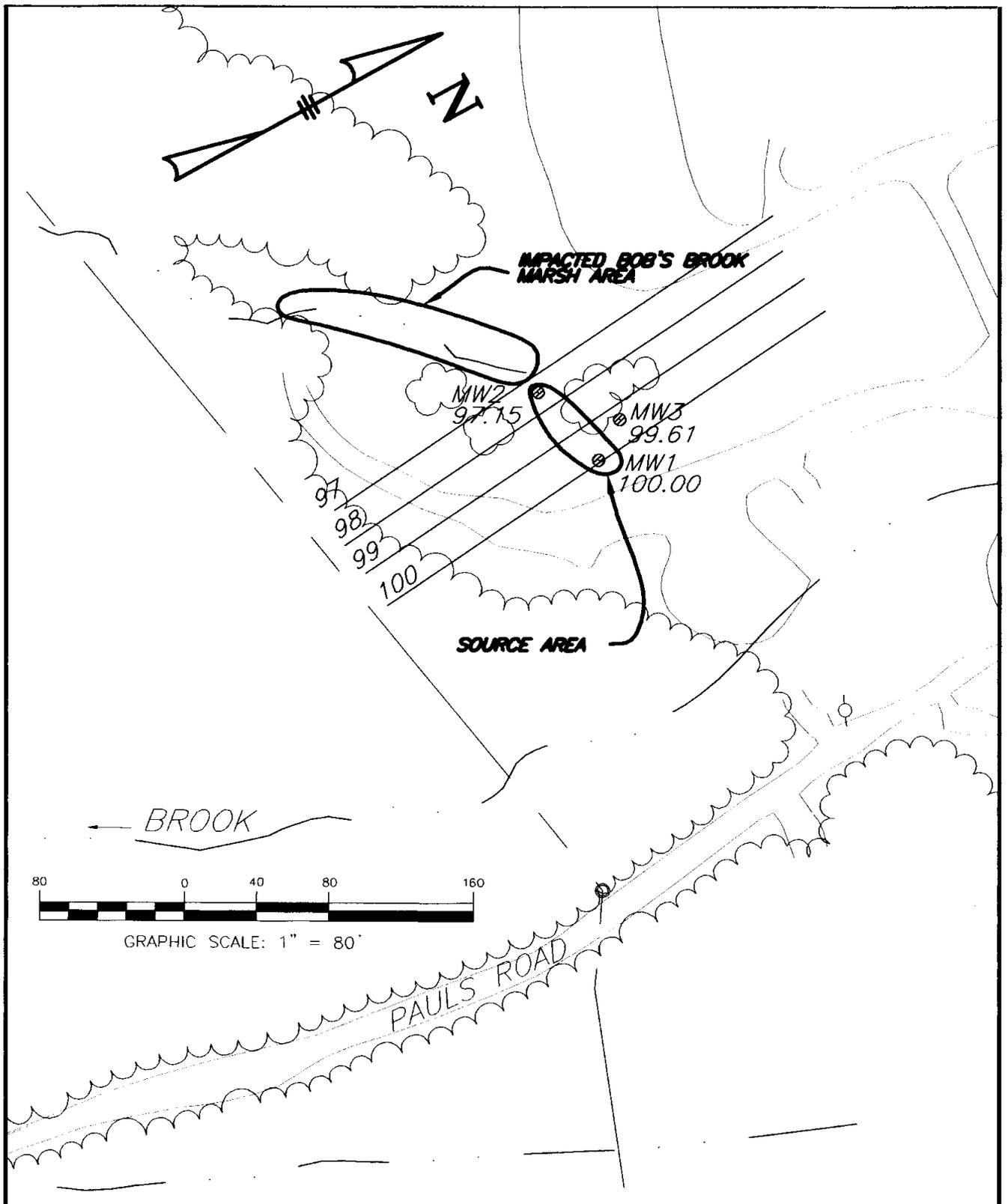




DATE: 2/8/99

**STEVENS & ASSOCIATES**  
ENGINEERING

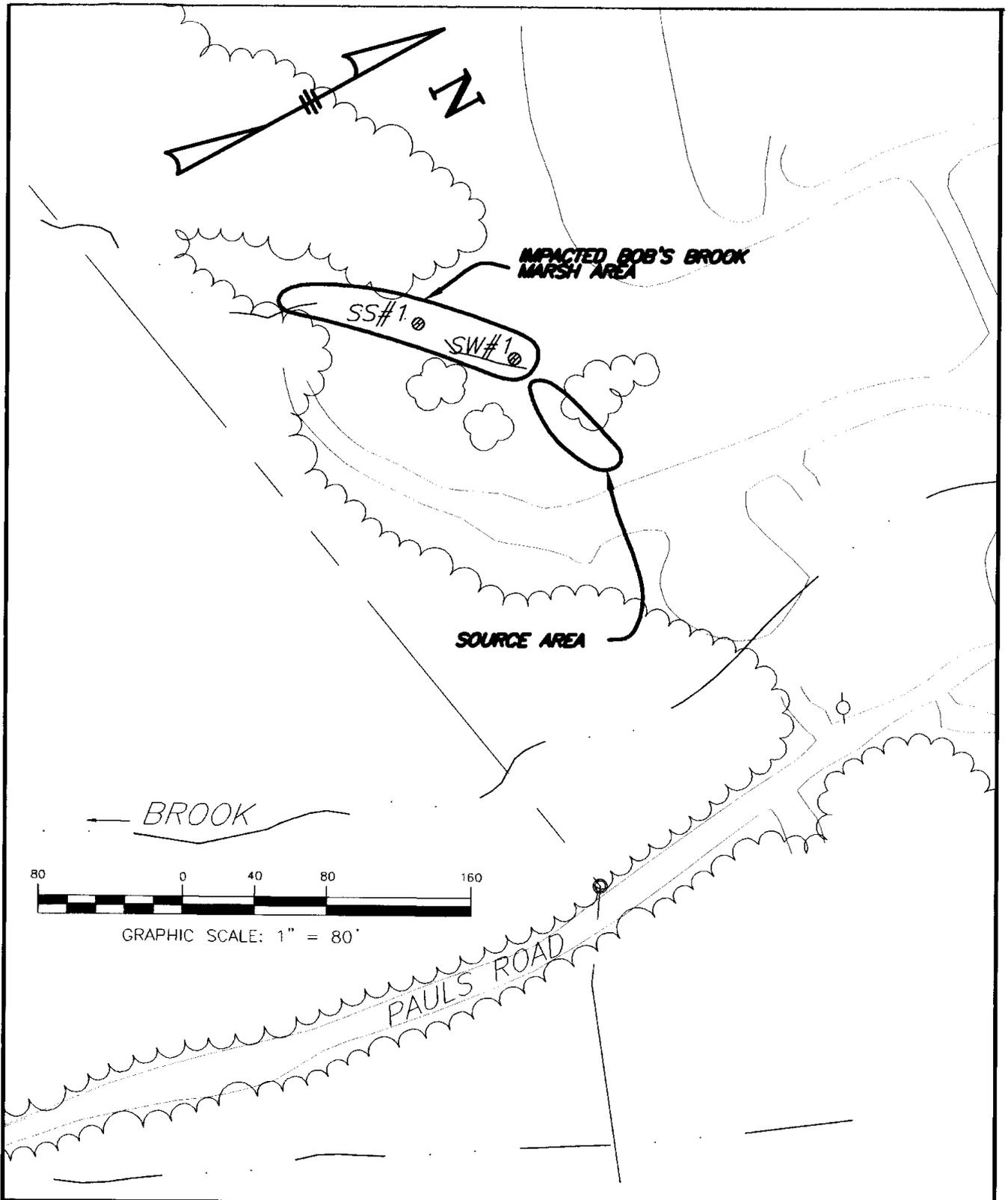
SOIL BORING PLAN (FIGURE TWO)  
RECYCLED AUTO PARTS SITE



DATE: 2/8/99

**STEVENS & ASSOCIATES**  
ENGINEERING

GROUND WATER POTENTIOMETRIC MAP  
MONITORING WELL PLAN (FIGURE THREE)  
RECYCLED AUTO PARTS SITE



DATE: 2/8/99

**STEVENS & ASSOCIATES**  
ENGINEERING

SEDIMENT & SURFACE WATER SAMPLE  
LOCATION PLAN (FIGURE FOUR)  
RECYCLED AUTO PARTS SITE