PIERS
Environmental
Services, Inc.

1330 S. Bascom Ave., Suite F
San Jose, CA 95128

Tel. (408) 559-1248 Fax (408) 559-1224

Need boring logs

REPORT OF FINDINGS
GROUNDWATER INVESTIGATION

AT
5940 COLLEGE AVE., OAKLAND, CA.

Sept 1999

Prepared for:

Mr. Patrick Elwood
1345 Grand Ave.
Piedmont, CA 94610

Prepared by:

PIERS Environmental Services
Bennett T Halsted, Project Manager
1330 South Bascom Ave. #F
San Jose, CA 95128

SEPTEMBER 13, 1999

1.0 INTRODUCTION

The purpose of this report is to present the findings of a preliminary investigation to determine the presence of hydrocarbons in the groundwater in the vicinity of a historic fuel service site. This report first reviews the known site history, describes the site vicinity, presents investigation protocols and analytical results and concludes with a recommendation for further investigation.

1.1 Site Location

The site is located in a commercial/residential district of Oakland, California on property at 5940 College Ave.. (Figure 1).

1.2 Background

The subject site was the location of a gasoline station prior to 1968, utilizing underground gasoline storage tanks.

2.0 INVESTIGATIVE SCOPE OF WORK

Because assessment research showed a historic fuel service use at the site an investigation into a potential historic impact to groundwater was recommended. After tracing existing fuel lines toward the suspected former tank locations, PIERS recovered groundwater grab samples from four locations around the suspected former tank locations.

2.1 Boring Locations

On August 3, and September 1, 1999, four borings were constructed on site to determine the presence of hydrocarbons in the groundwater. Soil borings SB-1 through SB-4 were constructed in the vicinity of the suspected former tank location. The boring locations are shown in Figure 2.

2.2 Reconnaissance Boring Installation and Groundwater Sampling

Prior to mobilization of the drilling equipment on-site, and prior to leaving the site, all associated equipment was thoroughly cleaned to removed all soil, oil, grease, mud, tar, etc. The cleaning process consisted of high pressure steam cleaning of the drilling equipment and a high-pressure hot water final rinse. Before drilling the borings, all drill stems, bits, and other down-hole equipment were cleaned.

2.2.1 **Soil Boring Procedure**

The borings were advanced using a three inch diameter hand auger to a depth that penetrated a minimum of one foot beneath the water table. All of the soil recovered from the boring was logged under the supervision of a registered civil engineer. Visual and olfactory observations of petroleum hydrocarbons were made and recorded on the boring logs.

2.2.2 **Groundwater Grab Sampling Procedures**

After completion, each boring was allowed to recharge with groundwater. Then, a new, disposable bailer was inserted into the boring for recovery of a groundwater grab sample. The groundwater was emptied into sample containers obtained directly from the analytical laboratory. An effort was made to minimize exposure of the sample to air.

Sample containers were labeled with self-adhesive tags. Field personnel labeled each tag, using waterproof ink, with the following information: Sampling location and number; Project name; Date and time samples were collected; Treatment (preservatives, filtered, etc.); Name of sampler.

Subsequent to collection, the samples were immediately stored on ice in an appropriate ice chest. Samples were transferred under Chain-of-Custody procedures to a State Certified Laboratory.

The borings were backfilled immediately after completion of the sampling and removal of the well casings, with a cement grout mixture containing approximately 3% bentonite.

2.2.3 **Laboratory Analyses**

The following analyses was performed by Entech Analytical Labs of Sunnyvale on groundwater samples obtained from each boring:

TPH-gas (EPA Method 8015M); BTEX, MTBE (EPA Method 8020)

The results of the groundwater samples were as follows:

Results in Parts Per Billion (PPB)

Sample#	TPH/g	Benzene	Toluene	EthylBenzene	Xylene	MTBE
SB1	5100	43	34	40	ND	110
SB2	ND	ND	ND	ND	ND	ND
SB3	59,000	3,500	310	2000	1900	650
SB4	190,000	890	110	4000	7500	1100

2.3 Reporting

All documents created during the investigation including boring logs, , chain of custody, and laboratory reports are included in the appendix of this Report of Findings.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Due to the moderate level of Total Petroleum Hydrocarbons as gasoline (TPH/g) in groundwater grab samples recovered at the former station location, it appears that the either contaminates have migrated on to the subject site from the neighboring site or, there has been a historical fuel release at subject site. A determination of groundwater gradient direction would need to be made in order to ascertain the contaminate source.

PIERS recommends that two wells be installed at the subject site, or the neighboring site to determine groundwater gradient direction.

LIMITATIONS

The observations and conclusions presented in this report are professional opinions based on the scope of work outlined herein. This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. The opinions presented apply to site conditions existing at the time of our study and cannot apply to site conditions or changes of which we are not aware or have not had the opportunity to evaluate. This investigation was conducted solely to evaluate environmental conditions of the groundwater with respect to hydrocarbons identified during historic research work. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. It must be recognized that any conclusions drawn from these data rely on the integrity of the information available at the time of investigation and that a full and complete determination of environmental contamination and risks cannot be made.

Respectfully submitted this 13th day of September, 1999,

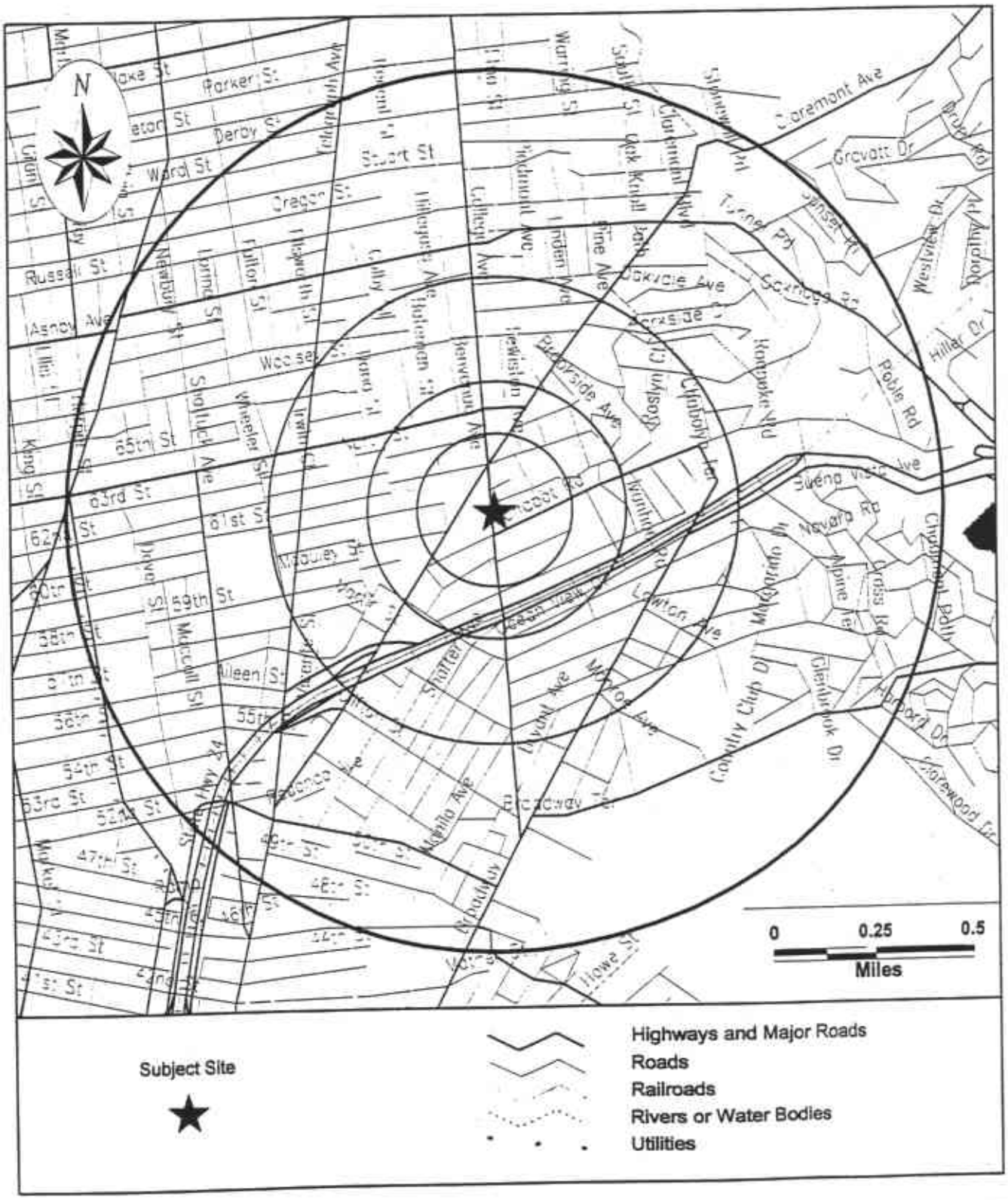
Bennett T. Halsted
Project Manager

Samuel H. Halsted PE
C.E. 14095

FIGURES

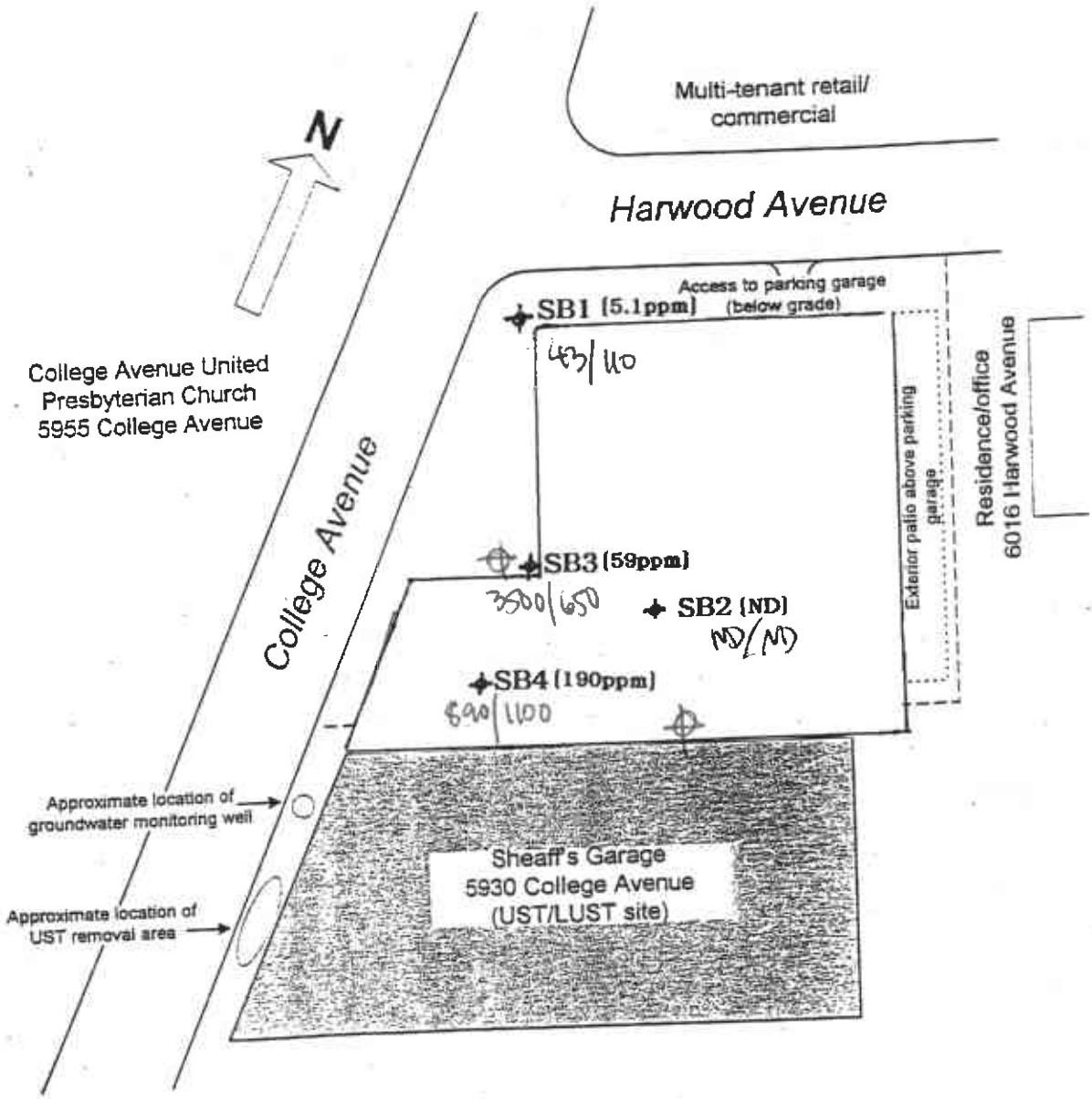
PIERS Environmental Services, Inc.
ASTM E1527-97 Environmental Sites Search

VICINITY MAP



For More Information Call VISTA Information Solutions, Inc. at **1 - 800 - 767 - 0403**
Report ID: **5940Colle**

FIGURE 1



ppb benzene / MtBE in water samples

BORING LOCATION (TPH/g)

SITE PLAN

5940 COLLEGE AVE., OAKLAND, CA

SCALE:	1"=40'	APPROVED BY:	DRAWN BY:
DATE:	9/13/99		REVISED

PIERS ENVIRONMENTAL SERVICES, INC.

1330 S. BASCOM AVENUE, SUITE F, SAN JOSE, CA 95128 | **FIGURE 2**

CHAIN-OF-CUSTODY ANALYTICAL RESULTS

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • Telephone: (408) 735-1550 (800) 287-1799 • Fax: (408) 735-1554

Chain of Custody/Analysis Work Order

Client: PIERS
Address: 1330 S. Bascom #F
San Jose
Contact: Ben Halsted
Telephone #: 408-559-1248
Date Received: 9-2-99
Turn Around: Noon

Project ID: College
Purchase Order #:

Sampler/Company: PIERS Telephone #: 408 559-1248
B. Halsted

Special Instructions/Comments

LAB USE ONLY

Samples arrived chilled and intact:
(Yes) (No) G.G 9/2/99

Notes:

Sample Information								Requested Analysis							
Lab #	Sample ID	Grab/ Composite	Matrix	Date Collected	Time Collected	Pres.	Sample Container	TPHg BTEX MTBE							
	SB-1		Water	8-31-99	9 28		(2)40ml VOA	X					16135-001		
	SB-2		"	"	10 16		"	X					"	-002	
	SB-3		"	"	1 45		"	X					"	-003	
	SB-4		"	9-1-99	11 05 am		(2)40ml VOA	X					"	-004	

Relinq. By:	Received By:	Date 9-2-99	Time 1205
Relinq. By:	Received By:	Date 9/2/99	Time 1205
Relinq/ By:	Received By:	Date	Time

Entech Analytical Labs, Inc.

CA ELAP# I-2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Piers Environmental Services
1330 South Bascom Avenue
San Jose, CA 95128
Attn: Ben Halsted

Date: 9/10/99
Date Received: 9/2/99
Project: College
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	SB-1			SB-2			SB-3				
Sample Date	8/31/99			8/31/99			8/31/99				
Sample Time	9:28			10:16			13:45				
Lab #	15135-001			15135-002			15135-003				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Results in µg/Liter:											
Analysis Date	9/9/99			9/10/99			9/9/99				
TPH-Gas	**5,100**	10	500	**ND**	1.0	50	**59,000**	50	2500	50	8015M
MTBE	**110**	10	50	**ND**	1.0	5.0	**650**	50	250	5.0	8020
Benzene	**43**	10	5	**ND**	1.0	0.50	**3,500**	50	25	0.50	8020
Toluene	**34**	10	5	**ND**	1.0	0.50	**310**	50	25	0.50	8020
Ethyl Benzene ·	**40**	10	5	**ND**	1.0	0.50	**2,000**	50	25	0.50	8020
Xylenes (total)	**ND**	10	5	**ND**	1.0	0.50	**1,900**	50	25	0.50	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Report amended 9/10/99

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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Piers Environmental Services
1330 South Bascom Avenue
San Jose, CA 95128
Attn: Ben Halsted

Date: 9/10/99
Date Received: 9/2/99
Project: College
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	**SB-4**										
Sample Date	9/1/99										
Sample Time	11:05										
Lab #	**15135-004**										
	Result	DF	DLR							PQL	Method
Results in µg/Liter:											
Analysis Date	9/9/99										
TPH-Gas	**190,000**	200	10000							50	8015M
MTBE	**1,100**	200	1000							5.0	8020
Benzene	**890**	200	100							0.50	8020
Toluene	**110**	200	100							0.50	8020
Ethyl Benzene	**4,000**	200	100							0.50	8020
Xylenes (total)	**7,500**	200	100							0.50	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983